Wm Cornwallis
Wittersham

L. Skynegr 1878.

BRITISH ZOOLOGY.

Claſs III. REPTILES.

IV. FISH.

Aſt ego deſpectis quæ cenſus opeſque dederunt
Naturæ mirabor opus. AUSONIUS.

VOL. III.

CHESTER,
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MDCCLXIX.

CLASS III.

REPTILES.

All the works of the LORD are good, and he will give every needful thing in due ſeaſon.

So that a man cannot ſay this is worſe than that, for in time they ſhall all be well approved.

Eccleſiaſticus xxxix. 33, 34.

TO

THOMAS FALCONER, Esq;

OF

CHESTER.

IT is but justice, my dear TOM, to address to you a work which was begun with your approbation, carried on under your improving strictures, and has so often amused us during the many pleasing hours we have passed together.

At the same time that I own the many advantages I have reaped from making you confident to the productions of an idle and rural pen; let me not fail in my acknowlegements to our common friend the Hon. DAINES BARRINGTON, who, with unremitting ardor, and with an honest freedom, has favored me with the most instructive hints on the subject of the following sheets.

Would! would to Heaven that I was capable of adding the third to the number! But the grateful tribute of a

ſigh is all I can give to what is now become only an inſtructive memory. Simplicity of manners, zealous friendſhip, the promotion of all liberal arts, univerſal benevolence, with its amiable attendant charity, characteriſed the Prelate whoſe loſs I deplore. You I know will excuſe theſe expreſſions of ſenſibility, when you recollect it is Dr. LITTLETON, late Biſhop of CARLISLE, whom I lament.

May you live long and happy, is the earneſt wiſh of him, who is, with the trueſt regard,

Your moſt affectionate kinſman,

And faithful humble ſervant,

Downing,
March 25, 1769.

Thomas Pennant.

ERRATA.

Page 21, *dele* **, and ** xxix.	*c.* 3.
22, Attingot,	Attingat.
51, gives	give.
56, thoſe *(the firſt)*	theſe.
65, ιχζυσιν,	ιχθυσιν.
66, inſtrument,	inſtruments.
67, NAPKE,	NAPKH.
68, impute,	impart.
69, leaſt	leſt.
83, aſſunder,	aſunder.
90, are,	is.
94, *Note*, ſecond of	ſecond book of.
115, aſſure,	aſſures.
135, twelve,	ſix.
140, extirminate,	exterminate.
171, *Gunnellis*,	*Gunnellus*.
173, fins,	fin.
213, *le Soup*,	le Loup.
251, intercepter,	intercepte.
236, abound,	abounds.
298, *Note*, on,	*on*.
moutant,	*montant*.
306, *norit*,	to be placed under *Quis?*
310, **	to be placed, p. 309, over BREAM.
without beards,	
315 *venera*,	*venena*.

ADVERTISEMENT.

INDIAN ZOOLOGY.

PART I.

Conſiſting of Twelve Plates, 4to. Imperial, with Deſcriptions.

THIS Work will be continued and completed in Six Numbers, containing Figures of undeſcribed Birds and Quadrupeds, with ſome Eſſays on the *Indian* Animals mentioned by the Antients, obſcured by Fable, &c.

Sold by Mr. WHITE, Bookſeller, in *Fleet-ſtreet*, and Mr. WALTERS, at *Charing-Croſs*.

mountains of *Kerry*, and that ſurprizing harbour the *Bullers* of *Buchan* * may well be oppoſed to the rocks of *Blackulla*, or the caverns of *Skiula*. *Sweden* can no where produce a parallel to that happy combination of grandeur and beauty in *Keſwick* † vale, or *Killarny* ‡ lake; nor can *Europe* ſhew a natural wonder equal to the *Giant's Cauſeway* in the north of *Ireland*.

The excellence and number of our ſprings (whether medicinal or incruſting) are well known to common inquirers.

Our minerals are as great in quantity, as rich in quality: of gold, indeed we cannot produce many ſpecimens, yet ſufficient to ſhew that it is found in this iſland §; but ſilver is found in great abundance in our lead ores, and veins of native ſilver in the copper ores of *Muckrus*, on the lake of *Killarny*. The hæmatites iron ores of *Cumberland*, and the beautiful columnar iron ores of the foreſt of *Dean*, are ſufficient to diſplay our riches in that uſeful commodity. No country produces ſo great a quantity of tin as *Cornwall*; and that county, and ſeveral others in the north

* Between *Aberdeen* and *Peterhead*.

† In *Cumberland*.

‡ In the County of *Kerry*.

§ That our country produces gold, appears in Dr. *Borlaſe*'s excellent hiſtory of *Cornwall*, p. 214. ſo late as the year 1753 ſeveral pieces were found in what the miners call *ſtream tin*; one ſpecimen was as thick as a gooſe quill; others weighed to the value of ſeventeen ſhillings, twenty ſeven ſhillings: and another even to the value of three guineas.

have been long noted for their inexhauſtible veins of copper; nor leſs famous are the lead mines of *Derbyſhire*, *Cardiganſhire* and *Flintſhire*, which have been worked for ages, yet ſhew no ſign of the decline of their ſtores.

In all theſe, nature ſports with great luxuriancy; the cryſtallized lead ore of *Tralee* *, the fibrous lead ore of *Tipperary*; the laminated lead ore of *Lord Hoptoun*'s mines; the cryſtalized tins, and the figured ores of *Zink*, are equally noted for their elegance, ſcarcity, and richneſs.

The ore of *Zink*, or *Lapis Calaminaris*, is found in vaſt quantities in the counties of *Somerſet* and *Flint*; while *black lead* or *wadd*, a ſubſtance ſcarce known in other kingdoms, abounds in the mountains of *Cumberland*.

To the *Swediſh Petroleum*, we may oppoſe the Well at *Pitchford*, and that of *St. Catherine*'s near *Edenburg*; our amber and our jet, together with our inexhauſtable ſtrata of coal found in ſo many parts of this kingdom, will, in the article of bitumens, give us the ſuperiority over theſe ſo much boaſted productions of *Sweden*.

To avoid a tedious enumeration, we ſhall only mention our wonderful mines of rock ſalt; our allum and our vitriol works; our various marbles, alabaſters, and ſtones; our moſt excellent clays and earths †; all which

* In the county of *Kerry*.

† If the inquiſitive reader is deſirous of a farther account of the number and excellence of our ſubterraneous productions,

articles, and many more unnoted here, might have furnished us with an ample field for panegyric,

Our botanical productions are not less abundant; but the works of *Ray*, which have lately been much enlarged and methodized, according to the *Linnæan* system, by the ingenious Mr. *Hudson*, in his *Flora Anglica*, are a sufficient display of our vegetable riches.

Our Zoology would be a copious subject to enlarge on, but the work in hand restrains us from anticipating our readers curiosity. We might expatiate on the clouds of *Soland* geese which breed on the *Bass island*, or *Puffins* on that of *Priestholme:* on our fish, and other marine animals; on our insects, and the various other sensitive productions of this kingdom; but we forbear a parade of useless declamation, and shall only add, that as few countries receive more advantages from their natural breed of quadrupeds, unmixed with any beast that preys on man, so, few can boast a greater variety of birds, whether local, or migratory.

This is a general view of the natural history of our own country; why then should we neglect inquiring into the various benefits that result from these instances of the wisdom of our Creator, which his divine munificence has so liberally, and so immediately placed before us? Such a neglect is certainly highly to be

tions, we refer him to the learned Dr. *Woodward*'s catalogue of the *English Fossils*, *London* 1729, particularly to p. 5.

blamed, for (to expreſs ourſelves in the words of an eminent writer) " the Creator did not " beſtow ſo much curioſity, and workman- " ſhip upon his creatures, to be looked on " with a careleſs incurious eye, eſpecially to " have them ſlighted or contemned; but to " be admired by the rational part of the world, " to magnify his own power to all the world, " and the ages thereof; and ſince the works " of the creation are all of them ſo many de- " monſtrations of the infinite wiſdom and " power of God, they may ſerve to us, as ſo " many arguments, exciting us to a conſtant " fear of the Deity, and a ſteady and hearty " obedience to all his laws".*

Much might be added to this ſubject, if conſidered in a theological light; but ſince the writings of *Boyle*, *Ray*, and *Derham*, fully prove that the ſtudy of natural hiſtory enforces the theory of religion and practice of morality, we had better refer to their works in general, than mangle them by imperfect quotations.

To exalt our veneration towards the Almighty, is the principal end of this ſublime ſcience; and next to that, the various benefits reſulting from it to human ſociety deſerve our ſerious conſideration.

To give an obvious inſtance: what wonderful changes have been made in human affairs by the diſcovery of an obſcure mineral. The antients, ignorant of the application of

* *Derham*'s Phyſ. theol. book XI. c. 2 4.

the

the magnet, timidly attempted a mere coaſting navigation; while we, better informed of the uſes of it, traverſe the wideſt oceans, and by the diſcovery of the new world, have layed open to ſcience, an inexhauſtible fund of matter.

The riſe and progreſs of medicine, kept pace with the advancement of this moſt important diſcovery; and tho' neceſſity was the parent of the mechanic arts, yet they alſo throve, and grew to maturity, under the ſame influence.

Many more inſtances might be added to this brief view of the utility of natural knowledge; but we ſhall only give ſome of its uſes in the polite arts, which have hitherto been too little connected with it.

To inſtance particularly in painting, its uſes are very extenſive: the permanency of colors depends on the goodneſs of the pigments; but the various animal, vegetable, and foſſil ſubſtances (out of which they are made) can only be known by repeated trials; yet the greateſt artiſts have failed in this reſpect: the ſhadows of the divine *Raphael* have acquired an uniform blackneſs, which obſcures the fineſt productions of his pencil, while the paintings of *Holbein*, *Durer*, and the *Venetian-ſchool*, (who were admirably ſkilled in the knowledge of pigments) ſtill exiſt in their primitive freſhneſs.

But theſe advantages are ſmall, compared to thoſe derived from the knowledge of nature in the repreſentation of objects: painting is an imitation of nature; now, who can imitate without conſulting the original? but to

come to what is more particularly the object of our inquiries; animal and vegetable life are the eſſence of landſcape, and often are ſecondary objects in hiſtorical paintings; even the ſculptor in his limited province would do well to acquire a correctneſs of deſign with a perfect knowledge of the muſcles of animals. But the painter ſhould have all this and more; he ſhould be acquainted with all their various tints, their manner of living, their peculiar motions or attitudes, and their places of abode*, or he will fall into manifeſt errors.

Plurimus inde labor tabulas imitando juvabit
Egregias, operumque typos, ſed plura docebit
Natura ante oculos præſens, nam firmat et auget
Vim genii, ex illâque artem experientia complet.†

Deſcriptive poetry is ſtill more indebted to natural knowledge, than either painting or ſculpture: the poet has the whole creation for his range; nor can his art exiſt without borrowing metaphors, alluſions, or deſcriptions from the face of nature, which is the only fund of great ideas. The depths of the ſeas, the internal caverns of the earth, and the planetary ſyſtem are out of the painter's reach; but can ſupply the poet with the ſublimeſt conceptions: nor is the knowledge of animals

* That great artiſt, Mr. *Ridinger*, of *Auſburgh*, exceeds all others in the three laſt particulars; nothing can equal his prints of animals for propriety of attitudes, for a juſt idea of their way of life, and for the beautiful and natural ſcenery that accompanies them. His fineſt works are, his *Wilde Thiere*, *Kleine Thiere*, and *Jagdbare Thiere*; but there are ſcarce any of his performances that can fail giving pleaſure to all admirers of nature repreſented as herſelf.

† *Freſnoy de arte graph. lin.* 537.

and

Explanation of References.

Ælian. an. var.	*Claudii Æliani* Opera quæ extant omnia, Cura & Opera *Conradi Gesneri* Tigurini, fol. *Tiguri*, 1556.
Alb.	Nat. Hist. of Birds, by *Eleazer Albin*, 3 vol. 4to *London*, 1738.
Aldr. av:	*Ulyssis Aldrovandi* Ornithologia, fol: *Francofurti*, 1610, 1613.
Amæn. acad.	*Caroli Linnæi* Amænitates Academicæ, 6 tom. 8vo. *Lugd. Bat.* & *Holmiæ*, 1749, &c.
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Aristoph.	*Aristophanis* Comœdiæ undecim, *Gr.* & *Lat.* cum Scholiis antiquis, fol. *Amstelodami*, 1710.
Bell's Travels,	into *Persia*, *China*, &c. 2 vol. 8vo: 1764.
Belon av.	L'Histoire de la Nature des Oiseaux, avec leurs Descriptions & naifs Portraits, par *Pierre Belon*, fol. *Paris*, 1555.
Belon obs.	Les Observations de plusieurs Singularites & Choses memorables trouvees en *Grece*, *Asie* & *Judie*, par *Pierre Belon*, fol. *Paris*, 1555.
Belon	La Nature & Diversité des Poissons, &c. 8vo. transverf. par *Pierre Belon*, *Paris*, 1555.
Borlase's Corn.	Nat. Hist. of *Cornwall*, by *William Borlase*, A.M. fol. *London*, 1758.
Brisson quad.	Regnum animale in Classes IX. distributum, a *D. Brisson*, 8vo. *Lugd. Bat.* 1762.
Brisson av.	Ornithologie, ou Methode contenant la Division des Oiseaux, &c. Ouvrage enrichi des Figures, par M. *Brisson*, 6 tom. 4to. *Paris*, 1760.

Br. Zool.	*Britiſh* Zoology: Claſs I. Quadrupeds. II. Birds. Illuſtrated with 132 Plates, imperial Paper, *London*, 1766.
Br. or *Brunnich*	M. Th. *Brunnichii* Ornithologia Borealis, 8vo. *Copenhagen*, 1764.
Br. Monog	A Hiſtory of the Eider-Duck, in *Daniſh*, by Mr. *Brunnich*, 12mo, *Copenhagen*, 1763.
De Buffon	Hiſt. Nat. generale & particuliere, avec la Deſcription du Cabinet du Roy, par M. *De Buffon*, 15 tom. 4to. *a Paris*, 1749, &c.
Caii opuſc.	*Joannis Caii* Britanni Opuſcula, a *S. Jebb* edita, 8vo. *Londoni*, 1729.
Camden	*Camden*'s Britannia, publiſhed by Biſhop *Gibſon*, 2 vol. fol. 3d edition, *London*, 1753.
Cat. Carol.	Nat. Hiſt. of *Carolina* and the *Bahama* Iſlands, by *Mark Catesby*, 2 vol. fol. *London*, 1731.
Charlton ex.	*Gualteri Charletoni* Exercitationes de Differentiis, &c. Animalium, fol. *Londini*, 1677.
Cluſ. ex.	*Caroli Cluſii* Exoticorum Libri X. fol. *Antverpiæ*, 1605.
Crantz's Greenl.	Hiſtory of *Greenland*, &c. by *David Crantz*. Tranſlated from the *High Dutch*. 2 vol. 8vo. *London*, 1767.
Dale's hiſt.	of *Harwich* and *Dover-court*, by *Sam. Dale*, 4to. *London*, 1730.
Egede's Greenl.	Deſcription of *Greenland*, by *Hans Egede*, Miſſionary in that Country for twenty Years. Tranſlated from the *Daniſh*, 8vo. *London*, 1745.
Edw.	Nat. Hiſt. of Birds and other rare and undeſcribed Animals, by *George Edwards*, 7 vol. 4to. *London*, 1743, &c.
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Geſner quad.	*Conrad. Geſneri* Hiſtoria Quadrupedum, fol. *Frankfort*, 1603.
Geſner av.	*Geſner* de Avium Natura, fol. *Francofurti*, 1585.

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Girald. Cam.	Itinerarium *Cambriæ*, Auctore *Sil. Giraldo Cambrense*, cum Annot. *Poveli*, fol. *Londoni*, 1585.
Grew's mus.	Catalogue of the Rarities belonging to the Royal Society, by Dr. *N. Grew*, fol. *London*, 1685.
Gunner	Det *Trondhiemste* Gelskabs Skrifter, *Kiobenthavn*, 1761.
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Hor. Ice.	Nat. Hist. of *Iceland*, by *N Horrebow*, translated from the *Danish*, fol. *London*, 1758.
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Klein quad.	*Jac. Theod. Klein* Quadrupedum Dispositio, brevisque Hist. Nat. 4to. *Lipsiæ*, 1751.
Klein av.	*J. Theod. Klein* Historiæ Avium Prodromus, 4to. *Lubecæ*, 1750.
Klein stem.	*J Theod. Klein* Stemmata avium, 40 Tabulis Æneis ornata, 4to. *Lipsiæ*, 1759.
Kramer	*Gulielmi Henrici Kramer* Elenchus Vegetabilium & Animalium per *Austriam Inferiorem* observatorum, 8vo. *Viennæ*, *Pragæ* & *Tergesti*, 1756.
Lin. syst.	*Caroli Linnæi* Systema Naturæ, edit. 12, reformata, 8vo. *Holmiæ*, 1766.
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Martin's West. Isles.	Description of the Western Islands of *Scotland*, by *M. Martin*, 2d edit. 8vo. *London*, 1716.
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Merret pinax	Pinax Rerum Naturalium Britannicarum, Authore *Chriſtoph. Merret*, 12mo, *Londini*, 1667.
Meyer's an.	A Work wrote in *German*, containing of 200 colored Plates of various Animals, with the Skeleton of each, by *John-Daniel Meyer*, Miniature Painter, at *Nuremberg*, 2 vol. fol. 1748.
Morton's Northampt.	Hiſt. Nat. of *Northamptonſhire*, by *John Morton*, A.M. fol. *London*, 1712.
Nov. Com. Petrop.	Novi Commentarii Academiæ Scientiarium imperialis *Petropolitanæ*, 7 tom. 4to. *Petropoli*, 1750, &c.
Olina	Uccelliera overo Diſcorſo della Natura e Proprieta di diverſi Uccelli e in particolare di que'che Cantano. Opera di *Gio. Petro Olina*, fol. in *Roma*, 1684.
Plin. nat. hiſt.	*Plinii* Hiſtoria Naturalis, cum Notis *Harduini*, 2 tom. fol. *Paris*, 1723.
Pl. enl.	Colored Figures of Birds, Reptiles and Inſects, publiſhing at *Paris*, under the Title of *Planches Enluminées*; to which we are promiſed an Explanation by the able Pen of M. *de Buffon*.
Pontoppidan	Nat. Hiſt. of *Norway*, by the right reverend *Eric Pontoppidan*, Biſhop of *Bergen*, tranſlated from the *Daniſh*, fol. *London*, 1755.
Proſp. Alpin.	*Proſperi Alpini* Hiſtoriæ *Ægypti* Pars prima & ſecunda, 2 tom. 4to. *Lugd. Bat.* 1735.
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Smith's Kerry	Natural and Civil Hiſtory of the County of *Kerry*, 8vo. *Dublin*, 1756.
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Wil. orn.	The Ornithology of Mr. *Francis Willoughby*; publiſhed by Mr. *Ray*, fol. *London*, 1678.
Worm. muſ.	Muſeum Wormianum, fol. *Amſtelodami*, 1655.
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CLASS

C L A S S I.

QUADRUPEDS.

Div. I. Hoofed Quadrupeds.

II. Digitated Quadrupeds.

G E N E R A.

Division I.

Division II.

Diviſion II.

			Page
Six cutting teeth, and two canine teeth, or fangs, in each jaw.	Five toes before, four behind: ſharp claws lodged in a ſheath that may be exerted or drawn in at pleaſure: a round viſage	VII. the Cat	45
	Five toes before, four behind *: thick blunted claws: a produced viſage	VIII. the Dog	49
	Five divided toes before, the ſame behind: a tranſverſe orifice between the tail and the anus	IX. the Badger	64
	Five toes on each foot, each connected by a ſtrong broad membrane - - -	X. the Otter	67
	Five divided toes on each foot: ſhort legs: ſharp-pointed viſage: long ſlender body - - -	XII. the Weeſel	77
Six cutting teeth in the upper jaw, four in the under, two canine teeth in each	Five toes on each foot, all palmated: the fore-legs buried deep in the ſkin: the hind-legs placed quite backwards: no external ears	XI. the Seal	71

* This character is invariably obſerved in the wild animals of this genus; but in the domeſtic ſpecies, nature ſeems to ſport; ſometimes omitting the fifth toe behind, often forming them imperfect, and often furniſhing the animal with it. For a farther account of the oſteology of this part, we refer the reader to the works of M. *de Buffon*, who ought, if envy would permit, to hold the firſt place among the modern zoologiſts.

Urit enim fulgore ſuo qui prægravat artes
Infra ſe poſitas.

and vegetables leſs requiſite, while his creative pen adds life and motion to every object.

From hence it may be eaſily inferred, that an acquaintance with the works of nature is equally neceſſary to form a genuine and correct taſte for any of the above mentioned arts. Taſte is no more than a quick ſenſibility of imagination refined by judgement, and corrected by experience; but experience is another term for knowledge *, and to judge of natural images, we muſt acquire the ſame knowledge, and by the ſame means as the painter, the poet, or the ſculptor.

Thus far natural hiſtory in general ſeems connected with the polite arts; but were we to deſcend into all its particular uſes in common life, we ſhould exceed the bounds of a preface: it will be therefore neceſſary to confine our inquiries to the inveſtigation of a ſingle part of the material world, which few are ſo ignorant as not to know is divided into the animal, vegetable, and foſſil kingdoms.

Vaſt would be the extent of the inquiries into each of theſe; but tho' ambition may tempt us to pervade the whole field of ſcience, yet a little experience will open to our views the immenſe tracts of natural knowlege, and we ſhall find it an arduous taſk only to inveſtigate a ſingle province, ſo as to ſpeak with preciſion and certainty; without which there can be no real improvements in natural hiſtory.

* See the eſſay on the origin of our ideas of the ſublime and beautiful.

For

For theſe reaſons, a partial examination of this ſcience is all that a conſiderate mind will aim at, which may perhaps be moſt naturally guided to give the preference to the moſt exalted ſubject of it.

Zoology is the nobleſt part of natural hiſtory, as it comprehends all ſenſitive beings, from reaſoning man, through every ſpecies of animal life, till it deſcends to that point where ſenſe is wholly extinct, and vegetation commences: and certainly none will deny, that life, and voluntary motion are ſuperior to a mere vegetating principle, or the more inactive ſtate of the foſſil kingdom.

Should we follow the train of reflections which naturally ariſe from the contemplation of animals, they would ſwell this preface into a volume: and ſhould we only mention the various uſes of *Britiſh* animals in common life yet even theſe would greatly exceed the bounds to which we have thought it right to limit ourſelves. The knowlege of *Diætetics* is a neceſſary branch of medecine, as by a proper attention to that article, an obſtinate diſtemper maybe eradicated, when common remedies have failed; but this can never be attained, without the ſtudy of Zoology, which aſſiſts us greatly in learning the different qualities of animal food; and how far a difference of nutriment may contribute to cure the diſeaſe.

Cloathing is eſſential, not only to our comfort, but ſubſiſtence; and the number of our manu-

manufactures, relative to this ſingle article, demand our care for their extenſion and improvement; eſpecially as the maintenance of thouſands depends on theſe important branches of commerce; yet theſe may be enlarged, by diſcovering new properties in animals, or by the farther cultivation of thoſe already diſcovered. The ſcience of Zoology is requiſite for each of theſe; and if we reflect but a little on the unwearied diligence of our rivals the *French*, we ſhould attend to every ſiſter ſcience that may any ways preſerve our ſuperiority in manufactures and commerce.

Domeſtic œconomy is an object of equal conſequence; and the author * of the *Calendar of Flora* has eſtabliſhed the uſes of Zoology in this particular, with undeniable evidence. This excellent writer has united a happy invention, with the moſt ſolid judgment, and certainly merits the higheſt commendations, as a friend of human kind. Our ingenious countryman, Mr. *Stillingfleet*, in the ſame year has purſued almoſt the ſame plan as far as his time would permit, with equal ſucceſs, and manifeſtly proved the utility of the project, in a learned diſcourſe prefixed to his work †.

If then Zoology can ſuggeſt ſo many hints towards enlarging and improving our manufactures and agriculture; we ſhall not think our time miſapplied, in offering to the publick,

* *Alex. Mal. Berger.*

† *Swediſh* tracts, tranſlated from the *amœn. Acad.* 2d Edition.

the

the NATURAL HISTORY of the *Quadrupeds* and *Birds* of GREAT-BRITAIN and IRELAND. This compilation had its peculiar difficulties; but the labor of travelling thro' a dry arrangement of the ſubject, was very frequently alleviated by the beautiful ſpecimens we met with in our progreſs: beſides, we own with pleaſure that we have been greatly aided by the lovers of natural hiſtory, who ſince the appearance of the firſt edition have contributed to enrich the preſent with ſeveral valuable obſervations; by collecting and digeſting theſe materials, we have not only rendered the work more complete, but are alſo encouraged to trace the *Britiſh Zoology* thro' ſome of the remaining claſſes, with all poſſible ſpeed.

Let therefore every merit that may appear in the preſent edition, and every error that may have been ſuppreſſed from the former, be attributed to the kind informations we have received from our learned and ingenious friends; among whom we are ambitious of naming, the honourable Mr. *Daines Barrington*, *William Conſtable*, eſq; *Joſeph Banks*, eſq; *Benjamin Stillingfleet*, eſq; the Reverend Doctor *William Borlaſe*, *Thomas Falconer*, eſq; of *Cheſter*, *Thomas Toſield* of *Yorkſhire*, eſq; Mr. *Plymly* of *Longnor*, *Shropſhire*, Mr. *Thomas Bolton*, of *Worlyclouh*, *Yorkſhire*, the Reverend Mr. *Farrington* of *Dynas*, *Caernarvonſhire*, *Owen Holland*, eſq; of *Conway*, *Henry Seymer*, eſq; of *Hanford*, *Wilts*, Doctor *Lyſons* of *Glocester*, Doctor *Solander*, of the *Muſeum*, Mr. *Peter*

Peter Collinſon, the Reverend Mr. *White* of *Selborn, Hants*; and that Father of *Britiſh* Ornithologiſts Mr. *George Edwards* of the college of Phyſicians.

In the proſecution of our plan, we ſhall, to avoid the perplexity, ariſing from forming a new ſyſtem, adopt (as far as relates to the *Quadrupeds* and *Birds)* that of the ineſtimable *Ray*, who advanced the ſtudy of nature far beyond all that went before him; and whoſe abilities, integrity, and mildneſs, were no leſs an ornament to the human ſpecies in general, than to his own country in particular. Yet, as this excellent man was in a manner the founder of ſyſtematic Zoology, ſo later diſcoveries have made a few improvements on his labors: where ever then he is miſtaken in the arrangement of animals, we ſhall follow the method of M. *Briſſon*; whoſe merit, as a ſyſtematic writer is not yet known; or at leſt, not ſufficiently acknowleged among us *.

We have, in our deſcriptions, wholly omitted the anatomy of animals; as that part, unleſs executed with the greateſt ſkill, would be no ſmall blemiſh to the reſt of this performance; but the reader may judge of the extent of our plan, by the following heads: the character of the genus ſhall firſt be mentioned: then the ſpecific name: the ſynonyms from different authors; and the genera in which thoſe authors have placed the animal. The

* Le Regne Animal. *Paris* 1756. 4to. Ornithologie, contenant la diviſion des oyſeaux, *&c. Paris* 1760, 1762, 6 tom. 4to.

names ſhall be given in ſeveral *European* languages *; and we ſhall conclude with a brief, but ſufficient deſcription, adding at the ſame time, the various uſes, and natural hiſtory of each individual.

If this plan ſucceeds, in promoting the knowledge of nature in this kingdom, we ſhall think ourſelves amply rewarded. Could our exhortations avail, we ſhould recommend this ſtudy moſt earneſtly to every country gentleman. To thoſe of an active turn, we might ſay, that ſo pleaſing and uſeful an employment would relieve the *tædium* ariſing from a ſameneſs of diverſions; every object would produce ſome new obſervation, and while they might ſeem only to gratify themſelves with a preſent indulgence, they would be laying up a fund of uſeful knowlege; they would find their ideas inſenſibly enlarged, till they comprehended the whole of domeſtic œconomy, and the wiſe order of Providence.

To thoſe of a ſedentary diſpotion, this ſtudy would not only prove agreeable, but ſalutary: men of that turn of mind are with difficulty drawn from their books, to partake of the neceſſary enjoyments of air and exerciſe; and even when thus compelled, they profit leſs by

* In the ornithology the *European* names are prefixed to the author referred to in the ſynonyms,

Italian	to	Aldrovand, Olina, or Zinanni.
French		Briſſon
German		Geſner or Kramer
Swediſh		the Fauna Suecica
Daniſh and *Norwegian*		Brunnich.

it

REPTILES.

WE are now to conſider the claſs of reptiles, which are, for the moſt part, objects of deteſtation; but however the opinion of the world may be, if a writer undertakes a general hiſtory of animals, he muſt include them: they form at leſt one link in the chain of beings, and may therefore be viewed with a degree of pleaſure by a philoſophic eye.

But notwithſtanding the prejudice againſt this claſs is almoſt univerſal, is it founded on reaſon? In ſome it may be owned that the outward form is diſagreeable, while the noxious qualities of others are juſtly productive of terror: but are we on that account to reject them? The more fatal they are, the more deeply we ſhould enquire into their effects, that we may be capable of relieving thoſe who are ſufferers, and ſecure others from the ſame misfortune. But if we duly weigh their noxious qualities, we ſhall, with our moral poet, find

"*All partial evil univerſal good.*"

The teeth of wild beaſts, and of ſerpents, are not only created as inſtruments of vengeance, but are ſalutary in leſſening the numbers of thoſe animals which are highly uſeful in the degree, and only hurtful in their exceſs; but if their bad qualities are ſerviceable, we are more indebted to their good ones than we chuſe to acknowlege.

But many of the animals that form this claſs are of immediate benefit to mankind. The Turtle, or Sea-Tortoiſe, ſupplies the torrid zone with a wholeſome and delicious food, as the epicures of our own country can atteſt. Frogs are a food in ſeveral parts, as Lizards and Serpents are in others.

The medicinal virtues of the Viper are partly exploded by the moderns, but time, the overthrower of ſyſtems, as well as empires, may reſtore it to the rank it held with the antients. The *Lacerta Scincus* is, however, yet eſteemed in the *Eaſt* for its ſalubrious qualities, and even Toads have contributed to the eaſe of patients in the moſt inveterate of all diſeaſes.

Had I followed *Linnæus*, and included the Cartilaginous Fiſh in this claſs, there would have been ample room for panegyric, for it is very doubtful whether any are pernicious; but the uſes of many, either as food or for mechanical purpoſes, were never queſtioned.

But if the external figure of the reptile tribe is diſguſting, they have one general beauty, an apt configuration of parts for their way of life, nor are they deſtitute of their peculiar graces: the fine diſpoſition of plates in the ſhell of the Tortoiſe, with the elegant ſymmetry of their colors, muſt ſtrike even common obſervers, while the eye of the deſpiſed Toad has a luſtre denied to more pleaſing forms. The frolicſome agility of Lizards enlivens the dried banks in hot climates, and the great affection which ſome of them ſhew to mankind, ſhould farther engage our regard and attention.

The

The wreathing of the Snake, with the vivid die of its ſkin, are certainly graceful, tho' from the dread of ſome particular ſpecies which are venemous, we have acquired an antipathy for the whole. The antients, who conſidered the Serpent as an emblem of health, could aſſociate pleaſing ideas with this animal. We therefore find it an ornament at every entertainment, and in every ſcene of mirth, both in painting and in ſculpture. *Virgil* adopted this notion, and has accordingly deſcribed it with every beauty both of form and color,

Adytis cum lubricus anguis ab imis
Septem ingens gyros, ſeptena volumina traxit;
Amplexus placidé tumulum, lapſuſque per aras:
Cæruleæ cui terga notæ, maculoſus et auro
Squamam incendebat fulgor; ceu nubibus arcus
Mille trahit varios adverſo ſole calores.

V. 84.

From the deep tomb, with many a ſhining fold,
An azure ſerpent roſe, in ſcales that flam'd with gold:
Like heaven's bright bow his varying beauties ſhone
That draws a thouſand colors from the ſun:
Pleas'd round the altars and the tomb to wind,
His glittering length of volumes trails behind.

Pitt.

But if after all ſome lively writer ſhould purſue the Naturaliſts with more wit than argument, and more humor than good-nature, it ſhould be endured with patience. Ridicule is, however, not the teſt of truth, tho' when joined to ſatyr, it ſeldom fails

of ſeducing the many who had rather laugh than think. Should this prove the caſe in the preſent inſtance, let the author be allowed to ſkreen himſelf from cenſure, by ſaying he writes not to the many, but the few; to thoſe alone who can examine the parts with a view to the *whole*, and who ſcorn to deſpiſe even the moſt deformed, or the moſt minute work of an all-wiſe CREATOR.

GENERA.

BRITISH

BRITISH ZOOLOGY.

Clafs III.

REPTILES.

Genus I. Body covered either with a fhell or ftrong hide, divided by futures; four fin-like feet; a fhort tail. TORTOISE.

I. The SPINOUS TORTOISE.

Teftudo coriacea five Mercurii *Rondel.* 450? *Gefner pifc.* 946?
Teftudo coriacea? Teftudo pedibus pinniformibus muticis, tefta coriacea, cauda angulis feptem exaratis. *Lin. fyft.* 350.
Turtle. *Borlafe Cornwall,* 285. *Plate* 27.

THIS fpecies (if the *teftudo coriacea*) feems common to the *Mediterranean*, and to our fouthern feas, and is not, as far as we know, difcovered in any other.

Two were taken on the coaft of *Cornwall* in the mackrel nets, of a vaft fize, a little after *Midfummer* 1756; the largeft weighed eight hundred pounds, the leffer near feven hundred.

Doctor *Borlafe* firft publifhed thefe animals to the world, and difcovered them in our feas.

He describes them as having seven spiny or serrated ridges running from the head to the tail, dividing the upper part of the back into equal parts.

The fore legs, as appear by his figure, are remarkably long and narrow, flat, smooth, and fleshy, being destitute of scales. The color of their upper side bluish, their under side, as well as that of the neck, ruddy, speckled with black.

We suspect an error in the number of the hind legs, the figure being represented with four, an excess we never have met with in any of this genus.

The head is painted extremely small, in proportion to the size of the animal, whose length was six feet nine inches, and breadth from the tip of one fore leg to that of the other ten feet four inches.

Size.

The covering of this species is compared to that of the *Testudo coriacea* of *Rondeletius*, which has an integument resembling a tough strong hide; and what is very singular, neither that of the *Cornish* species, nor yet that of the *French* naturalist, seem by the figures to be divided into angular compartments by transverse sutures, like the shells of all tortoises we have ever met with. But the history of this kind remains still very obscure: it is therefore to be wished, that particular attention be paid to the next that is taken on our coasts; and that observation be made whether the covering is crustaceous or coriaceous, that we may be assured that these were the *European* kind, not the *American*; it seeming not improbable but they might be a couple that had escaped out of some *West India* ship that had foundered, or been cast away near the *Cornish* coast.

Genus.

Genus II. Body naked.
Four legs, the feet divided into toes.
No tail. FROGS.

I. The COMMON FROG.

Βατραχος. *Arist. Hist. an. lib.* iv. c. ix.
La Grenoille. *Belon poissons*, 48.
Rana fluviorum. *Rondel.* 217.
Rana aquatica innoxia. *Gesner quad. ovip.* 46. *Aquatil.* 805.
Rana aquatica. *Raii syn quad.* 447.
Wasser Frosche. *Meyer an.* I. *tab.* 52.
Rana temporaria. R. dorso planiusculo subangulato. *Lin. syst.* 357.
Groda, Fro, Klassa. *Faun. suec. No.* 102.
Rana. *Gronov. Zooph. No.* 62.

SO common and well-known an animal requires no description; but some of its properties are so singular that we cannot pass them unnoticed.

Its spring or power of taking large leaps is remarkably great, and it is the best swimmer of all four-footed animals. Nature hath finely adapted its parts for those ends, the fore members of the body being very lightly made, the hind legs and thighs very long, and furnished with very strong muscles.

While in a tadpole state it is entirely a water-animal; the work of generation is performed in that element, as may be seen in every pond during spring; when the female remains oppressed by the male for a number of days.

The work of propagation is extremely singular, it being certain that the frog has not a *penis intrans*; there appears a strong analogy in this case between a certain class of the vegetable kingdom and those Generation.

animals; for it is well known, that when the female frog depoſits its ſpawn, the male inſtantaneouſly impregnates it with what we may call a *farina fœcundans*, in the ſame manner as the male *Palm* tree conveys fructification to the flowers of the female, which would otherwiſe be barren*.

As ſoon as the frogs are releaſed from their tadpole ſtate they immediately take to land; and if the weather has been hot, and there fall any refreſhing ſhowers, you may ſee the ground for a conſiderable ſpace perfectly blackened by Myriads of theſe animalcules, ſeeking for ſome ſecure lurking places. Some philoſophers** not giving themſelves time to examine into this phænomenon, imagined them to have been generated in the clouds, and ſhowered on the earth; but had they, like our *Derham*†, but traced them to the next pool, they would have found a better ſolution of the difficulty.

As frogs adhere cloſely to the backs of their own ſpecies, ſo we know they will do the ſame by fiſh: *Walton*‡ mentions a ſtrange ſtory of their deſtroying pike; but that they will injure, if not entirely kill carp, is a fact indiſputable, from the following relation: a very few years ago on fiſhing a pond belonging to Mr. *Pit*, of *Encomb*, *Dorſetſhire*, great numbers of the carp were found each with a frog mounted on it, the hind legs clinging to the back, the fore legs fixed in the corner of each eye of the fiſh, which were thin and greatly waſted, teized by car-

* *Shaw's Travels*, 224. *Haſſelquiſt Trav. Engl. Ed.* 416.
** *Rondeletius*, 216. *Wormii Muſ.* 327.
† *Ray's Wiſdom Creat.* 316. ‡ *Complete Angler*, 161.

rying

rying fo difagreeable a load. Thefe frogs we imagine to have been males difappointed of a mate.

The croaking of frogs is well known, and from that in fenny countries they are diftinguifhed by ludicrous titles, thus they are ftiled *Dutch Nightingales* and *Bofton Waites*; even the *Stygian* frogs have not efcaped notice, for *Ariftophanes* hath gone farther, and formed a chorus of them.

Βρεκεκέξ, κοάξ, κοαξ,
Βρεκεκεξ, κοαξ, κοαξ,
Λιμναῖα κρηνῶν τεκνα *.

Brekekex, coax, coax,
Brekekex, coax, coax,
The offspring of the pools and fountains.

Yet there is a time of year when they become mute, neither croaking nor opening their mouths for a whole month: this happens in the hot feafon, and that is in many places known to the country people by the name of the *Paddock Moon*. Periodical Silence.

*Morton*** endeavours to find a reafon for their filence, but tho' his facts are true, he is unfortunate in his philofophy. Frogs are certainly endued (as he well obferved) with a power of living a good while under water without refpiration, which is owing to their lungs being compofed of a feries of bladders: but he miftakes the nature of air, when he affirms that they receive a quantity of cool air, and dare not open their mouths for a month, from a dread of admitting a warmer into their lungs. It is hardly neceffary to fay, that in whatever ftate the air was received, it

* *Comedy of the Frogs.* ** *Hift. Northampt.* 441.

 would

would assimilate itself to the external atmosphere in a short time. We must leave the fact to be accounted for by farther experiments. But from what we do know, we may partly vindicate *Theophrastus*, and other antients, about the silence of the frogs at *Seriphus*. That philosopher affirms it, but ascribes it to the coldness of the waters in that island: Now when Monsieur *Tournefort* was there, the waters were lukewarm, and the frogs had recovered their voices *. Is it not probable that *Theophrastus* might be at *Seriphus* at that season when the frogs were mute, and having never observed it elsewhere, might conclude their silence to be general as to the time, but particular as to the place. *Ælian***, who quotes *Theophrastus* for the last passage, ascribes the same silence to the frogs of the lake *Pierus* in *Thessaly*, and about *Cyrene* in *Africa*: but he is so uncertain a writer, that we cannot affirm whether the species of the *African* frogs is the same with ours.

Food. These, as well as all other reptiles, feed but a small space of the year. The food of this genus is flies, insects, and snails. Toads are said to feed also on bees, and to do great injury to those useful insects.

During winter frogs and toads remain in a torpid state: the last of which will dig into the earth and cover themselves with almost the same agility as the mole.

* *Tournefort's voy.* I. 142.
** *Ælian lib.* iii. *ch.* 35, 37.

II. The

II. The GIBBOUS FROG.

Rana gibbosa. *Gesner pisc.* 809.
Rana esculenta. *Lin. syst.* 357. *Faun. suec. No.* 279.
R. corpore angulato, dorso transversè gibbo, abdomine marginato. *Ibid.*

THIS differs from the former in having a high protuberance in the middle of the back, forming a very sharp angle. Its colors are also more vivid, and its marks more distinct; the ground color being a pale or yellowish green, marked with rows of black spots from the head to the rump.

This and, we think, the former are eaten. We have seen in the markets at *Paris* whole hampers full, which the venders were preparing for the table by skinning and cutting off the fore parts, the loins and legs only being kept. Our strong dislike to these reptiles, prevented a close examination into the species. Eatable.

III. The TOAD.

Φρυνος. *Arist. Hist. an. lib.* ix. *c.* I. 40.
Bufo. *Virg. Georg.* I. 184. Rubeta. *Plin. lib.* viii. *c.* 31.
Rubeta sc. Phrynum. *Gesner pisc.* 807. *Rondel*, 222.
Bufo sive Rubeta. *Raii syn. quad.* 252.
Bufo rubetarum. *Klein quad.* 122.
Rana Bufo. R. corpore ventricoso, verrucoso lurido fuscoque. *Lin. syst.* 354.
Padda, Tassa. *Faun. suec. No.* 275.
Gronov. Zooph. No. 64.

THE most deformed and hideous of all animals; the body broad, the back flat, and covered with a pimply dusky hide; the belly large,

swagging, and swelling out; the legs short, and its pace labored and crawling: its retreat gloomy and filthy: in short, its general appearance is such as to strike one with disgust and horror; yet we have been told by those who have resolution to view it with attention, that its eyes are fine: to this it seems that *Shakespear* alludes, when he makes his *Juliet* remark,

Some say the lark and loathed toad change eyes.

As if they would have been better bestowed on so charming a songster than on this raucous reptile.

But the hideous appearance of the toad is such as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. *Ælian** makes its venom so potent, that *Basilisk*-like it conveyed death by its very look and breath; but *Juvenal* is content with making the *Roman* ladies, who were weary of their husbands, form a potion from its entrails**, in order to get rid of the good man.

Occurrit Matrona potens, quæ molle calenum
Porrectura viro miscet sitiente rubetam. *Sat.* I. 68.

To quench the husband's parching thirst, is brought
By the great Dame, a most deceitful draught;
In rich *calenian* wine she does infuse,
(To ease his pains) the toad's envenom'd juice.

This opinion begat others of a more dreadful nature; for in after-times superstition gave it preterna-

* *Hist. an. lib.* ix. *c.* 11.
** *Sat.* vi. 658. Vide *Ælian Hist. an. lib.* xvii. *c.* 12 and 15.

tural

tural powers, and made it a principal ingredient in the incantations of nocturnal hags:

> Toad that under the cold ſtone,
> Days and nights, has thirty-one,
> Swelter'd venom ſleeping got,
> Boil thou, *firſt* i' th' charmed pot.

We know by the poet that this charm was intended for a deſign of the firſt conſideration, that of raiſing the dead from their repoſe, and bringing before the eyes of *Macbeth* a hateful ſecond-ſight of the proſperity of *Banquo*'s line.

This ſhews the mighty powers attributed to this animal by the dealers in the magic art; but the powers our poet indues it with, are far ſuperior to thoſe than *Geſner* aſcribes to it: *Shakeſpear*'s witches uſed it to diſturb the dead; *Geſner*'s, only to ſtill the living, *Ut vim coeundi ni fallor, in viris tollerent* *.

We may add here another ſuperſtition in reſpect to this animal: it was believed by ſome old writers to have a ſtone in its head, fraught with great virtues medical and magical: it was diſtinguiſhed by the name of the Reptile, and called the *Toad-Stone*, *Bufonites*, *Crapaudine*, *Krottenſtein* **; but all its fancied powers vaniſhed on the diſcovery of its being nothing but the foſſil tooth of the *ſea wolf*, or of ſome flat-toothed fiſh, not unfrequent in our iſland, as well as ſeveral other countries; but we may well excuſe this tale, ſince *Shakeſpear* has extracted from it a ſimile of uncommon beauty: Toad-ſtone.

* *Hiſt. quad. ovip.* 72.
** *Boet. de Boot. de Lap. et Gem.* 301. 303.

Sweet

Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

But these fables have been long exploded: we shall now return to the notion of its being a poisonous animal, and deliver as our opinion, that its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind parts, is the foundation of the report.

That it has any noxious qualities we have been unable to bring proofs in the smallest degree satisfactory, tho' we have heard many strange relations on that point.

On the contrary, we know several of our friends who have taken them in their naked hands, and held them long without receiving the left injury: It is also well known that quacks have eaten them, and have besides squeezed their juices into a glass, and drank them with impunity.

Not poisonous.

We may say also, that these reptiles are a common food to many animals; to *buzzards*, *owls*, *Norfolk plovers*, *ducks*, and *snakes*, who would not touch them were they in any degree noxious.

So far from having venomous qualities, they have of late been considered as if they had beneficent ones. We wish, for the benefit of mankind, that we could make a favorable report of the many attempts of late to cure the most terrible of diseases the *cancer*, by the application of live toads; but, alas,

alas, they seem only to have rendered a horrible complaint more loathsome.

In a word, we may consider the toad as an animal that has neither good nor harm in it; that being a defenceless creature, nature has furnished it, instead of arms, with a most disgusting deformity, that strikes into almost every Being capable of annoying it, a strong repugnancy to meddle with so hideous and threatening an appearance.

Generation.

The time of their propagation is very early in the spring: at that season the females are seen crawling about oppressed by the males, who continue on them for some hours, and adhere so fast as to tear the very skin from the Parts they stick to. We are uncertain whether they are viviparous: *Linnæus** says they are, and diverts us with a report he had heard, that the male acts the midwife to the female in parturition.

To conclude this account with the marvellous, this animal is said to have often been found in the midst of solid rocks, and even in the centre of growing trees, imprisoned in a small hollow, to which there was not the least adit or entrance**: how the animal breathed, or how it subsisted (supposing the possibility of its confinement) is past our comprehension. *Plot*'s† solution of this phænomenon is far from satisfactory; yet as we have the great *Bacon*'s‡ authority for the fact, we do not entirely deny our assent to it.

* *Syst. Nat.* 355. ** *Plot's Hist. Staff.* 247. † *P.* 249.
‡ *Nat. Hist. Cent.* vi. *Exp.* 570.

IV. The

IV. The NATTER JACK.

Rana Rubeta? *Lin. syst.* 355. *Faun. suec. No.* 101.
R. corpore verrucoso, ano obtuso subtus punctato. *Ibid.*

THIS species frequents dry and sandy places: it is found on *Putney Common*, and also near *Revesby Abby*, *Lincolnshire*, where it is called the *Natter Jack*. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is liker to running. Several are found commonly together, and, like others of this genus, they appear in the evenings.

The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples of unequal sizes: on the back is a yellow line.

The under side of the body is of a paler hue, marked with black spots, which are rather rough.

On the fore feet are four divided toes; on the hind five, a little webbed.

The length of the body is two inches and a quarter; the breadth, one and a quarter: the length of the fore legs one inch one-sixth; of the hind legs, two inches.

We are indebted to *Joseph Banks*, esq; for this account.

Genus

Genus III. Slender naked body: four legs: divided toes on each: very long tail. LIZARDS.

I. The SCALY LIZARD.

Lacertus terreftris lutea fquamofa anglica. *Raii fyn. quad.* 264.
Plot's Hift. Staff. 252. *tab.* 22.
Lacerta agilis? L. cauda verticillata longiufcula fquamis acutis, collari fubtus fquamis conftructo. *Lin. fyft.* 363.
Odla, Fyrfot. *Faun. fuec. No.* 284.
Lacerta. *Gronov. Zooph. No.* 60.
Little Brown Lizard. *Edw.* 225.
Padzher pou. *Borlafe Cornwall*, 284. *tab.* 28.

THOSE we have feen differ in color, but agree in all other refpects with the fpecies defcribed by Doctor *Plot*. Their length from the nofe to the hind legs was three inches; from thence to the end of the tail three and three quarters.

Along the back was a black lift; each fide of that a brown one: then fucceeded a narrow ftripe, fpotted alternately yellow and brown; beneath that a broad black one; thofe ended a little beyond the hind legs. The belly was yellow, and the fcales large but even. The fcales on the back fmall; on the tail the ends projected: thofe on the latter were varied with black and brown.

The legs and feet were dufky; on each foot were five toes, furnifhed with claws.

This

This species is extremely nimble: in hot weather it basks on the sides of dry banks, or of old trees; but on being observed immediately retreats to its hole.

The food of this species, as of all the other *English* lizards, is insects: they themselves of birds of prey. Each of our lizards are perfectly harmless; yet their form is what strikes one with disgust, and has occasioned great obscurity in their history.

Other species.

Related to this species is the *Guernsey* lizard, which we are informed has been propagated in *England* from some originally brought from that island. We have also heard of a green lizard frequent near *Farnham*, which probably may be of that kind: but the most uncommon species we ever met with any account of, is that which was killed near *Woscot*, in the parish of *Swinford*, *Worcestershire*, in 1741, which was two feet six inches long, and four inches in girth. The fore legs were placed eight inches from the head; the hind legs five inches beyond those: the legs two inches long: the feet divided into four toes, each furnished with a sharp claw. Another was killed at *Penbury*, in the same county. Whether these are not of exotic descent, and whether the breed continues, is what we are at present uninformed of.

II. The

II. The WARTY LIZARD.

Lacertus aquaticus. *Gesner quad. ovip.* 31.
Salamandra aquatica. *Raii syn. quad.* 273.
Lacerta palustris, L. cauda lanceolata mediocri, pedibus muticis palmis tetradactylis. *Lin. syst.* 370.
Skrot-abborre, Gruffgrabbe. *Faun. suec. No.* 281.
Lacerta Americana. *Seb. Mus.* I. *tab.* 89. *fig.* 4, 5.
Salamandra alepidota verrucosa. *Gronov. Zooph. No.* 47.

THE length of this species was six inches and an half, of which the tail was three and a quarter.

The irides yellow: the head and beginning of the back flat, and covered with small pimples or warts, of a dark dusky color; the sides with white ones: the belly, and the side of the tail, was of a bright yellow; the first spotted with black.

The tail was compressed sideways, and very thin towards the upper edge, and slender towards the end.

The fore feet divided into four toes; the hind into five; all without nails, dusky spotted with yellow.

Its pace is slow and crawling.

This species we have frequently seen in the state we describe, but are uncertain whether we ever met with it under the form of a *larve*. We have more than once found under stones and old logs, some very minute young lizards that had much the appearance of this kind: they were perfectly formed, and had not the least vestiges of fins; so that circumstance joined to their being found in a dry place, remote from water, makes us imagine them to have never

never been inhabitants of that element, as it is certain many of our lizards are in their first state.

At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head, but both drop off as soon as the animal takes to the land, being then no longer of any use.

Besides these circumstances that attend them in form of a *larve*, Mr. *Ellis* * has remarked certain pennated fins at the gills of one very common in most of our stagnating waters, and which is frequently observed to take a bait like a fish.

III. The BROWN LIZARD.

Lacertus vulg. terrestris ventre nigro maculato. *Raii syn. quad.* 264.

L. vulgaris. L. cauda tereti mediocri, pedibus unguiculatis, palmis tetradactylis, dorso linea duplici fusca. *Lin. syst.* 370. *Faun. suec. No.* 283.

THIS is three inches long: the body slender; the tail long, slightly compressed, small and taper; that and the upper part of the body of a pale brown, marked on each side the back with a narrow black line reaching to the end of the tail: the belly of a pale yellow, marked with small dusky spots; the toes formed like those of the preceding.

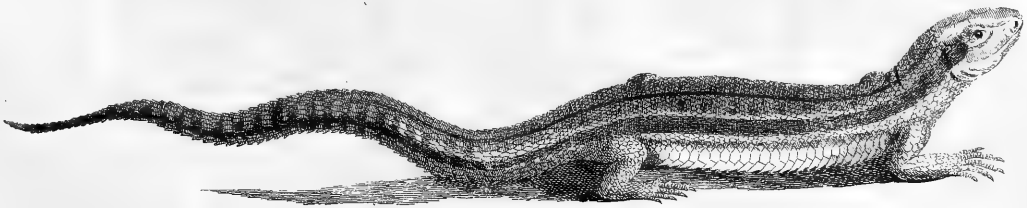
* *Phil. Tran. vol.* LVI. *p.* 191.

IV. The

I

BROWN LIZARD. *p. 16.*

SCALY LIZARD.



P. Mazell Del. ing. Sculp.

IV. The LITTLE BROWN LIZARD.

Lacertus parvus terrestris fuscus oppido rarus. *Raii syn. quad.* 264.

THIS species is mentioned by Mr. *Ray* in his list of the *English* lizards, without any other description than is comprehended in the *synonym.*

V. The SNAKE-SHAPED LIZARD.

Lacertus terrestris anguiformis in ericetis. *Raii syn. quad.* 264.

WE remain also in the same obscurity in respect to this species. It seems to be of that kind which connects the serpent and lizard genus, having a long and very slender body, and very small legs. Such are the *Seps* or *Lacerta Chalcidica* of *Raii syn. quad.* 272, the *Lacerta anguina* of *Linnæus*, 371, or that figured by *Seba, tom.* ii. *tab.* 68. under the name of *Vermis serpentiformis.*

Genus IV. Long and slender bodies, covered with scaly plates: no feet. SERPENT.

I. The VIPER.

Ἔχις. *Arist. Hist. an. lib.* iii. *c.* 1.
Vipera. *Virg. Georg.* iii. 417. *Plinii, lib.* x. *c.* 42.
Vipera. *Gesner Serp.* 71.
Viper or Adder. *Raii syn. quad.* 285. *Borl. Corn.* 282. *tab.* 28.
Coluber Berus. *Lin. syst.* 377.
Hugg-orm. *Faun. suec. No.* 286.
C. Berus scutis abdom. 146. squamis caudæ. 39. *Ibid. Amæn. Acad.* I. 527.

VIPERS are found in many parts of this island, but the dry, stony, and, in particular, the chalky countries abound with them.

They are viviparous, not but that they are hatched from an internal egg; being of that class of animals, of whose generation *Aristotle** says, Εν αυτοις μεν ωοτοκει τό τέλειον ωόν, ἔξω δε ζωοτοκει, *i. e.* They conceive a perfect egg within, but bring forth their young alive.

Providence is extremely kind in making this species far from being prolific, we having never heard of more than eleven eggs being found in one viper, and those are as if chained together, and each about the size of a blackbird's egg.

The viper grows seldom to a greater length than two feet; tho' once we saw a female (which is nearly a third larger than the male) which was almost three feet long.

Descr. The ground-color of this serpent is a dirty yellow; that of the female deeper. Its back is marked the whole length with a series of rhomboid black spots, touching each other at the points; the sides with triangular ones; the belly entirely black.

There is a variety wholly black; but the rhomboid marks are very conspicuous even in this, being of a deeper and more glossy hue than the rest. *Petiver* calls it the *Vipera Anglica Nigricans. Pet. Mus. No.* 204**.

The head of the viper is inflated, which distinguishes it from the common snake. The tongue forked; the teeth small; the four canine teeth are placed two on each side the upper jaw: these instruments of poison are long, crooked, and

Teeth.

* *De Gen. an. lib.* iii. *c.* 2.

** Coluber Prester. *Lin. syst.* 377. Bose. *Faun. suec. No.* 287.

moveable,

moveable, and can be raifed and depreffed at pleafure; they are hollow from near the point to their bafe, near which is a gland that fecretes, prepares, and lodges the poifon; and the fame action that gives the wounds, forces from this gland, thro' the tooth, the fatal juice into it.

Thefe iflands may be particularly thankful for the bleffing they enjoy, in being poffeffed of only one venomous animal, and that of a kind which encreafes fo little.

They copulate in *May*, and are fuppofed to be about three months before they bring forth.

They are faid not to arrive at their full growth in lefs than fix or feven years; but that they are capable of engendering at two or three.

We have been often affured by intelligent people of the truth of a fact mentioned by Sir *Thomas Brown* *, who was far from a credulous writer, that the young of the viper, when terrified, will run down the throat of the parent, and feek fhelter in its belly in the fame manner as the young of the *oppoffum* retire into the ventral pouch of the old one.

From this fome have imagined that the viper is fo unnatural as to devour its own young; we difbelieve the fact, it being well known the food of thefe fer- Food.
pents is frogs, toads, lizards, mice, and, according to Doctor *Mead*, even an animal fo large as a mole. Thefe they fwallow entire; which if we confider the narrownefs of their neck, fhews it is capable of a diftenfion hardly credible, had we not ocular proofs of the fact.

* *Vulgar errors*, 114.

It is alſo ſaid, from good authority, that they will prey on young birds; whether on ſuch as neſtle on the ground, or whether they climb up trees for them as the *Indian* ſerpents do, we are quite uncertain; but we are well aſſured that this diſcovery is far from a recent one:

Ut aſſidens implumibus pullis avis
Serpentium allapſus timet *.

Thus, for its young the anxious bird
The gliding ſerpent fears.

The viper is capable of ſupporting very long abſtinence, it being known that ſome have been kept in a box ſix months without food, yet did not abate of their vivacity. They feed only a ſmall part of the year, but never during their confinement; for if mice, their favorite diet, ſhould at that time be thrown into their box, tho' they will kill, yet they never will eat them.

The poiſon decreaſes in violence in proportion to the length of their confinement: it muſt be alſo added the virtues of its fleſh (whatſoever they be) are at the ſame time conſiderably leſſened.

Theſe animals, when at liberty, remain torpid throughout the winter; yet when confined have never been obſerved to take their annual repoſe.

The method of catching them is by putting a clift ſtick on or near their head; after which they are ſeized by the tail, and put inſtantly into a bag.

The viper-catchers are very frequently bit by them in the purſuit of their buſineſs, yet we very rarely

* *Hor. Epod.* I.

hear

hear of the bite being fatal. The remedy, if applied in time, is very certain, and is nothing elfe but fallad oil, which the viper-catchers feldom go without. The *axungia viperina*, or the fat of vipers, is alfo another. Doctor *Mead* fufpects the efficacy of this laft, and fubftitutes one of his own in its place *; but we had rather truft to vulgar receipts which perpetual trials have fhewn to be infallible.

Effects of its bite.

The fymptoms of the venom, if the wound is neglected, are very terrible: it firft caufes an acute pain in the place affected, attended with a fwelling, firft red, afterwards livid, which by degrees fpreads to the neighbouring parts; great faintnefs, and a quick tho' low and interrupted pulfe enfue; great ficknefs at the ftomach, bilious convulfive vomitings, cold fweats, and fometimes pains about the navel; and in confequence of thefe death itfelf **. But the violence of the fymptoms depends much on the feafon of the year, the difference of the climate, the fize or rage of the animal, or the depth or fituation of the wound.

Uffes.

Dreadful as the effects of its bite may be, yet its flefh has been long celebrated as a noble medicine. Doctor *Mead* cites from *Pliny*, *Galen*, and other antients, feveral proofs of its efficacy in the cure of *ulcers*, the *elephantiafis*, and other bad complaints. He even fays he has feen good effects from it in an obftinate *lepra*: it is at prefent ufed as a reftorative, tho' we think the modern phyficians have no great dependence on its virtues. The antients prefcribed

* *Effay on Poifons*, 47. ** *Lib.* xxix. *c.* 3.

it boiled, and to be eaten as fish; for when fresh, the medicine was much more likely to take effect than when dried, and given in form of a powder or troche.

The antient *Britons* had a strange superstition in respect to these animals, and of which there still remains in *Wales* a strong tradition. The account *Pliny* gives of it is as follows: we shall not attempt a translation, it being already done to our hands in a spirited manner by the ingenious Mr. *Mason*, which we shall take the liberty of borrowing.

Præterea est ovorum genus in magna Galliarum *fama, omissum* Græcis. *Angues innumeri æstate convoluti, salivis faucium corporumque spumis artifici complexu glomerantur*; anguinum *appellatur*. Druidæ *sibilis id dicunt in sublime jactari, sagoque oportere intercipi, ne tellurem attingot: profugere raptorem equo: serpentes enim insequi, donec arceantur amnis alicujus interventu**.

But tell me yet
From the grot of charms and spells,
Where our matron sister dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-stone*,
Gender'd 'fore the autumnal moon?
When in undulating twine,
The foaming snakes prolific join;
When they hiss, and when they bear
Their wond'rous egg aloof in air;
Thence before to earth it fall,
The *Druid* in his hallow'd pall,
Receives the prize,
And instant flies,
Follow'd by the envenom'd brood,
'Till he cross the crystal flood**.

* *Lib.* xxix. *c.* 3.
** *Mason's Caractacus.* The person speaking is a Druid.

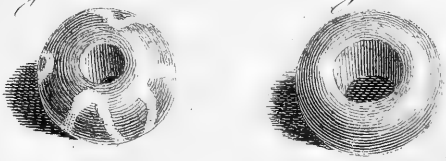
This

This wondrous egg feems to be nothing more than a bead of glafs, ufed by the *Druids* as a charm to impofe on the vulgar, whom they taught to believe, that the poffeffor would be fortunate in all his attempts, and that it would gain him the favor of the great.

Our modern *Druideffes* give much the fame account of the *ovum anguinum*, *Glain Neidr*, as the *Welch* call it, or the *Adder-Gem*, as the *Roman* philofopher does, but feem not to have fo exalted an opinion of its powers, ufing it only to affift children in cutting their teeth, or to cure the chin-cough, or to drive away an ague.

We have fome of thefe beads in our cabinet: they are made of glafs, and of a very rich blue color; fome are plain, others ftreaked: we fay nothing of the figure, as the annexed plate will convey a ftronger idea of it than words.

Glain Neidr, or Adder Gems.



II. The SNAKE.

Ενυδρίς. *Arist. Hist. an.* I. *c.* 1.
Natrix torquata. *Gesner. Serpent.* 63.
Natrix torquata. *Raii syn. quad.* 334.
Anguis vulgaris fuscus collo flavescente, ventre albis maculis distinctus. *Pet. Mus.* xvii. *No.* 101.
Coluber natrix. *Lin. syst.* 380.
Tomt-Orm, Snok, Ring-Orm. *Faun. suec. No.* 288.
C. natrix scutis abdom, 170. Squamis caudæ, 60. *Ibid.*

THE snake is the largest of the *English* serpents, sometimes exceeding four feet in length: the neck is slender; the middle of the body thickest; the back and sides covered with small scales, the belly with oblong, narrow, transverse plates. The first *Linnæus* distinguishes by the name of *squamæ*, the last he calls *scuta*, and from them forms his genera of serpents.

Those that have both *squamæ* and *scuta* he calls *Colubri*; those that have only *squamæ*, *Angues*. The viper and snake are comprehended in the first genus, the blind-worm under the second; but we chuse (to avoid multiplying our genera) to take in the few serpents we have by a single genus, their marks being too evident to be confounded.

Descr. The color of the back and sides of the snake are dusky or brown; the middle of the back marked with two rows of small black spots running from head to tail; and from them are multitudes of lines of spots crossing the sides; the plates on the belly are dusky, the scales on the sides of a bluish white.

On each side the neck is a spot of pale yellow, and the base of each is a triangular black spot, one angle of which points towards the tail.

The

The teeth are fmall and ferrated, lying each fide the jaw in two rows.

This fpecies is perfectly inoffenfive; it frequents and lodges itfelf among bufhes in moift places, and will readily take the water, fwimming very well.

It preys on frogs, infects, worms, and mice, and, confidering the fmallnefs of the neck, it is amazing how large an animal it will fwallow.

The fnake is oviparous: it lays its eggs in dung-hills, and in hot-beds, whofe heat, aided by that of the fun, promotes the exclufion of the young. Eggs.

During winter it lies torpid in banks of hedges, and under old trees.

III. The BLIND-WORM.

The blind-worm or flow-worm, *Cæcilia Typhline* Græcis. *Raii fyn. quad.* 289. *Grew's Muf.* 48.

Cæcilia anglica cinerea fquamis parvis mollibus, compactis. *Pet. Muf.* xvii. *No.* 102.

Long cripple. *Borlafe Cornw.* 284. *tab.* 28.

Anguis fragilis. *Lin. fyft.* 392.

Ormfla, Koppar-Orm. *Faun. fuec.* 289.

A. fragilis fquamis abdominis caudæque, 135. *Ibid.*

THE ufual length of this fpecies is eleven inches: the irides are red; the head fmall; the neck ftill more flender; from that part the body grows fuddenly, and continues of an equal bulk to the tail, which ends quite blunt. Defcr.

The color of the back is cinereous, marked with very fmall lines compofed of minute black fpecks; the fides are of a reddifh caft; the belly dufky, both marked like the back.

The

The tongue is broad and forky; the teeth minute, but numerous; the scales small.

The motion of this serpent is slow, from which, and from the smallness of the eyes, are derived its names. Like others of the genus, it lies torpid during winter, and are sometimes found in vast numbers twisted together.

Like the former it is quite innocent. Doctor *Borlase* mentions a variety of this serpent with a pointed tail; and adds, that he was informed that a man lost his life by the bite of one in *Oxfordshire*. We are inclined to think that his informant mistook the black or dusky viper for this kind; for excepting the viper, we never could learn that there was any sort of poisonous serpent in these kingdoms.

CLASS IV.

FISH.

Oh Deus ampla tuæ, quam ſunt miracula dextræ!
O quam ſolerti ſingula mente regis!
Divite tu gazâ terras, et meſſibus imples;
Nec minus eſt vaſti fertilis unda maris:
Squammiger hunc peragrat populus, proleſque parentum
Stipat, et ingentes turba minuta duces.

JONSTON. PSALMUS CIV.

F I S H.

Div. I. CETACEOUS FISH.

NO gills, an orifice on the top of the head, thro' which they breathe, and eject water; a flat or horizontal tail; exemplified in the explanatory plate, *fig.* 1. by the BEAKED WHALE, borrowed from *Dale's Hist. Harw.* 411. *tab.* 14.

GENERA.

Div. II. CARTILAGINOUS FISH

BREATHING thro' certain apertures, generally placed on each side the neck, but in some instances beneath, in some above, and from one to seven in number on each part, except in the PIPE FISH, which has only one.

The muscles supported by cartilages, instead of bones.

Explan. Pl. *fig.* 2. the PICKED DOG FISH.
a. The lateral apertures.

Div. III. BONY FISH.

THIS division includes those whose muscles are supported by bones or spines, which breathe thro' gills covered or guarded by thin bony plates, open on the side, and dilatable by means of a certain row of bones on their lower part each separated by a thin web, which bones are called the *Radii Branchiostegi*, or the *Gill-covering Rays*.

The tails of all the fish that form this division, are placed in a situation perpendicular to the body, and this is an invariable character.

The later Icthyologists have attempted to make the number of the branchiostegous rays a character of the *genera*; but I found (yet too late in some instances, where I yielded an implicit faith) that their rule was very fallible, and had induced me into error; but as I borrowed other definitions, it is to be hoped the explanation of the *genera* will be intelligible. I should

ſhould be very diſingenuous, if I did not own my obligations in this reſpect to the works of ARTEDI, Dr. GRONOVIUS, and LINNÆUS.

It is from the laſt I have copied the great ſections of the BONY FISH into

APODAL,	JUGULAR,
THORACIC,	ABDOMINAL*.

He founds this ſyſtem on a compariſon of the ventral fins to the feet of land animals or reptiles, and either from the want of them, or their particular ſituation in reſpect to the other fins, eſtabliſhes his ſections.

In order to render them perfectly intelligible, it is neceſſary to refer to thoſe ſeveral organs of movement, and ſome other parts, in a perfect fiſh, or one taken out of the three laſt ſections.

The HADOCK. Expl. Pl. *fig.* 4.

a.	The pectoral fins.
b.	ventral fins.
c.	anal fins.
d.	caudal fin, or the tail.
e. e. e.	dorſal fins.
f.	bony plates that cover the gills.
g.	branchioſtegous rays, and their membranes.
h.	lateral, or ſide line.

* *Vide Syſt. Nat.* 422.

Sect.

Sect. I. APODAL.

THE most imperfect, wanting the ventral fins; illustrated by the CONGER, *fig.* 3. This also expresses the union of the dorsal and anal fins with the tail, as is found in some few fish.

Sect. II. JUGULAR.

THE ventral fins *b*, placed before the pectoral fins *a*, as in the HADOCK, *fig.* 4.

Sect.

Sect. III. THORACIC.

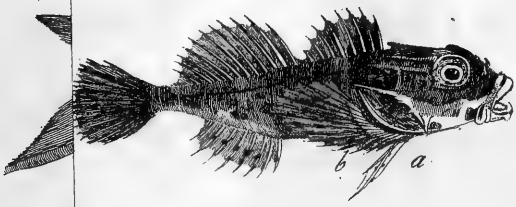
THE ventral fins *a*, placed beneath the pectoral fins *b*, as in the FATHER LASHER, *fig.* 5.

Sect.

Sect. IV. ABDOMINAL.

THE ventral fins placed behind the pectoral fins, as in the MINOW, *fig.* 6.

V



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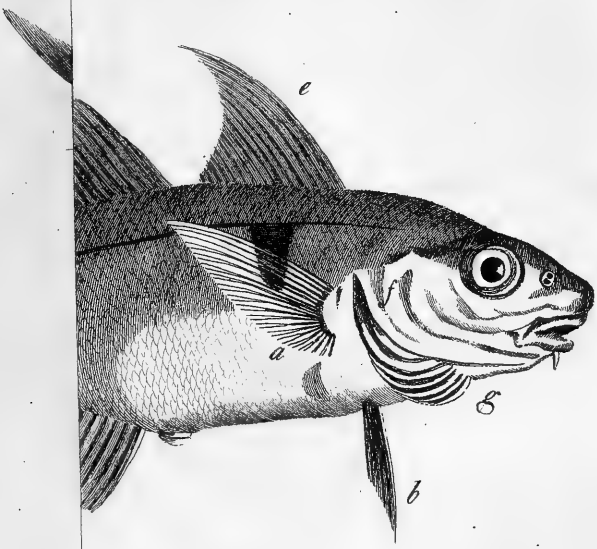

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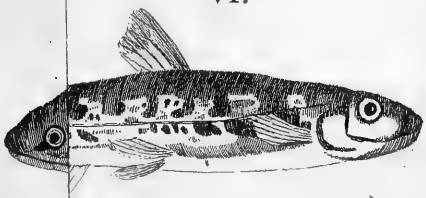

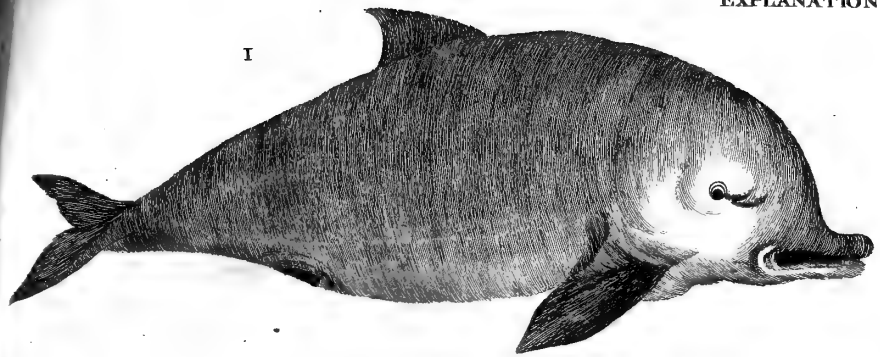
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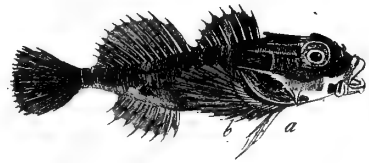
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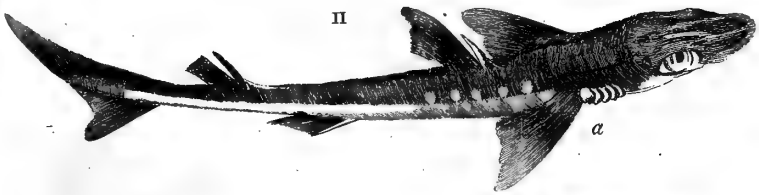
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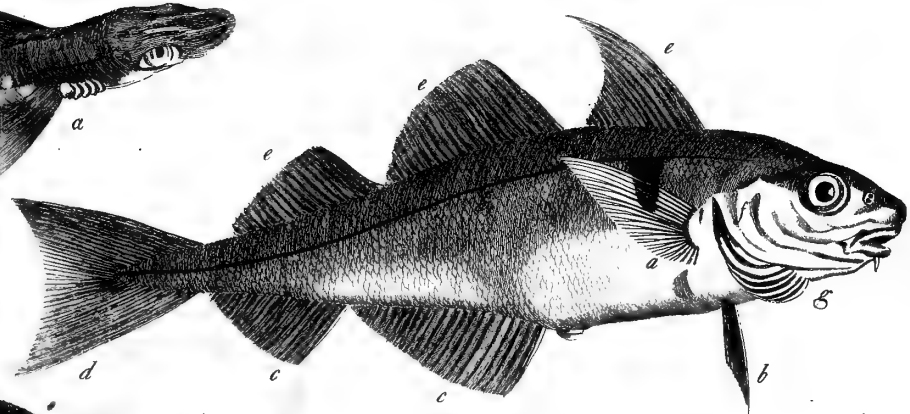
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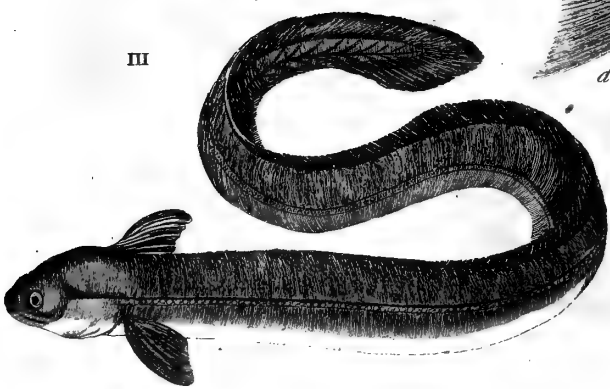
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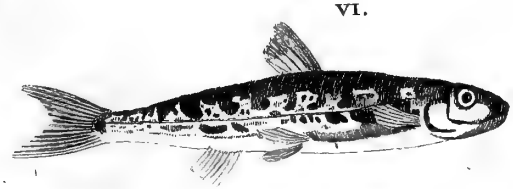
VI.

Div. I. CETACEOUS FISH.

NATURE on this tribe hath beftowed an internal ftructure in all refpects agreeing with that of quadrupeds; and in a few other the external parts in both are fimilar.

Cetaceous Fifh, like land animals, breathe by means of lungs, being deftitute of gills. This obliges them to rife frequently to the furface of the water to refpire, to fleep on the furface, as well as to perform feveral other functions.

They have the power of uttering founds, fuch as bellowing and making other noifes, a faculty denied to genuine fifh*.

Like land animals they have warm blood, are furnifhed with organs of generation, copulate, bring forth, and fuckle their young, fhewing a ftrong attachment to them.

Their bodies beneath the fkin are entirely furrounded with a thick layer of fat (blubber) analogous to the lard on hogs.

The number of their fins never exceeds three, *viz.* two pectoral fins, and one back fin; but in fome fpecies the laft is wanting.

Their tails are placed horizontally or flat in refpect to their bodies; contrary to the direction of thofe of all other fifh, which have them in a perpendicular fite. This fituation of the tail enables them to force themfelves fuddenly to the furface of the water

* *Pontop. Hift. Norw.* ii. 123. *Blafius Anat. Animal,* 288.

to

to breathe, which they are so frequently constrained to do.

Many of these circumstances induced *Linnæus* to place this tribe among his *Mammalia*, or what other writers style quadrupeds.

To have preserved the chain of beings entire, he should in this case have made the genus of *Phocæ*, or *Seals*, and that of the *Trichecus* or *Manati*, immediately precede the whale, those being the links that connect the *Mammalia* or quadrupeds with the fish; for the *Seal* is, in respect to its legs, the most imperfect of the former class; and in the *Manati* the hind feet coalesce, assuming the form of a broad horizontal tail.

Notwithstanding the many parts and properties which cetaceous fish have in common with land animals, yet there still remain others, that in a natural arrangement of the animal kingdom, must determine us after the example of the illustrious *Ray**, to place them in the rank of fish; and for the same reasons, that first of systematic writers assigns,

That the form of their bodies agrees with that of fish.

They are entirely naked, or covered only with a smooth skin.

They live entirely in the water, and have all the actions of fish.

* Who makes two divisions of fish.
1 *Pulmone respirantes.*
2 *Branchiis respirantes.*

Genus

Genus I. Cetaceous Fifh without teeth, with horny laminæ in their mouths. WHALE.

I. The COMMON WHALE.

Μυς́ικητος. *Arift. Hift. an. lib.* iii. *c.* 12.
Mufculus *Plinii lib.* xi. *c.* 37.
Balæna. *Rondel.* 475. *Gefner Pifc.* 114.
Balæna major, laminas corneas in fuperiore maxillas habens, fiftula donata, bipinnis. *Sib. Phalæn.* 28.
Balæna vulgaris edentula, dorfo non pinnato. *Raii fyn. pifc.* 6.
Balæna. *Rondel. Wil. Icth.* 35.
The Whale. *Martens Spitzberg.* 130. *Crantz. Greenl.* 1. 107.
La Baleine ordinaire. *Briffon Cet.* 218.
Balæna fiftula in medio capite, dorfo caudam verfus, acuminato. *Arted fyn.* 106. *Sp.* 106.
Balæna myfticetus. *Lin. fyft.* 105. Gronlands Walfifk. *Faun. fuec. No.* 49.
Balæna. *Gronov. Zooph.* 29.

THIS fpecies is the largeft of all animals: it is even at prefent fometimes found in the northern feas ninety feet in length; but formerly they were taken of a much greater fize, when the captures were lefs frequent, and the fifh had time to grow. Such is their bulk within the *arctic* circle, but in thofe of the *torrid* zone, where they are unmolefted, whales are ftill feen one hundred and fixty feet long *. Size.

The head is very much difproportioned to the fize of the body, being one-third the fize of the fifh: the under lip is much broader than the upper. The tongue is compofed of a foft fpongy fat, capable of

* *Adanfon's voy.* 174. From this account we find no reafon to difbelieve the vaft fize of the *Indian* whales, of whofe bones and jaws, both *Strabo, lib.* xv. and *Pliny, lib.* ix. *c.* 3. relate, that the natives made their houfes, ufing the jaws for door-cafes. This method of building was formerly practifed by the inhabitants of *Greenland*, as we find from *Frobifher*, in his fecond voyage, p. 18, publifhed in 1578.

yielding

yielding five or six barrels of oil. The gullet is very small for so vast a fish, not exceeding four inches in width. In the middle of the head are two orifices, thro' which it spouts water to a vast height, and with a great noise, especially when disturbed or wounded.

The eyes are no larger than those of an ox.

On the back there is no fin, but on the sides, beneath each eye, are two large ones.

The penis is eight feet in length, inclosed in a strong sheath. The teats in the female are placed in the lower part of the belly.

The tail is broad and semilunar.

This whale varies in color: the back of some being red, the belly generally white. Others are black, some mottled, others quite white, according to the observations of *Marten*, who says, that their colors in the water are extremely beautiful, and that their skin is very smooth and slippery.

Whalebone. What is called *whalebone* adheres to the upper jaw, and is formed of thin parallel laminæ, some of the longest four yards in length; of these there are commonly 350 on each side, but in very old fish more; of these about 500 are of a length fit for use, the others being too short. They are surrounded with long strong hair, not only that they may not hurt the tongue, but as strainers to prevent the return of their food when they discharge the water out of their mouths.

It is from these hairs that *Aristotle* gave the name of Μυσίκητος, or the *bearded whale*, to this species, which he tells us had in its mouth hairs instead of teeth;

teeth *; and *Pliny* defcribes the fame under the name of *Mufculus* **. Tho' the antients were acquainted with this animal, yet as far as we recollect, they were ignorant of their ufes as well as capture.

Aldrovand † indeed defcribes from *Oppian*, what he miftakes for whale fifhing: he was deceived by the word κητος, which is ufed not only to exprefs whale in general, but any great fifh. The *poet* here meant the *fhark*, and fhews the way of taking it in the very manner practifed at prefent, by a ftrong hook baited with flefh. He defcribes too its three-fold row of teeth, a circumftance that at once difproves its being a whale:

> Δεινὰς χαυλιόδοντας ἀναιδέας ἠὔτ' ἀκοντας,
> Τριςοιχεί πεφυῶτας ἐπασσυτέρησιν ἀκωκᾶις.
>
> *Halieut.* v. *lin.* 526.

> Whofe dreadful teeth in triple order ftand,
> Like fpears out of his mouth.

The whale, tho' fo bulky an animal, fwims with vaft fwiftnefs, and generally againft the wind.

It brings only two young at a time, as we believe is the cafe with all other whales.

Its food is a certain fort of fmall fnail, and as *Linnæus* fays, the *medufa*, or fea blubber. Food.

The great refort of this fpecies is within the *arctic* circle, but they fometimes vifit our coafts. Whether this was the *Britifh* whale of the antients we cannot pretend to fay, only we find, from a line in *Juvenal*, that it was of a very large fize,

* ἔτι δὲ καὶ ὁ μυςίκητος ὀδόντας μεν εν τω ςόματι εκ εχει, τρίχας δε ὁμόιας υἑίας. *Hift. an lib.* iii. *c.* 12.

** *Lib.* xi. *c.* 37. † *De Getis.* 261.

Quanto

Quanto Delphinis Balæna Britannica *major.*
Sat. x.

As much as *British* whales in size surpass
The dolphin race.

To view these animals in a commercial light, we must add, that the *English* were late before they engaged in the whale-fishery: it appears by a set of queries, proposed by an honest merchant in the year 1575, in order to get information in the business, that we were at that time totally ignorant of it, being obliged to send to *Biskaie for men skilful in the catching of the whale, and ordering of the oil, and one cooper skilful to set up the staved cask* *. This seems very strange; for by the account *Octher* gave of his travels to King *Alfred*, near 700 years ** before that period, it is evident that he made that monarch acquainted with the *Norwegians* practising the whale-fishery; but it seems all memory of that gainful employ, as well as of that able voyager *Octher*, and all his important discoveries in the North were lost for near seven centuries.

It was carried on by the *Biscayeners* long before we attempted the trade, and that for the sake not only of the oil, but also of the whalebone, which they seem to have long trafficked in. The earliest notice we find of that article in our trade is by *Hackluyt* †, who says it was brought from the *Bay of St. Laurence* by an *English* ship that went there for the *barbes* and *fynnes* of whales and train oil, A. D. 1594, and who found there seven or eight hundred *whale*

* *Hackluyt's Col. voy.* I. 414. ** *Idem* I. 4.
† *Hackluyt* III. 194.

fynnes

Fynnes, part of the cargo of two great *Biskaine* ships that had been wrecked there three years before. Previous to that, the ladies stays must have been made of split cane or some tough wood, as Mr. *Anderson* observes in his Dictionary of Commerce *, it being certain that the whale fishery was carried on, for the sake of the oil, long before the discovery of the use of whalebone.

The great resort of these animals was found to be on the inhospitable shores of *Spitzbergen*, and the *European* ships made that place their principal fishery, and for numbers of years were very successful: the *English* commenced that business about the year 1598, and the town of *Hull* had the honor of first attempting that profitable branch of trade. At present it seems to be on the decline, the quantity of fish being greatly reduced by the constant capture for such a vast length of time: some recent accounts inform us, that the fishers, from a defect of whales, apply themselves to the seal fishery, from which animals they extract an oil. This we fear will not be of any long continuance; for these shy and timid creatures will soon be induced to quit those shores by being perpetually harrassed, as the *morse* or *walrus* has already in a great measure done. We are also told, that the poor natives of *Greenland* begin even now to suffer from the decrease of the seal in their seas, it being their principal subsistence; so that should it totally desert the coast, the whole nation would be in danger of perishing thro' want.

* *Vol.* I. 442.

Royal Fish. In old times the whale seems never to have been taken on our coasts, but when it was accidentally flung ashore: it was then deemed a royal fish*, and the king and queen divided the spoil; the king asserting his right to the head, her majesty to the tail **.

II. The PIKE-HEADED WHALE.

Balæna tripinnis nares habens cum rostro acuto, et plicis in ventre. *Sib. Phalain* 29, *tab.* 1.
Idem. *Raii syn. pisc.* 16.
Pike-headed whale. *Dale Harwich*, 410. *No.* 3.
La Baleine a museau pointu. *Brisson Cet.* 224.
Balæna fistula duplici in rostro, dorso extremo protuberantia cornuiformi. *Arted. syn.* 107.
Balæna Boops. *Lin. syst.* 106.

Size. THE length of that taken on the coast of *Scotland*, as remarked by Sir *Robert Sibbald*, was forty-six feet, and its greatest circumference twenty.

Descr. The head of an oblong form, sloping down, and growing narrower to the nose; six feet eight inches from the end of which were two spout-holes, separated by a thin division: the eyes small.

The pectoral fins five feet long, and one and an half broad; on the back about eight feet and an half from the tail, in lieu of a back fin, was a hard horny protuberance: the tail was nine feet and an half broad.

The belly was uneven, and formed into folds running lengthways.

* Item habet warectum maris per totum regnum *Ballenas* et *Sturgiones* captos, &c. *Edwardi* II. *anno* 17*mo*.
** *Blackston's Com.* I. *c.* 4.

The

The ſkin extremely ſmooth and bright; that on the back black; that on the belly white.

This ſpecies takes its name from the ſhape of its noſe, which is narrower and ſharper pointed than that of other whales.

III. The FIN FISH.

Balæna edentula corpore ſtrictiore, dorſo pinnato. *Raii ſyn. piſc.* 9. *Dale Harwich*, 410. *No.* 2.
Fin Fiſh. *Marten's Spitzberg.* 165. *Egede Greenl.* 65. *Crantz Greenl.* I. 110.
Le Gibbar. *Briſſon Cet.* 222.
Balæna fiſtula in medio capite tubero penniformi in extremo dorſo. *Arted. ſyn.* 107.
Balæna Phyſalus. *Lin. ſyſt.* 106.

THIS ſpecies is diſtinguiſhed from the common whale by a fin on the back, placed very low and near the tail.

The length is equal to that of the common kind, but much more ſlender. It is furniſhed with whalebone in the upper jaw, mixed with hairs, but ſhort and knotty, and of little value. The blubber alſo on the body of this kind is very inconſiderable: theſe circumſtances, added to its extreme fierceneſs and agility, which renders the capture very dangerous, cauſe the fiſhers to neglect it. The natives of *Greenland* tho' hold it in great eſteem, as it affords a quantity of fleſh, which to their palate is very agreeable. Deſcr.

The lips are brown, and like a twiſted rope: the ſpout hole is as it were ſplit in the top of its head, thro' which it blows water with much more violence, and to a greater height, than the common whale.

The fishers are not fond of seeing it, for on its appearance the others retire out of those seas.

Some writers conjecture this species to have been the Φυσαλος, and *Physeter*, or blowing whale of *Oppian*, *Ælian*, and *Pliny* *; but since those writers have not left the left description of it, it is impossible to judge which kind they meant; for in respect to the faculty of spouting out water, or blowing, it is not peculiar to any one species, but common to all the whale kind.

IV. The ROUND-LIPPED WHALE.

Balæna tripinnis maxillam inferiorem rotundam et superiore multo latiorem habens. *Sib. Phalain.* 33. *tab.* T. 3.

Idem. *Raii syn. pisc.* 16.

La Baleine a museau rond. *Brisson Cet.* 222.

B. fistula duplici in fronte maxilla inferiore multo Latiore. *Arted. syn.* 107.

Balæna musculus. *Lin. syst.* 106.

THE character of this species is to have the lower lip broader than the upper, and of a semicircular form.

That taken in 1692 near *Abercorn-Castle*, was seventy-eight feet long, the circumference thirty-five; the *rictus* or gape very wide; the tongue fifteen feet and an half long; the mouth furnished with short whalebone, about three feet in length. On the forehead were two spout holes of a pyramidal form.

The eyes were placed thirteen feet from the end of the nose: the pectoral fins ten feet long: the

* *Oppian, Halieut*, I. *Lin*, 368. *Ælian Hist. an.* ix. *c.* 49. *Plin. lib.* ix. *c.* 5.

back

back fin about three feet high, placed near the tail, which was eighteen feet broad: the belly was full of folds.

This fpecies is faid to feed on herrings.

V. The BEAKED WHALE.

Butfkopf. *Marten's Spitzberg.* 124.
Bottle-head, or flounders-head.

Dale Harwich, 411. *tab.* 14.
Nebbe-hual, or beaked whale.
Pontop. Norway, I. 123.

THIS fpecies was taken near *Maldon,* 1717, and thus defcribed by *Dale* and *Marten.*

The length was fourteen feet, the circumference feven and an half; the body very thick, the forehead high, the nofe depreffed, and of the fame thicknefs its whole length, not unlike the beak of a bird: in the mouth were no teeth.

The eyes large, the eyelids fmall, and placed a little above the line of the mouth. The fpout hole was on the top of the head femicircular, with the corners pointed towards the tail.

The pectoral fins were feventeen inches long. The back was placed rather nearer the tail than the head, and was a foot long: the breadth of the tail was three feet two inches.

Thefe fifh fometimes grow to the length of twenty feet; they make but little noife in blowing, are very tame, come very near the fhips, and will accompany them for a great way.

Belon defcribes and figures a fifh very much refembling, if not the fame with this: he fays it fur-

nished whalebone, *Dont les Dames font aujourdhuy leurs bustes, et arrondissent leurs verdugades* *, by which it appears, that this commodity was but newly known at that time in *France*. He adds, that the tongue was very good eating, and both that and the flesh used to be salted for provision.

Genus II. Cetaceous Fish, with teeth in the lower jaws only. CACHALOT.

Sp. I. The BLUNT-HEADED CACHALOT.

A Fish of this kind was cast ashore on *Blyth* sand, *January* 30, 1762; its length was fifty-four feet, the breadth fourteen: the upper jaw was five feet longer than the lower, whose length was ten feet.

Size.

Descr.

The head was of a most enormous size, very thick, and above one-third the size of the fish: the end of the upper jaw was quite blunt, and near eight feet high: the spout hole was placed near the end of it.

Teeth.

The teeth were placed in the lower jaw, eighteen on each side, all pointing outwards; in the upper jaw opposite to them were an equal number of cavities, in which the ends of the teeth lodged when the mouth was closed. The teeth, figured in *plate* iii. *No.* 2, was eight inches long, the greatest circum-

* *Belon de la nat. &c. des Poissons*, 1555, p. 6, by which it appears that the *French* were acquainted with that article at least forty years before we were.

ference

ference the ſame. It is hollow within ſide for the depth of three inches, and the mouth of the cavity very wide: it is thickeſt at the bottom, and grows very ſmall at the point, bending very much; but in ſome the flexure is more than in others. Theſe, as well as the teeth of all other whales, we have obſerved are very hard, and cut like ivory.

The eyes very ſmall, and remote from the noſe.

The pectoral fins placed near the corners of the mouth: it had no other fin, only a large protuberance on the middle of the back.

The tail a little forked, and fifteen feet from tip to tip.

The penis eight feet long.

The figure *plate* ii. we borrowed from a print taken from the fiſh publiſhed by *William Bingham*; after directing the tail to be placed in a horizontal poſition.

This is one of the ſpecies which yield what is improperly called *ſperma ceti*, that ſubſtance being found lodged in the head of the fiſh that form this genus, which the *French* call *Cachalot*, a name we have adopted, having no generical term for it in our tongue. Sperma-ceti.

II. The GREAT-HEADED CACHALOT.

Trumpa. *Purchass's Pilgrimes* iii. 471.
Balæna major in inferiore tantum maxilla dentata dentibus arcuatis falciformibus, pinnam sive spinam in dorso habens. *Sib. Phalain.* 13. *tab.* A. 1. *Raii syn. pisc.* 15.
Le cachalot a dents en faucilles. *Brisson Cet.* 229.
The Parmacitty Whale, or Pot Wal fish. *Dale Harwich*, 413.
Physeter microps. *Lin. syst.* 107. *Arted. syn.* 104.
Cashalot, Catodon, or Pot fish. *Crantz Greenl.* I. 112.

ACCORDING to Sir *Robert Sibbald*'s observations on one taken on the coast of *Scotland*, the head was of an oblong form, and of such a bulk as to exceed that of all the rest of the body.

The end of the upper jaw was five feet longer than that of the lower: a little above the middle of the nose was placed the spout hole, divided in the middle, and covered with a lid.

Teeth. In the lower jaw were forty-two teeth, bent like a sickle, thick in the middle, and growing smaller towards each end: a specimen of a small one is engraved, *plate* iii. *No.* 3.

The eyes were very small, not larger than those of a hadock.

On the middle of the back was a long spine, instead of a fin.

The color of this fish was black, the skin of a silky appearance, and very thin.

The length of this fish was fifty-two feet; above seventy gallons of oil were extracted from it, and a great quantity of *sperma ceti*.

Linnæus informs us, that this species pursues and terrifies the porpesses so much, as often to drive them on shore.

III. The

III. The ROUND-HEADED CACHALOT.

Balæna minor in inferiore maxilla tantum dentata fine fpina aut pinna in dorfo. *Sib. Phalain.* 9. *Raii fyn. pifc.* 15.

Le petit Cachalot. *Briffon Cet.* 228.

Phyfeter Catodon. *Lin. fyft.* 107.

Catodon fiftula in roftro. *Arted. fynon.* 108.

THIS fpecies was taken on one of the *Orkney* ifles, a hundred and two of different fizes being caft afhore at one time, the largeft twenty-four feet in length.

The head was round, the opening of the mouth fmall: *Sibbald* fays it had no fpout hole, but only noftrils. We rather think, that the former being placed at the extremity of the nofe was miftaken by him for the latter.

The teeth we have in our cabinet of this fpecies (*plate* iii. *No.* 4.) are an inch and three quarters long, and in the largeft part, of the thicknefs of one's thumb. The top is quite flat, and marked with concentric lines; the bottom is more flender than the top, and pierced with a fmall orifice. Teeth.

The back fin was wanting; inftead was a rough fpace.

IV. The HIGH-FINNED CACHALOT.

Balæna macrocephala tripinnis, quæ in mandibula inferiore dentes habet minus inflexos et in planum definentes. *Sib. Phalain.* 18. *Raii fyn, pifc.* 16.

Le Cachalot a dents plattes. *Briffon. Cet.* 230.

ONE of this fpecies was caft on the *Orkney* ifles in 1687. The fpout hole was placed in front, and on the middle of the back was a high fin,

fin, which *Sibbald* compares to the mizen maſt of a ſhip. The head abounded with *ſperma ceti* of the beſt ſort.

Teeth. The teeth of this kind are very ſlightly bent; that which we have figured, *plate* iii. *No.* 1. is ſeven inches three quarters in length; the greateſt circumference nine: it is much compreſſed on the ſides; the point rather blunt than flat; the bottom thin, having a very narrow but long orifice, or ſlit, hollowed to the depth of five inches and a quarter, and the tooth was immerſed in the jaw as far as that hollow.

Genus III. Cetaceous Fiſh, with teeth in both jaws. DOLPHIN.

Sp. 1. The DOLPHIN.

Δελφίς. *Ariſt. Hiſt. an. lib.* vi. *c.* 12. Δελφίν. *Ælian. lib.* I. *c.* 18.
Delphinus *Plinii, lib.* ix. *c.* 8. Le Daulphin, ou oye de mor. *Belon Poiſſ.* 7.
Delphinus. *Rondel.* 459. *Geſner piſc.* 319. *Caii opuſc.* 113.
Delphinus Antiquorum. *Wil. Icth.* 28. *Raii ſyn. piſc.* 12.
Delphinus corpore longo ſubtereti, roſtro longo acuto. *Arted. ſyn.* 105.
Le Dauphin. *Briſſon Cet.* 233.
Delphinus Delphis. *Lin. ſyſt.* 108.
Dolphin. *Borlaſe Cornwall,* 264. *tab.* 27. *Crantz Greenl.* I, 115.

HISTORIANS and philoſophers ſeem to have contended who ſhould invent moſt fables concerning this fiſh. It was conſecrated to the Gods, was celebrated in the earlieſt time for its fondneſs of the human race, was honored with the title of the

Sacred

Sacred Fifh *, and diftinguifhed by thofe of *Boy-loving*, and *Philanthropift*. It gave rife to a long train of inventions, proofs of the credulity and ignorance of the times.

Ariftotle fteers the cleareft of all the antients from thefe fables, and gives in general fo faithful a natural hiftory of this animal, as evinces the fuperior judgment of that great philofopher, in comparifon of thofe who fucceeded him. But the elder *Pliny*, *Ælian*, and others, feem to preferve no bounds in their belief of the tales related of this fifh's attachment to mankind.

Pliny ** the younger, (apologizing for what he is going to fay) tells the ftory of the enamoured dolphin of *Hippo* in a moft beautiful manner. It is too long to be tranfcribed, and would be injured by an abridgement; therefore we refer the reader to the original, or to Mr. *Melmouth*'s elegant tranflation.

Scarce an accident could happen at fea but the dolphin offered himfelf to convey to fhore the unfortunate. *Arion*, the mufician, when flung into the ocean by the pyrates, is received and faved by this benevolent fifh.

Inde (fide majus) tergo Delphina recurvo,
Se memorant oneri fuppofuiffe novo.
Ille fedens citharamque tenens, pretiumque vehendi
Cantat, et æquoreas carmine mulcet aquas.
Ovid. Fafti. lib. ii. 113.

But (paft belief) a dolphin's arched back,
Preferved *Arion* from his deftined wrack;
Secure he fits, and with harmonious ftrains,
Requites his bearer for his friendly pains.

* *Athenæus*, 281. ** *Epift. lib.* ix. *ep.* 33.

We

We are at a loss to account for the origin of those fables, since it does not appear that the dolphin shews a greater attachment to mankind than the rest of the cetaceous tribe. We know that at present the appearance of this fish, and the porpesse, are far from being esteemed favorable omens by the seamen; for their boundings, springs and frolics in the water, are held to be sure signs of an approaching gale.

It is from their leaps out of that element that they assume a temporary form that is not natural to them, but which the old painters and sculptors have almost always given them. A dolphin is scarce ever exhibited by the antients in a strait shape, but almost always incurvated: such are those on the coin of *Alexander the Great*, which is preserved by *Belon*, as well as on several other pieces of antiquity. The poets describe them much in the same manner, and it is not improbable but that the one had borrowed from the other:

> Tumidumque pando transilit dorso mare
> Tyrrhenus omni piscis exsultat freto,
> Agitatque gyros. *Senec. Trag. Agam.* 450.

> Upon the swelling waves the dolphins shew
> Their bended backs, then swiftly darting go,
> And in a thousand wreaths their bodies throw.

Descr. The natural shape of the dolphin is almost strait, the back being very slightly incurvated, and the body slender: the nose is long, narrow, and pointed, not much unlike the beak of some birds, for which reason the *French* call it *L' oye de mer*.

Teeth. It has in all forty-two teeth, twenty-one in the upper jaws, and nineteen in the lower, a little above

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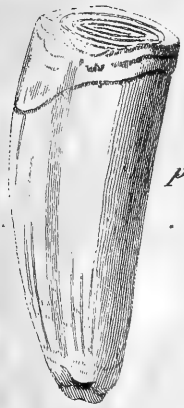

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p. 47.

P. Mazell del. et lith.

an inch long, conic at their upper end, sharp pointed*, bending a little in. They are placed at small distances from each other, so that when the mouth is shut, the teeth of both jaws lock into one another: a single one is figured *plate* iii. *No.* 5.

The spout hole is placed in the middle of the head.

The back fin is high, triangular, and placed rather nearer to the tail than to the head; the pectoral fins situated low.

The tail is semilunar.

The skin is smooth, the color of the back and sides dusky; the belly whitish.

It swims with great swiftness: its prey is fish.

It was formerly reckoned a great delicacy: Doctor *Caius* says, that one which was taken in his time, was thought a present worthy the Duke of *Norfolk*, who distributed part of it among his friends. It was roasted and dressed with porpesse sauce, made of crumbs of fine white bread, mixed with vinegar and sugar.

This species of dolphin must not be confounded with that to which seamen gives the name, the latter being quite another kind of fish, the *Coryphæna*, *Hippuris* of *Linnæus*, *p.* 446. and the *Dorado* of the *Portuguese*, described by *Willoughby*, *p.* 213.

* *Plate* iii. *fig.* 5.

II. The

II. The PORPESSE.

Φώκαινα. *Arist. Hist. an. lib.* vi. *c.* 12.
Turfio *Plinii. lib.* ix. *c.* 9.
Le Marsouin. *Belon.*
Turfio. *Rondel.* 474. *Gesner pisc.* 711.
Porpesse. *Wil. Icth.* 31. *Raii syn. pisc.* 13. *Crantz Greenl.* I, 114. *Kolben's Hist. Cape,* II. 200.
Le Marsouin. *Brisson Cet.* 234.
Delphinus corpore fere coniformi, dorso lato, rostro subacuto. *Arted. synon.* 104.
Delphinus Phocæna. *Lin. syst.* 108.
Marswin, Tumblare. *Faun. suec. No.* 51.

THESE fish are found in vast multitudes in all parts of the sea that wash these islands, but in greatest numbers at the time when fish of passage appear, such as mackrel, herrings, and salmon, which they pursue up the bays with the same eagerness as a pack of dogs does a hare. In some places they almost darken the sea as they rise above water to take breath: but porpesses not only seek for prey near the surface, but often descend to the bottom in search of sand eels, and sea worms, which they root out of the sand with their noses in the same manner as hogs do in the fields for their food.

Defcr. Their bodies are very thick towards the head, but grows slender towards the tail, forming the figure of a cone.

The nose projects a little, is much shorter than that of the dolphin, and is furnished with very strong muscles, which enables it the readier to turn up the sand.

Teeth. In each jaw are forty-eight teeth, small, sharp pointed, and a little moveable: like those of the dolphin,

phin, they are so placed as that the teeth of one jaw locks into those of the other when closed.

The tongue is flat, pectinated at the edges, and fastened down to the bottom of the mouth.

The eyes small; the spout hole on the top of the the head.

On the back is one fin placed rather below the middle; on the breast are two fins. The tail semilunar.

The color of the porpesse is generally black, and the belly whitish, not but they sometimes vary; for in the river *St. Laurence* there is a white kind; and Doctor *Borlase*, in his voyage to the *Scilly* isles, observed a small species of cetaceous fish, which he calls *thornbacks*, from their broad and sharp fin on the back, some of these were brown, some quite white, others spotted: but whether they were only a variety of this fish, or whether they were small *grampuses*, which are also spotted, we cannot determine.

The porpesse is remarkable for the vast quantity of the fat or lard that surrounds the body, which yields a great quantity of excellent oil: from this lard, or from their rooting like swine, they are called in many places *sea hogs*; the *Germans* call them *meerschwein*; the *Swedes*, *marsuin*; and the *English*, *porpesse*, from the *Italian*, *porco pesce*. Fat.

III. The

III. The GRAMPUS.

Orca *Plinii*, *lib.* ix. *c.* 6.
L'oudre ou grand marsouin. *Belon*, 13.
Orca. *Rondel.* 483. *Gesner pisc.* 635. Leper, Springer. *Schonevelde*, 53.
Butskopf. *Marten's Spitzberg.* 124.
Balæna minor utraque maxilla dentata. *Sib. Phalæn.* 7, 8. *Wil. Icth.* 40. *Raii syn. pisc.* 15.
L. Epaulard. *Brisson Cet.* 236.
Delphinus orca. *Lin. syst.* 108.
Lopare, Delphinus rostro sursum repando, dentibus latis serratis. *Arted. syn.* 106.

THIS species is found from the length of fifteen feet to that of twenty-five. It is remarkably thick in proportion to its length, one of eighteen feet being in the thickest place ten feet diameter. With reason then did *Pliny* call this an immense heap of flesh, armed with dreadful teeth *.

It is extremely voracious, and will not even spare the porpesse, a congenerous fish. It is said to be a great enemy to the whale, and that it will fasten on it like a dog on a bull, till the animal roars with pain.

Teeth. The nose is flat, and turns up at the end. There are thirty teeth in each jaw; those before are blunt, round, and slender; the fartheſt sharp and thick: between each is a space adapted to receive the teeth of the opposite jaw when the mouth is closed.

The spout hole is in the top of the neck. In respect to the number and site of the fins, it agrees with the dolphin.

* Cujus imago nulla representatione exprimi possit alia, quam carnis immensæ dentibus truculentis. *Lib.* ix. *c.* 6.

The

The color of the back is black, but on each shoulder is a large white spot, the sides marbled with black and white, the belly of a snowy whiteness. Color.

These sometimes appear on our coasts, but are found in much greater numbers off the *North Cape* in *Norway*, whence they are called *North Capers*. These and all other whales are observed to swim against the wind, and to be much disturbed, and tumble about with unusual violence at the approach of a storm. Place.

Linnæus and *Artedi* say, that this species is furnished with broad serrated teeth, which as far as we have observed, is peculiar to the *shark* tribe. We therefore suspect that those naturalists have had recourse to *Rondeletius*, and copied his erroneous account of the teeth: Sir *Robert Sibbald*, who had opportunity of examining and figuring the teeth of this fish, and from whom we take that part of our description, giving a very different account of them.

It will be but justice to say, that no one of our countrymen ever did so much towards forming a general natural history of this kingdom as Sir *Robert Sibbald*: he sketched out a fine outline of the Zoology of *Scotland*, which comprehends the greatest part of the *English* animals, and, we are told, had actually filled up a considerable part of it: he published a particular history of the county of *Fife*, and has left us a most excellent history of the whales which frequent the coast of *Scotland*. We acknowledge ourselves much indebted to him for information in respect to many of those

fifh, few of which frequent the fouthern feas of thofe kingdoms, and thofe that are accidentally caft afhore on our coafts, are generally cut up by the country people, before an opportunity can be had of examining them.

Div. II. CARTILAGINOUS FISH.

THIS title is given to all fifh whofe mufcles are fupported by cartilages inftead of bones, and comprehends the fame genera of fifh to which *Linnæus* has given the name of *amphibia nantes:* but the word *amphibia*, ought properly to be confined to fuch animals who inhabit both elements, and can live without any inconvenience for a confiderable fpace, either on land or under water. This definition therefore excludes all that form this divifion.

Many of the cartilaginous fifh are viviparous, being excluded from an egg, which is hatched within them. The egg confifts of a white and a yolk, and is lodged in a cafe, formed of a thick tough fubftance, not unlike foftened horn: fuch are the eggs of the Ray and Shark kinds.

Some again differ in this refpect, and are oviparous; fuch is the Sturgeon, and others.

They breathe either thro' certain apertures beneath, as in the Rays; on their fides as in the Sharks, &c. or on the top of the head, as in the Pipe-fifh; for they have not covers to their gills like the bony fifh.

Genus IV. Slender Eel-shaped body;
Seven apertures on each side;
One on the top of the head.
No pectoral or ventral fins. LAMPREY.

Sp. I. The LAMPREY.

La Lamproye de mer. *Belon.* 66.
Lampetra. *Rondel.* 398.
Lampreda. *Gesner. Paralip.* 22. *pisc.* 590.
Lamprey, or Lamprey Eel. *Wil. Icth.* 105.
Lampetra. *Raii syn. pisc.* 35.
Petromyzon maculosus ordinibus dentium circiter viginti. *Arted. synon.* 90.
Petromyzon marinus. P. ore intus papilloso, pinna dorsali posteriori a cauda distincta. *Lin. syst.* 394. *Faun. suec. No.* 292.

Place. LAMPREYS are found at certain seasons of the year in several of our rivers, but the *Severn* is the most noted for them*. They are sea fish, but like salmon, quit the salt waters, and ascend the latter end of the winter, or beginning of spring, and after a stay of a few months return again to the ocean, a very few excepted. The best season for them is the months of *March*, *April*, and *May*; for they are more firm when just arrived out of the salt water than they are afterwards, being observed to be much wasted, and very flabby at the approach of hot weather.

They are taken in the nets along with salmon and shad, and sometimes in weels laid in the bottom of the river.

* They are also found in the most considerable of the *Scotch* and *Irish* rivers.

It

It has been an old cuſtom for the city of *Glouceſter*, annually, to preſent his majeſty with a *lamprey* pye, covered with a large raiſed cruſt. As the gift is made at *Chriſtmas*, it is with great difficulty the corporation can procure any freſh lampreys at that time, tho' they give guinea a-piece for them, ſo early in the ſeaſon.

They are reckoned a great delicacy, either when potted or ſtewed, but are a ſurfeiting food, as one of our monarchs fatally experienced, *Henry* the Firſt's death being occaſioned by a too plentiful meal of theſe fiſh.

Lampreys are ſometimes found ſo large as to weigh four or five pounds.

The mouth is round and placed rather obliquely below the end of the noſe: the edges are jagged, which enables them to adhere the more ſtrongly to the ſtones, as their cuſtom is, and which they do ſo firmly as not to be drawn off without ſome difficulty.

We have heard of one weighing three pounds, which was taken out of the *Eſk*, adhering to a ſtone of twelve pounds weight, ſuſpended at its mouth, from which it was forced with no ſmall pains.

There are in the mouth twenty rows of ſmall teeth, diſpoſed in circular orders, and placed far within.

The color is duſky, irregularly marked with dirty yellow, which gives the fiſh a diſagreeable look.

We believe that the antients were unacquainted with this fiſh; ſo far is certain, that which Doctor *Arbuthnot*, and other learned men, render the word *lamprey*, is a ſpecies unknown in our ſeas, being the Not the Muræna

muræna of *Ovid*, *Pliny*, and others, for which we want an *English* name.

The words *Lampetra* and *Petromyzon*, are but of modern date, invented from the nature of the fish; the first a *Lambendo petras*, the other from Πέτρος, and Μυσαω, because they are supposed to lick, or suck the rocks.

II. The LESSER LAMPREY.

La Lamproye d'eaue doulce. *Belon.* 67.
Lampredæ alterum genus. *Gesner pisc.* 597.
Lampetra medium genus. *Wil. Icth.* 106. *Raii syn. pisc.* 35.
Neunaugen. *Kram.* 282.
Petromyzon fluviatilis. *Lin. syst.* 394.
Nein-oga, natting. *Faun. suec. No.* 290. Petromyzon pinna dorsali posteriori angulata. *Ibid.*
Gronov. Zooph. No. 159.

Descr. THIS species sometimes grows to the length of ten inches.

The mouth is formed like that of the preceding. On the upper part is a large bifurcated tooth; on each side are three rows of very minute ones: on the lower part are seven teeth, the exterior of which on each side is the largest.

The irides are yellow. As in all the other species between the eyes, on the top of the head, is a small orifice of great use to clear its mouth of the water that remains on adhering to the stones, for thro' that orifice it ejects the water in the same manner as cetaceous fish.

On the lower part of the back is a narrow fin, beneath that rises another, which at the beginning is high

high and angular, then grows narrow, furrounds the tail, and ends near the anus.

The color of the back is brown or dufky, and fometimes mixed with blue; the whole under-fide filvery. Thefe are found in the *Thames*, *Severn*, and *Dee*, are potted with the larger kind, and are by fome preferred to it, as being milder tafted. Vaft quantiti esare taken about *Mortlake*, and fold to the *Dutch* for bait for their turbot and cod fifhery. Color.

III. The PRIDE.

Une Civelle, un Lamproyon. *Belon.* 67.
Lampetra parve et fluviatilis. *Rondel. pifc. fl.* 202.
Lampreda minima. *Gefner pifc.* 598.
Pride. *Plot. Oxf.* 182. *plate* x.
Lampern, or Pride of the *Ifis*. *Wil. Icth.* 104. *Raii fyn. pifc.* 35.
Petromyzon branchialis. *Lin. fyft.* 394.
Lin-ahl. *Faun. fuec. No.* 291. Petromyzon pinna dorfali poftcriori lineari, labio oris latere poftico lobato. *Ibid.*
Uhlen. *Kram.* 384.
Gronov. Zooph. No. 160.

WE have feen thefe of the length of eight inches, and about the thickneefs of a fwan's quil, but they are generally much fmaller.

They are frequent in the rivers near *Oxford*, particularly the *Ifis*, but not peculiar to that county, being found in others of the *Englifh* rivers, where, inftead of concealing themfelves under the ftones, they lodge themfelves in the mud, and never are obferved to adhere to any thing like other lampreys.

The body is marked with numbers of tranfverfe lines, that pafs crofs the fides from the back to the bottom of the belly, which is divided from the mouth to the anus by a ftrait line.

The back fin is not angular like that of the former, but of an equal breadth. The tail is lanceolated, and sharp at the end.

Genus V. Body broad, flat, and thin.
Five apertures on each side placed beneath:
Mouth situated quite below. RAY.

* With sharp teeth.

I. The SKATE.

Βατὶς? *Arist. Hist. an. lib.* I. *c.* 5. *lib.* vi. *c.* 10. *Oppian Halieut.* I. 103.
Raia undulata sive cinerea. *Rondel.* 346. *Gesner pisc.* 791.
The Skate, or Flaire. *Wil. Ich.* 69. *Raii syn. pisc.* 25.
Raia Batis. *Lin. syst.* 395.
Raia varia, dorso medio glabro, unico aculeorum ordine in cauda. *Arted. synon.* 102.
Gronov. Zooph. No. 157.

Size. THIS species is the thinnest in proportion to its bulk of any of the genus, and also the largest, some weighing near two hundred pounds.

Descr. The nose, tho' not long, is sharp pointed; above the eyes is a set of short spines: the whole upper part of that we examined was of a pale brown. Mr. *Ray* says, some he saw were streaked with black: the lower part is white, marked with great numbers of minute black spots. The jaws were covered with small granulated but sharp-pointed teeth.

The

The tail is of a moderate length: near the end are two fins: along the top of it is one row of ſpines, and on the edges are irregularly diſperſed a few others, which makes us imagine with Mr. *Ray*, that in this reſpect theſe fiſh vary, ſome having one, others more orders of ſpines on the tail.

It is remarked that in the males of this ſpecies the fins are full of ſpines.

Skates generate in *March* and *April*, at which time they ſwim near the ſurface of the water, ſeveral of the males purſuing one female. They adhere ſo faſt together in coition, that the fiſhermen frequently draw up both together, tho' only one has taken the bait. The females begin to caſt their *purſes*, as the fiſhermen call them (the bags in which the young are included) in *May*, and continue doing it till *September*. In *October* they are exceedingly poor and thin; but in *November* they begin to improve, and grow gradually better till *May*, when they are in the higheſt perfection. The males go ſooner out of ſeaſon than the females. Generation.

II. The

II. The SHARP-NOSED RAY.

Βος? *Arist. Hist. an. lib.* v. *c.* 5. *Oppian Halieut.* ii. 141.
Bos *ovidii?* 94. *Plinii lib.* ix. *c.* 24.
Raia oxyrhinchus. *Rondel.* 347. *Gesner pisc.* 792.
Wil. Icth. 71. *Raii syn. pisc.* 26.
Raia oxyrinchus. *Lin. syst.* 395.
Raia varia tuberculis decem aculeatis in medis dorso. *Arted. synon.* 101.

Size. IN fishing in the *Menai* (the strait that divides *Anglesea* from *Caernarvonshire*) *July* 1768, we took one of this species whose length was near seven feet, and breadth five feet two inches; when just brought on shore, it made a remarkable snorting noise.

The nose was very long, narrow, and sharp-pointed, not unlike the end of a spontoon.

The body was smooth, and very thin in proportion to the size; the upper part ash-colored, spotted with numerous white spots, and a few black ones.

The tail was thick; towards the end were two small fins, on each side was a row of small spines, with another row in the middle, which run some way up the back.

The lower part of the fish was quite white.

The mouth very large, and furnished with numbers of small sharp teeth bending inwards.

On its body we found the *hirudo muricata*, which adhered very strongly, and when taken off left a black impression.

This fish has been supposed to be the *Bos* of the antients, which was certainly some enormous species of

of *Ray*, tho' we cannot pretend to determine the particular kind: *Oppian* ftyles it,

Ευρυτατος παντεσσι μετ' ιχθυσιν.

Broadeft among fifhes.

He adds an account of its fondnefs of human flefh, and the method it takes of deftroying men, by over-laying and keeping them down by its vaft weight till they are drowned. *Phile* gives much the fame relation*. We are inclined to afford them credit, fince a modern writer**, of undoubted authority, gives the very fame account of a fifh found in the *South Seas*, the terror of thofe employed in the pearl fifhery. It is a fpecies of *ray*, called there *Manta*, or the *Quilt*, from its furrounding and wrapping up the unhappy divers till they are fuffocated; to guard againft which, the negroes never go down without a fharp knife to defend themfelves againft the affaults of this terrible enemy.

* *De propriet. Anim.* 85.
** *Ulloa's voy.* I. 132. 8*vo. edit.*

III. The

III. The ROUGH RAY.

Raia fullonica. *Rondel.* 357. *Gesner pisc.* 797.
Raia aspera nostras, the white horse. *Wil. Icth.* 78. *Raii syn. pisc.* 26.
Raia fullonica. *Lin. syst.*
Raia dorso toto aculeato, aculeorum ordine simplici ad oculos, duplici in canda. *Arted. syn.* 101. *Gronov. Zooph. No.* 155.

THIS species derives its *Latin* name from the instruments fullers make use of in smoothing cloth, the back being rough, with small spines like that.

These spines are spread not only over the back, but the upper side of the fins and the head: near each eye is a semicircular order of larger spines, and about the nose are a few others; a row of the same kind go half way down the back: the tail is armed with a double row of still greater spines.

The color of the upper part is ash-color, mixed with yellow; the lower part of the body entirely white.

This species we believe to be rare, having never met with it; therefore are obliged to borrow our description from Mr. *Willoughby*.

IV. The

IV. The CRAMP RAY.

Ναρκη. *Arist. Hist. an. lib.* v. *c.* 5. ix. *c.* 37. *Oppian Halieut.* I. 104. ii. 56. iii. 149.
Torpedo. *Plinii lib.* ix. *c.* 42.
La Tremble ou Torpille. *Belon.* 78, 81.
Torpedo. *Rondel. Gesner pisc.*
Torpedo. Cramp Fish. *Wil. Icth.* 81. *Raii syn. pisc.* 28. *Smith's Hist. Waterford*, 271.
Raia Torpedo. *Lin. syst.* 395.
Raia tota lævis. *Arted. synon.* 102. *Gronov. Zooph. No.* 153. *tab.* 9.

THE narcotic or numbing quality of this fish has been taken notice of in all ages: it is so powerful when the fish is alive, as instantly to deprive the person who touches it of the use of his arm, and even to affect him if he touches it with a stick. *Oppian* goes so far as to say, that it will benumb the astonished fisherman, even thro' the whole length of line and rod.

Ναὶ μὲν κι ΝΑΡΚΕ σφέτερον νόον ἐκ απολείπει,
Πληγῆ ἀνίαζεσα. Τιταινομένη δ' ὀδυνησιν
Ὁρμιῆ λαγόνας προστύσσεϑ. Αιψα δε χαίτης
Ἱππείης δόνακος τε διεδραμέν, ἐς δ' ἁλιῆϑ
Δεξιτερην ἔσκηψε φερώνυμον ἰχθυϑ ἄλγϑ.
Πολλάκι δ' εκ παλάμης κάλαμϑ πέσεν, ὅπλά τε θήρης
Τοῖϑ γαρ κρύσαλλϑ ενιζεϑ αὐτικα χειρί.

The hook'd *Torpedo* ne'er forgets its art,
But soon as struck begins to play its part,
And to the line applies its magic sides,
Without delay the subtile power glides
Along the pliant rod, and slender hairs,
Then to the fisher's hand as swift repairs:
Amaz'd he stands; his arm's of sense bereft,
Down drops the idle rod; his prey is left:
Not less benumb'd, than if he had felt the whole
Of frost's severest rage beneath the *arctic* pole,

But great as its powers are when the fish is in vigor, they are impaired as it declines in strength, and totally cease when it expires. They impute no noxious qualities to it as a food, being commonly eat by the *French*, who find them more frequently on their coasts than we do on ours.

This wonderful faculty is occasioned by a most rapid, frequent, and violent contraction and exertion of its muscles, against any object that touches it. The cause is prettily explained by M. *Reaumur**, to whom we refer the inquisitive reader for a farther account.

We may mention a double use in this strange power the *torpedo* is endued with; the one, when it is exerted as a means of defence against voracious fish, who are at a touch deprived of all possibility of seizing their prey.

The other is well explained by *Pliny*, who tells us, it attains by the same powers its end in respect to those fish it wishes to ensnare. *Novit* torpedo *vim suam, ipsa non torpens; mersaque in limo se occultat piscium qui securi supernatantes obtorpuere, corripiens***.

Defcr. These fish are sometimes found of the weight of fifteen pounds.

The body is almost circular, and is thicker than others of the ray kind. The skin is soft, smooth,

* *Hist. de l'Academie des Sciences*, 1714.

** "The *torpedo* is well acquainted with its own powers, "tho' itself never affected by them. It conceals itself in the "mud, and benumbing the fish that are carelessly swimming "about, makes a ready prey of them."

and

and of a yellowifh color, marked with large annular fpots: the eyes very fmall, and almoft covered with the fkin; behind each is a femilunar orifice; the mouth is placed below, and furnifhed with fmall fharp teeth.

Along each fide of the body is a narrow fin; near the vent two others. The tail is thick towards the bafe, and grows fmall towards the end: on the upper part are two fmall fins placed near each other; the end is round.

Thefe fifh inhabite hot, or at leaft warm climates, and are very rarely taken in the *Britifh* feas: the only one we ever heard of on our coafts, being took off the county of *Waterford.*

** With blunt teeth.

V. The THORNBACK.

La Raye bouclée. *Belon.* 70.
Raia clavata. *Rondel.* 353. *Gefner pifc.* 795.
Steinroch. *Schonevelde*, 59.
Thornback. *Wil. Icth.* 74. *Raii fyn. pifc.* 26.
Raia clavata. *Lin. fyft.* 297. *Gronov. Zooph. No.* 154.
R. aculeata dentibus tuberculofis, cartilagine tranfverfa abdominali. *Arted. fynon.* 94.
Racka. *Faun. fuec. No.* 293.

THIS common fifh is eafily diftinguifhed from the others by the rows of ftrong fharp fpines, difpofed along the back and tail. In a large one we faw, were three rows on the back, and five on the tail, all inclining towards its end.

On the nofe, and on the inner fide of the forehead near the eyes, were a few fpines, and others were

were scattered without any order on the upper part of the pectoral fins.

The mouth was small, and filled with granulated teeth.

The upper part of the body was of a pale ash-color, marked with short streaks of black, and the skin rough, with small tubercles like shagreen.

The belly white, crossed with a strong semilunar cartilage beneath the skin: in general the lower part was smooth, having only a few spines on each side.

The young fish have very few spines on them, and their backs are often spotted with white, and each spot is encircled with black.

Food. This species frequents our sandy shores, are very voracious, and feed on all sorts of flat fish, and are particularly fond of herrings and sand eels, and sometimes eat crustaceous animals such as crabs.

These sometimes weigh fourteen or fifteen pounds, but with us seldom exceed that weight.

They begin to generate in *June*, and bring forth their young in *July* and *August*, which (as well as those of the skate) before they are old enough to breed, are called *maids*. The thornback begins to be in season in *November*, and continues so later than skate, but the young of both are good at all times of the year.

VI. The

VI. The STING RAY.

Τρυγων. *Arist. Hist. an. lib.* viii. *c.* 13. ix. 37. *Oppian. Halieut.* I. 104. ii. 462.
Pastinaca *Plinii lib.* ix. *c.* 42, 38.
La Pastenade de mer, Tourterelle, ou Tareronde. *Belon.* 83
Pastinaca. *Rondel.* 331. *Gesner pisc.* 679.
Steckroche. Grone Tepel. *Schonevelde,* 58.
Pastinaca marina lævis. *Wil. pisc.* 67.
Fire Flaire. *Raii syn. pisc.* 24.
Raia Pastinaca. *Lin. syst.* 396.
Raia corpore glabro, aculeo longo anterius serrato, cauda apterygia. *Arted. synon.* 100. *Gronov. Zooph. No.* 158.

THE weapon with which nature hath armed this fish, hath supplied the antients with many tremendous fables relating to it. *Pliny*, *Ælian*, * and *Oppian*, have given it a venom that affects even the inanimate creation: trees that are struck by it instantly lose their verdure and perish, and rocks themselves are incapable of resisting the potent poison.

The enchantress *Circe*, armed her son with a spear headed with the spine of the *Trygon*, as the most irresistible weapon she could furnish him with, and with which he afterwards committed parricide, unintentionally, on his father *Ulysses*.

That spears and darts might, in very early times, have been headed with this bone instead of iron, we have no kind of doubt: that of another species of this fish being still used to point the arrows of some of the *South American Indians*, and is, from its hardness, sharpness, and beards, a most dreadful weapon.

* *Hist. an. lib.* ii. *c.* 36.

But in refpect to its venemous qualities there is not the left credit to be given to the opinion, tho' it was believed (as far as it affected the animal world) by *Rondeletius*, *Aldrovand*, and others, and even to this day by the fifhermen in feveral parts of the kingdom. It is in fact the weapon of offence belonging to the fifh, capable of giving a very bad wound, and which is attended with dangerous fymptoms, when it falls on a tendinous part, or on a perfon in a bad habit of body. As to any fifh having a fpine charged with actual poifon, we muft deny our affent to it, tho' the report is fanctified by the name of *Linnæus**.

Defcr. This fpecies does not grow to the bulk of the the others: that which we examined was two feet nine inches from the tip of the nofe to the end of the tail; to the origin of the tail one foot three inches; the breadth one foot eight.

The body is quite fmooth, of a fhape almoft round, and is of a much greater thicknefs, and more elevated form in the middle than any other *Rays*, but grows very thin towards the edges.

The nofe is very fharp pointed, but fhort; the mouth fmall, and filled with granulated teeth.

The irides are of a gold color: behind each eye the orifice is very large.

* *Syft. Nat.* I. 348. He inftances the *Paftinaca*, the *Torpedo*, and the *Tetrodon lineatus*. The firft is incapable of conveying a greater injury than what refults from the meer wound. The fecond, from the vehemence of its fhock: and the third, by imparting a pungent pain like the fting of nettles, occafioned by the minute fpines on its abdomen.

The

The tail is very thick at the beginning: the ſpine is placed about a third the length of the former from the body, is about five inches long, flat on the top and bottom, very hard, ſharp pointed, and the two ſides thin, and cloſely and ſharply bearded the whole way. The tail extends four inches beyond the end of this ſpine, and grows very ſlender at the extremity. Tail.

Theſe fiſh are obſerved to ſhed their ſpine, and to renew them annually; ſometimes the new ſpine appears before the old one drops off, and the *Corniſh* call this ſpecies *Cardinal Triloſt*, or three tailed, when ſo circumſtanced.

The colour of the upper part of the body is a dirty yellow, the middle part of an obſcure blue; the lower ſide white, the tail and ſpine duſky.

Genus VI. Slender body growing less towards the tail.
Two fins on the back.
Rough skin.
Five apertures on the sides of the neck.
Mouth, generally placed far beneath the end of the nose.
The upper part of the tail longer than the lower. SHARKS.

* Without the anal fin.

I. The ANGEL FISH.

Πινη. *Arist. Hist. an. lib.* v. *c.* 5, &c. *Athenæus, lib.* vii. *p.* 319.
Oppian Halieut. I. 388, 742.
Squatina *Plin. lib.* ix. *c.* 12. Rhina, sc. Squatus. *lib.* xxxii. *c.* 11.
L'Ange, ou Angelot de mer. *Belon.* 69.
Squatina. *Rondel.* 367. *Gesner. pisc.* 859. *Wil. Icth.* 79.
Monk, or Angel Fish. *Raii syn. pisc.* 26.
Squalus squatina. *Lin. syst.* 398. S. pinna ani nulla, caudæ duabus, ore terminali, naribus cirrosis. *Ibid.*
Sq. pinna ani carens, ore in apice capitis. *Arted. syn.* 95. *Gronov. Zooph. No.* 151.

THIS is the fish which connects the genus of rays and sharks, partaking something of the character of both; yet in an exception to each in the situation of the mouth, which is placed at the extremity of the head.

It is a fish not unfrequent on most of our coasts, where it prowls about for prey like others of the kind. It is extremely voracious, and, like the ray, feeds

feeds on flounders and flat fifh, which keep at the bottom of the water, as we have often found on opening them. It is extremely fierce and dangerous to be approached. We knew an inftance of a fifherman, whofe leg was terribly tore by a large one of this fpecies, which lay within his nets in fhallow water, and which he went to lay hold of incautiouffly. Fiercenefs.

The afpect of thefe, as well as the reft of the genus, have much malignity in them: their eyes are oblong, and placed lengthways in their head, funk in it, and overhung by the fkin, and feem fuller of malevolence than fire.

Their fkin is very rough; the antients made ufe of it to polifh wood and ivory *, as we do at prefent that of the greater dog-fifh. The flefh is now but little efteemed on account of its coarfenefs and ranknefs, yet *Archeftratus* (as quoted by *Athenæus*, p. 319) fpeaking of the fifh of *Miletus*, gives this the firft place in refpect to its delicacy of the whole cartilaginous tribe.

They grow to a great fize; we have feen them of near an hundred weight. Defcr.

The head is large, the teeth broad at their bafe, but flender and very fharp above, and difpofed in five rows all round the jaws. Like thofe of all fharks, they are capable of being raifed or depreffed by means of mufcles uniting them to the jaws, not being lodged in fockets as the teeth of cetaceous fifh are.

* Qua lignum et ebora poliuntur. *Plinii lib.* ix. *c.* 12.

The tongue is large; the eyes ſmall; the pupil of a pale green; the irides white, ſpotted with brown: behind each eye is a ſemilunar orifice.

The back is of a pale aſh-color, and very rough; along the middle is a prickly tuberculated line: the belly is white and ſmooth.

The pectoral fins are very large, and extend horizontally from the body to a great diſtance; they have ſome reſemblance to wings, ſo writers have given this the name it bears in this work.

The ventral fins are placed in the ſame manner, and the double penis is placed in them, which forms another character of the males in this and the laſt genus.

The tail is bifurcated, the upper lobe rather the longeſt: not very remote from the end on the back are two fins.

II. The

II. The PICKED DOG FISH.

ἀκανθίας γαλέος. *Arift. Hift. an. lib.* vi. *c.* 10. *Oppian Halieut.* I. 380.
Επινωτις *Athenæi lib.* vii. *p.*
L'Efguillats. *Belon.* 61.
Galeus acanthias. *Rondel.* 373. *Gefner. pifc.* 607.
Sperhaye, Dornhundt. *Schoneveldc*, 29.
Galeus acanthias five fpinax. *Wil. Icth.* 56.
The picked dog, or hound fifh. *Raii fyn. pifc.* 21.
Squalus fpinax. *Lin. fyft.* 397. Sq. pinna ani nulla, dorfalibus fpinofis, corpore teretiufculo. *Ibid.*
Sq. pinna ani nulla, corpore fubrotundo. *Arted. fynon.* 94.
Hai. *Faun. fuec. No.* 295. *Gronov. Zooph.* 149.

THE picked dog fifh takes its name from a ftrong and fharp fpine placed juft before each of the back fins, diftinguifhing it at once from the reft of the *Britifh* fharks. Name.

The nofe is long, and extends greatly beyond the mouth, but is blunt at the end. Defcr.

The teeth are difpofed in two rows, are fmall and fharp, and bend from the middle of each jaw towards the corners of the mouth.

The firft back fin is placed nearer the head than the tail; the other is fituated very near the latter.

The tail is finned for a confiderable fpace beneath, and the upper part is much the longeft.

The back is of a brownifh afh-color; the belly white.

It grows to the weight of about twenty pounds.

III. The BASKING SHARK.

Sun-fish. *Smith's Hist. Cork*, ii. 292. *Hist. Waterford*, 271.

THIS species has been long known to the inhabitants of the south and west of *Ireland*, and those of *Caernarvonshire* and *Anglesea*; but having never been considered in any other than a commercial view, has till this time remained undescribed, at least by any *English* writer*; and what is worse, mistaken for and confounded with the *luna* of *Rondeletius*, the same that our *English* writers call the *sunfish*.

The *Irish* and *Welch* give it the same name, from its lying as if to sun itself on the surface of the water; and for the same reason we have taken the liberty of calling it the basking shark. It was long taken for a species of whale, till we pointed out the branchial orifices on the sides, and the perpendicular site of the tail.

These are migratory fish, or at least it is but in a certain number of years that they are seen in multitudes on the *Welch* seas, tho' in most summers a single and perhaps strayed fish appears.

* *Linnæus, p.* 400. mentions a species, which in size, and in some other respects, resembles this; but his differs in having a small anal fin. It is his *Squalus maximus. S. dentibus caninis, pinna dorsali anteriore majore.* He says it inhabites the *arctic* seas, and feeds on *medusæ* (sea jellies) that it rivals the whale in size, has no orifice near the eyes, and has a small anal fin.

They

They visited the bays of *Caernarvonshire* and *Anglesea* in vast shoals, in the summers of 1756 *, and a few succeeding years, continuing there only the hot months, for they quitted the coast about *Michaelmas*, as if cold weather was disagreeable to them.

They had nothing of the fierce and voracious nature of the shark kind, and were so tame as to suffer themselves to be stroked: they generally lay motionless on the surface, commonly on their bellies, but sometimes, like tired swimmers, on their backs.

Food.

Their food seemed to consist entirely of sea plants, no remains of fish being ever discovered in the stomachs of numbers that were cut up, except some green stuff, the half digested parts of algæ, and the like.

At certain times they were seen sporting on the waves, and leaping with vast agility several feet out of the water.

Their length was from three to eleven yards, but the last was a rare size.

Their form was rather slender, like others of the shark kind.

Teeth.

The upper jaw was much longer than the lower, and blunt at the end. The mouth placed beneath, and each jaw furnished with numbers of small teeth: those before were much bent, those more remote in the jaws, were conic and sharp pointed.

On the sides of the neck were five large transverse apertures to the gills.

* Some old people say they recollect the same sort of fish visiting these seas in vast numbers about forty years ago.

On

On the back were two fins; the first very large, not directly in the middle of the back, but rather nearer the head; the other small, and situated near the tail. On the lower part were four others, viz. two pectoral fins, and two ventral fins; the last placed just beneath the hind fin of the back. Near these the male had two genitals, and between these fins was situated the pudendum of the female.

The tail was very large, and the upper part remarkably longer than the lower.

The color of the upper part of the body was a deep leaden; the belly white.

The skin was rough, like shagreen, but less so on the belly than the back.

Within side the mouth, towards the throat, was a very short sort of whalebone.

Liver. The liver was of a great size, but that of the female was the largest; some weighed above a thousand pounds, and yielded a great quantity of pure and sweet oil, fit for lamps, and also much used by the people who took them, to cure bruises, burns, and rheumatic complaints. A large fish has afforded to the captors a profit of twenty pounds. They were viviparous, a young one about a foot in length being found in the belly of a fish of this kind.

Oil.

They were taken with harpoons with long lines fixed to them in much the same manner as whales are, and when struck go off with vast rapidity, and dart instantly to the bottom, taking with them forty or fifty fathom of line, and are a long time before they are quite subdued.

The

The fiſhers obſerved on them a ſort of leech of a reddiſh color, and about two feet long, but which fell off when the fiſh was brought to the ſurface of the water, and left a white mark on the ſkin.

The ſame perſons aſſert, that there were two ſpecies of this fiſh; a leſſer ſort, about two yards in length, which had in the mouth only three rows of teeth, and thoſe larger than in the kind we have deſcribed, being an inch and an half long.

This account we digeſted from materials furniſhed by the Rev. Mr. *Farrington*, and the Rev. Mr. *Williams*, Rector of *Lanvair yn Hornwy*, in *Angleſea*; for it has not been our fortune to ſee more of this fiſh than fragments of the ſkin, jaws, and what is ſtyled whalebone: they have now in a manner quitted the coaſts, ſcarce one in a ſummer appearing in thoſe ſeas.

** With the anal fin.

IV. The WHITE SHARK.

Λαμία ? *Arist. Hist. an. lib.* v. *c.* 5. ix. *c.* 37.
Λάμνη. *Oppian Halieut.* I. 370. v. 36.
Καρχαρίας Κυων. *Athen. lib.* vii. *p.* 310.
Lamia ? *Plinii lib.* ix. *c.* 24.
Le chien carcharien ou Perlz fisch de Norvege. *Belon.* 52. 87.
Lamia. Tiburo. *Rondel.* 489. 390.
Canis Carcharias. *Gesner pisc.* 173.
White Shark. *Wil. Icth.* 47. *Raii syn. pisc.* 18.
Squalus carcharias. Sq. dorso plano dentibus serratis. *Lin. syst.* 400.
Arted. synon. 89. *Gronov. Zooph. No.* 143.

Size. THIS grows to a very great bulk, *Gillius* says, to the weight of four thousand pounds; and that in the belly of one was found a human corps entire, which is far from incredible, considering their vast greediness after human flesh.

They are the dread of the sailors in all hot climates, where they constantly attend the ships in expectation of what may drop overboard; a man that has that misfortune perishes without redemption: they have been seen to dart at him, like gudgeons to a worm. A master of a *Guinea* ship informed me, that a rage of suicide prevailed among his new bought slaves, from a notion the unhappy creatures had, that after death they should be restored again to their families, friends, and country. To convince them at left that they should not re-animate their bodies, he ordered one of their corpses to be tied by the

the heels to a rope, and lowered into the sea, and tho' it was drawn up again as fast as the united force of the crew could be exerted, yet in that short space the sharks had devoured every part but the feet, which were secured at the end of the cord.

Swimmers very often perish by them; sometimes they lose an arm or leg, and sometimes are bit quite assunder, serving but for two morsels for this ravenous animal: a melancholy tale of this kind is related in a *West India* ballad, preserved in Mr. *Percy*'s reliques of ancient *English* poetry*.

The mouth of this fish is furnished with (sometimes) a sixfold row of teeth, flat, triangular, exceedingly sharp at their edges, and finely serrated. We have one that is rather more than an inch and an half long. *Grew*** says, that those in the jaws of a shark two yards in length, are not half an inch, so that the fish to which mine belonged must have been six yards long, provided the teeth and body keep pace in their growth†. Teeth.

This dreadful apparatus, when the fish is in a state of repose, lie quite flat in the mouth, but when he seizes his prey, he has power of erecting them, by the help of a set of muscles that join them to the jaw.

The mouth is placed far beneath, for which reason these, as well as the rest of the kind, are said to

* *Vol.* I. 331.

** *Rarities*, 91.

† Fossil teeth of this fish are very frequent in *Malta*, some of which are four inches long.

be

be obliged to turn on their backs to feize their prey, which is an obfervation as antient as the days of *Pliny**.

The eyes are large; the back broad, flat, and fhorter than that of other fharks. The tail is of a femilunar form, but the upper part is longer than the lower. It has vaft ftrength in the tail, and can ftrike with great force, fo that the failors inftantly cut it off with an axe as foon as they draw one on board.

The pectoral fins are very large, which enables it to fwim with great fwiftnefs.

The color of the whole body and fins is a light afh.

The antients were acquainted with this fifh; and *Oppian* gives a long and entertaining account of its capture. Their flefh is fometimes eaten, but is efteemed both coarfe and rank.

V. The BLUE SHARK.

Γλαυκος. *Ælian. an. lib.* I. *c.* 16.
Galeus glaucus. *Rondel.* 378. *Gefner pifc.* 609.
Blew fhark. *Wil. Icth.* 49. *Raii fyn. pifc.* 20.
Squalus foffula triangulari in extremo dorfo, foraminibus nullis ad oculos, *Arted. fyn.* 98.
Squalus glaucus. *Lin. fyft.* 401.

ÆLIAN relates ftrange things of the affection this fpecies bears to its young: among others, he fays, that it will permit the fmall brood, when in danger, to fwim down its mouth, and take fhel-

* *Omnia autem carnivora funt talia et fupina vefcantur. lib.* IX. *c.* 24.

ter

ter in its belly. This fact has been fince confirmed by the obfervation of one of our beft icthyologifts*, and is no more incredible, than that the young of the *Opoffum* fhould feek an afylum in the ventral pouch of its parent, a fact too well known to be contefted. But this degree of care is not peculiar to the blue fhark, but we believe common to the whole genus.

This fpecies frequents many of our coafts, but particularly thofe of *Cornwall* during the pilchard feafon, and is at that time taken with great iron hooks made on purpofe.

It is of an oblong form: the nofe extends far beyond the mouth: it wants the orifices behind the eyes, which are ufual in this genus: the noftrils are long, and placed tranfverfely. *Artedi* remarks a triangular dent in the lower part of the back. Defcr.

The fkin is fmoother than that of other fharks; the back is of a fine blue color; the belly of a filvery white.

Linnæus fays, that its teeth are granulated; for our part we muft confefs it is a fifh that has not come under our examination, therefore hope to be favored with an accurate defcription from fome Natulift, who lives on the coaft it haunts.

We may add, that *Rondeletius* fays he was an eyewitnefs to its fondnefs for human flefh; that thefe fifh are lefs deftructive in our feas, is owing to the coolnefs of the climate, which is well known to abate the fiercenefs of fome, as well as the venom of other animals.

* *Rondeletius*, 388.

VI. The

VI. The SEA FOX.

Αλωπεξ? *Arist. Hist. an. lib.* ix. *c.* 37. *Ælian Var. Hist. lib.* I. *c.* 5.
Oppian Halieut. I. 381. iii. 144.
Vulpes *Plinii. lib.* ix. *c.* 43.
Singe de mer. *Belon.* 88.
Vulpes marina. *Rondel.* 337. *Gesner pisc.* 1045.
Cercus *Caii opusc.* 110.
Sea Fox, or Ape. *Wil. Icth.* 54. *Raii syn. pisc.* 20.
Squalus cauda longiore quam ipsum corpus. *Arted. syn.* 96.
Sea Fox. Thresher. *Borlase Cornwall.* 265.

Tail. THIS fish is most remarkable for the great length of the tail: the whole measure of that we had an opportunity of examining, was thirteen feet, of which the tail alone was more than six, the upper part extending greatly beyond the lower, almost in a strait line.

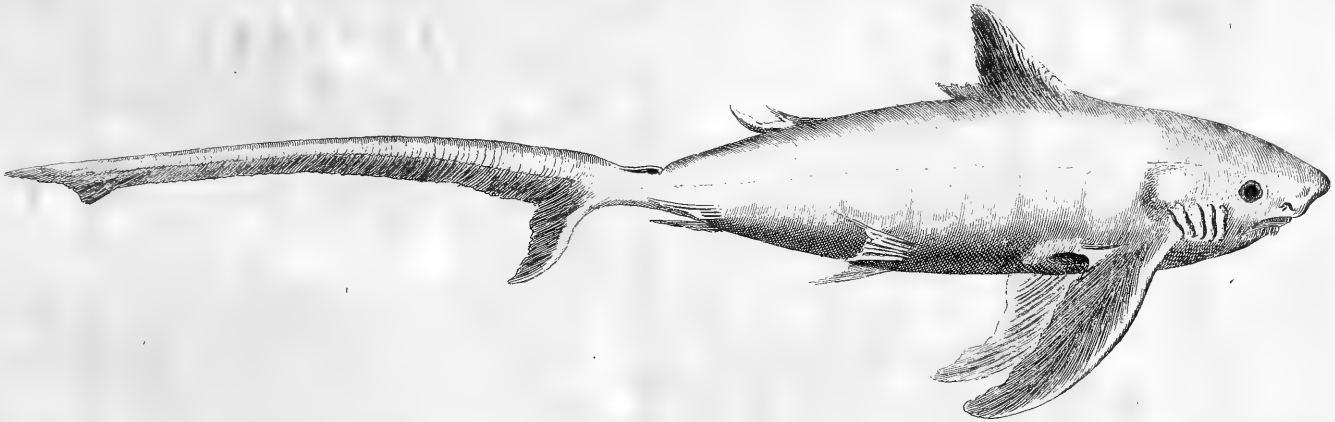
The body was round and short: the nose short but sharp pointed: the eyes large, and placed immediately over the corners of the mouth, which was small, and placed not very distant from the end of the nose.

The teeth are small for the size of the fish, and placed in three rows.

The back was ash-color; the belly white.

The antients styled this fish Αλωπεξ, and *Vulpes*, from its supposed cunning. They believed, that when it had the misfortune to have taken a bait, it swallowed the hook till it got at the cord, which it bit off, and so escaped.

They are sometimes taken in our seas, and have been imagined to be the fish called the *Thresher*, from



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from its attacking and beating the *Grampus* with its long tail, whenever that fpecies of whale rifes to the furface to breathe.

VII. The T O P E.

Κυων? *Arift. Hift. an. lib.* vi. *c.* 11.
Canicula? *Plinii lib.* ix. *c.* 46.
Le chien de mer, ou Canicule. *Belon.* 65.
Canis galeus. *Rondel.* 377. *Gefner pifc.* 167.
The Tope. *Wil Icth.* 51. *Raii fyn. pifc.* 20.
Squalus naribus ori vicinis; foraminibus exiguis ad oculos. *Arted. fynon.* 97.
Squalus galeus. *Lin. fyft.* 399. *Gronov. Zooph. No.* 142.

ONE that was taken on our coaft the laft year weighed twenty-feven pounds, and its length was five feet; but they grow to a greater fize, fome, according to *Artedius*, weighing an hundred pounds. Size.

The color of the upper part of the body and fins was a light cinereous; the belly white.

The nofe was very long, flat, and fharp pointed; beyond the noftrils femitranfparent. The noftrils were placed very near the mouth.

Behind each eye was a fmall orifice. The teeth were numerous, difpofed in three rows, fmall, very fharp, triangular, and ferrated on their inner edge.

The firft back fin was placed about eighteen inches from the head; the other very near the tail.

The tail finned beneath, the upper part ended in a fharp angle.

This fpecies is faid by *Rondeletius* to be very fierce and voracious, even to purfue its prey to the edge of the fhore.

Its skin and flesh has an offensive rank smell; therefore we suppose Mr. *Dale* gave it ironically the title of *Sweet William* *.

VIII. The GREATER DOG FISH.

Νεβριας. Σκύλιος, Ασεβίας? *Arist. Hist. an. lib.* v. *c.* 10. vi. *c.* 10, 11.
Ποικιλος? *Oppian Halieut.* l. 381.
La Roussete commune. *Belon* 65.
Canicula *Aristotelis.* *Rondel.* 380. *Gesner pisc.* 168.
Catulus major vulgaris. *Wil. Icth.* 62.
Greater Cat fish: the Bounce. *Raii syn. pisc.* 22.
Squalus ex rufo varius, pinna ani medio inter anum et caudem pinnatum. *Arted. syn.* 97.
Squalus canicula. *Lin. syst.* 399. *Gronov. Zooph. No.* 145.
Greater Cat fish. *Edw.* 289.

THIS species being remarkably spotted, may be the same known to antients by the names expressed in the synonyms; but they so frequently leave such slight notices of the animals they mention, that we are often obliged to add a doubtful mark (?) to numbers of them.

Descr. The weight of one we took was six pounds three ounces, and yet it measured three feet eight inches in length; so light are the cartilaginous fish in respect to their size.

The nose was short, and very blunt, not extending above an inch and an half beyond the mouth. The nostrils were large, placed near the mouth, and covered with a large angular flap: the head very flat.

* *Hist. Harwich*, 420.

The

The eyes were oblong, behind each a large orifice opening to the inſide of the mouth.

The teeth ſmall, ſharp, ſmooth at their ſides, ſtrait, and diſpoſed in four rows.

Both the back fins were placed much behind, and nearer the tail than in common.

The tail was finned, and below extended into a ſharp angle.

The color of the whole upper part of the body, and the fins, was brown, marked with numbers of large diſtinct black ſpots: ſome parts of the ſkin were tinged with red; the belly was white.

The whole was moſt remarkably round, and had a ſtrong ſmell.

We think it is this ſpecies which furniſhes what anglers call *Indian graſs*, being the tendrils that iſſue from each end of the purſe of this fiſh, which are much more delicate and ſlender than thoſe of any other.

The female of this ſpecies, and we believe of other ſharks, is greatly ſuperior in ſize to the male; ſo that in this reſpect there is an agreement between the fiſh and the birds of prey *. They bring about nineteen young at a time: the fiſhermen believe that they breed at all times of the year, as they ſcarce ever take any but what are with young.

To this kind may be added, as a meer variety, the

Catulus maximus. *Wil. Icth.* 63. *Raii ſyn. piſc.* 22.
Squalus cinereus, pinnis ventralibus diſcretis. *Arted. ſyn.* 97.
Squalus ſtellaris. *Lin. ſyſt.* 399.
No. 145. *Gronov. Zooph.*

* Vide *Britiſh Zoology*, *vol.* I. 130.

The chief difference seeming to be in the color and the size of the spots; the former being grey, the latter fewer but larger than in the other.

IX. The LESSER DOG FISH.

Le muscarol? *Belon.* 64.
Catulus minor. *Wil. Ich.* 64.
Lesser Rough Hound, or Morgay. *Raii syn. pisc.* 22.
Squalus dorso vario, pinnis ventralibus concretis. *Arted. synon.* 97.
Squalus catulus. *Lin. syst.* 400. *Gronov. Zooph. No.* 144.

THE weight of one that was brought to us by a fisherman was only one pound twelve ounces; the length two feet two inches: it is of a slender make in all parts.

The head was flat: the nostrils covered with a long flap: the nose blunt, and marked beneath with numerous small punctures: behind each eye was a small orifice: the back fins like those of the former, placed far behind.

The ventral fins are united, forming as if it were but one, which is a sure mark of this species.

The tail finned like that of the greater dog fish.

The color is cinereous, streaked in some parts with red, and generally marked with numbers of small black spots; but we have observed in some that they are very faint and obscure.

The belly is white.

This species breeds from nine to thirteen young at a time, are very numerous on some of our coasts, and very injurious to the fisheries.

X. The

X. The SMOOTH HOUND.

Γαλεος λεῖος? *Arift. Hift. an. lib.* vi. *c.* 10. *Oppian. lib.* I. 380.
Galeus lævis. *Rondel.* 375. *Gefner pifc.* 608.
Muftelus lævis primus. *Wil. Icth.* 60.
Smooth or unprickly hound. *Raii fyn. pifc.* 22.
Squalus dentibus obtufis feu granulofis. *Arted. fyn.* 93.
Squalus muftelus. *Lin. fyft.* 400. *Gronov. Zooph. No.* 142.

THIS fpecies is called fmooth, not that the fkin is really fo, but becaufe it wants the fpines on the back, which are the character of the fecond fpecies, the Picked Dog.

The nofe extends far beyond the mouth, and the end blunt: the holes behind the eyes are fmall; the back is lefs flat than that of others of this genus.

The firft back fin is placed midway above the pectoral and ventral fins: the pectoral fins are fmall.

The tail forked, but the upper part is much the longeft.

The teeth refemble thofe of a Ray, rough and fharp.

The color of the back and fides afh, and free from fpots; the belly filvery.

XI. The PORBEAGLE.

The Porbeagle. *Borlase Cornwall*, 265. *tab.* 26.

THE figure of this fish, engraved after a drawing by the Rev. Mr. *Jago* *, is preserved in Doctor *Borlase*'s Natural History of *Cornwall*.

As it is not attended with any account farther than that it is a *Cornish* fish, and a small species of shark, we are obliged to form the best description we can from the print.

The nose appears to be very long, slender towards the end, and sharp pointed. The mouth placed far beneath; the body very thick and deep, but extremely slender, just at the setting on of the tail.

The first back fin is placed almost in the middle, the other pretty near the tail.

The belly very deep: the ventral and anal fins small.

The tail bifurcated; the upper fork a little longer than the lower.

* This gentleman was minister of *Loo*, in *Cornwall*, and appears to have been well acquainted with the History of Fish. He communicated figures of several of the *Cornish* fish, with a brief account of each to *Petiver*, at whose instance, as Doctor *Derham* tells us, in the preface to Mr. *Ray*'s Itineraries, p. 69, he added them to the Synopsis *Avium et piscium*, p. 162. A few others of his drawings are also preserved in the Natural History of *Cornwall*, and seem to be executed with skill and accuracy.

Genus

Genus VII. One aperture behind each ventral fin.
Large, flat, and circular head and body.
Teeth numerous and fmall in the jaws, roof of the mouth, and on the tongue.
Pectoral fins broad and thick.

FISHING FROG.

I. The COMMON FISHING FROG.

Βατραχος. *Arift. Hift. an. lib.* iv. *c.* 37. *Oppian Halieut.* ii. 86.

Rana pifcatrix. *Ovid. Halieut.* 126. *Plinii lib.* ix. *c.* 24.

La Grenoille de mer, ou pefcheufe. Le Diable de mer, Bauldroy & Pefcheteau. *Belon.* 77.

Rana pifcatrix. *Rondel.* 363. *Gefner pifc.* 813.

Seheganfs, feheteuffel, fehetode. *Schonevelde*, 59.

Toad-fifh, Frog-fifh, or Sea-Devil. *Wil. Icth.* 85. *Raii fyn. pifc.* 29.

Lophius ore cirrofo. *Arted. fyn.* 87.

Lophius pifcatorius. *Lyn. fyft.* 402.

L. p. depreffus capite rotundato. *Faun fuec. No.* 298. *Gronov. Zooph. No.* 207.

THIS fingular fifh was known to the antients by the name of Βατραχος, and *Rana*, and to us by that of the fifhing frog, for it is of a figure refembling that animal in a tadpole ftate. *Pliny* takes notice of the artifice ufed by it to take its prey: *Eminentia fub oculis cornicula turbato limo exerit, affultantes pifciculos attrahens, donec tam prope accedant, ut affiliat.* "It puts forth the flender horns "it has beneath its eyes, enticing by that means the Name.

"little fish to play round, till they come within "reach, when it springs on them*.

Descr. The fishing frog grows to a large size, some being between four and five feet in length; and we have heard of one taken near *Scarborough*, whose mouth was a yard wide. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the dog fish**, and whenever they take it with their lines, always set it at liberty.

It is a fish of very great deformity: the head is much bigger than the whole body, is round at the circumference, and flat above: the mouth of a prodigious wideness.

The under jaw is much longer than the upper: the jaws are full of slender sharp teeth: in the roof of the mouth are two or three rows of the same: at the root of the tongue, opposite each other, are two bones of an elliptical form, thick set, with very strong sharp teeth.

The nostrils do not appear externally, but in the upper part of the mouth are two large orifices that serve instead of them.

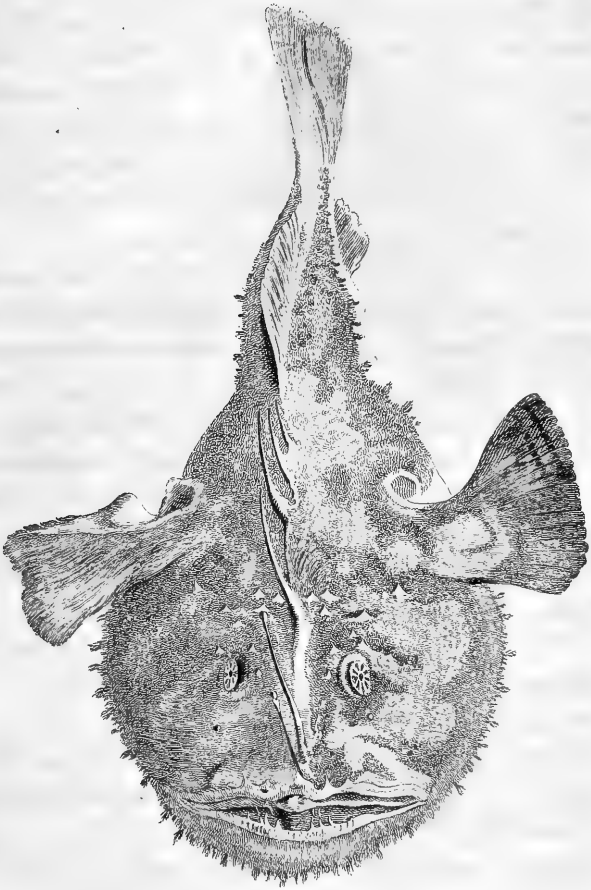
On each side the upper jaw are two sharp spines, and others are scattered about the upper part of the head.

Immediately above the nose are two long tough filaments, and on the back three others; these are

* *Cicero*, in his second of *De Natura Deorum*, gives much the same account of this fish: *Ranæ autem marinæ dicuntur obruere sese arena solere, et moveri propè aquam, ad quas, quasi ad escam, pisces cum accesserint, confici a ranis, atque consumi.*

** The bodies of these fierce and voracious fish are often found in the stomach of the *Fishing Frog*.

what



FISHING FROG.

Wat Williams del

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what *Pliny* calls *cornicula*, and ſays it makes uſe of to attract the little fiſh.

Along the edges of the head and body are a multitude of ſhort fringed ſkins, placed at equal diſtances.

The ventral fins are broad, thick, and fleſhy, are jointed like arms, and within ſide divided into fingers.

The aperture to the gills is placed behind, each of theſe is very wide, ſo that ſome writers have imagined it to be a receptacle for the young in time of danger.

The back fin is placed very low near the beginning of the tail: the anal fin is placed beneath, almoſt oppoſite the former.

The body grows ſlender near the tail, the end of which is quite even.

The color of the upper part of this fiſh is duſky, the lower part white; the ſkin ſmooth.

II. The LONG FISHING FROG.

Fiſhing Frog of Mount's-Bay. *Borlaſe Cornwall*, 266. *tab.* 27. *fig.* 6. *Phil. Tranſ. vol.* liii. 170.

THIS is a ſpecies at preſent unknown to us, except by deſcription.

It is, ſays Doctor *Borlaſe*, of a longer form than the common kind: the head more bony, rough, and aculeated. It had no fin like appendages round the head, but on each ſide the thinner part of the body, beginning beneath the dorſal fin, and reaching within

two

two inches of the tail, was a series of them, each three quarters of an inch in length.

At the end of the pectoral fins were spines an inch and three quarters in length; at the end of the tail others three quarters of an inch long.

Genus VIII. One narrow aperture on each side.
The mouth placed far below, tubular and without teeth.
The body long, and often angular.

STURGEON.

I. The STURGEON.

Ονισκος. *Athen. lib.* viii. 315.
A'κκιπησιος? *Athen. p.* 294.
Acipenser? *Plinii lib.* ix. *c.* 17. *Ovidii Halieut?*
L'Esturgeon, *Belon.* 89.
Acipenser. *Rondel.* 410. *Gesner pisc.* 2.
Sturio. *Gesner pisc.*
Stoer. *Schonevelde.* 9.
Sturgeon. *Wil. Icth.* 239. *Raii syn. pisc.* 112.
Schirk. *Kram.* 383.
Acipenser corpore tuberculis spinosis exasperato. *Arted. syn.* 91.
Acipenser sturio. *Lin. syst.* 403. *Mus. Ad. Fred.* 54. *tab.* 18. *fig.* 2.
Stor. *Faun. suec. No.* 299.
Seb. Mus. iii. 101. *tab.* 29. *No.* 19.

THAT this is the ὀνισκος of *Dorion*, as quoted by *Athenæus*, is very probable, as well from the account he gives of its form, as of its nature. He says its mouth is always open, with which it agrees with the sturgeon, and that it conceals itself in the hot months: this shews it to be a fish of a cold nature, which is confirmed by the history of the

the *European* fifh of this fpecies, given by Mr. *Forfter**, in his Effay on the *Volga*, who relates that they are fcarce ever found in that river in fpring or fummer, but in vaft quantities in autumn and winter, when they crowd from the fea under the ice, and are then taken in great numbers.

Whether the *acipenfer* is the fturgeon of the moderns, may be doubted, otherwife *Ovid* would never have fpoke of it as a foreign fifh :

> *Tuque peregrinis, Acipenfer, nobilis undis.*
> And, thou, a fifh in foreign feas renowned.

It being well known that it is not uncommon in the *Mediterranean*, and even in the mouth of the *Tiber*, at certain feafons; but this paffage leaves us as much in the dark as to the particular fpecies intended, by the word *acipenfer*, as the defcription *Pliny* has given us; for that philofopher relates, that its fcales are placed in a contrary direction to thofe of other fifh, being turned towards the mouth, which difagrees with the character of all that are known at prefent. Whatever fifh it might be, it was certainly the fame with the *Elops*, or *Helops*, as appears both from *Pliny*, and another line of the poet before-mentioned :

> *Et pretiofus Helops noftris incognitus undis.*
> The pretious *Helops* ftranger to our feas.

The fturgeon annually afcends our rivers, but in no great numbers, and is taken by accident in the Migratory.

* *Phil. Tranf.* lvii. 352.

falmon

salmon nets. It seems a spiritless fish, making no manner of resistance when entangled, but is drawn out of the water like a lifeless lump. It is a fish that is seldom taken far out at sea, but frequents such parts as are not remote from the æstuaries of great rivers. It is admired for the delicacy and firmness of its flesh, which is white as veal, and extremely good when roasted. It is generally pickled. The most we receive comes either from the *Baltic* rivers, or *North America:* those cured at *Pillau* have been, till of late, in the greatest repute; but thro' the encouragement given by the society instituted for promoting trade and manufactures, the sturgeon from our colonies begins to rival those of the *Baltic*.

Great numbers are taken during summer in the lakes *Frische-haff*, and *Curisch-haff* near *Pillau*, in large nets made of small cord. The adjacent shores are formed into districts, and farmed out to companies of fishermen, some of which are rented for six thousand guilders, or near three hundred pounds *per annum*.

They are found in vast abundance in the *American* rivers in *May*, *June*, and *July*, at which time they leap some yards out of the water, and falling on their sides, make a noise to be heard in still weather at some miles distance*.

Caviare. *Caviare* is made of the roes of this, and also of all the other sorts of sturgeons, dried, salted, and packed up close. The best is said to be made of those of the *Sterlet***, a small species frequent in

* *Catesby Carol. App.* 33. ** *Strahlenberg's Hist. Russia*, 337.

the

the *Yaik* and *Volga*. * *Icthyocolla*, or ising-glass, is also made of the *sound* of our fish, as well as that of the others, but the *Beluga* affords the best**.

The sturgeon grows to a great size, to the length of eighteen feet, and to the weight of five hundred pounds, but it is seldom taken in our rivers of that bulk. The largest we have known caught in those of *Great Britain* weighed four hundred and sixty pounds, which was taken about two years ago in the *Esk*, where they are more frequently found than in our southern waters. Descr.

The nose is very long, slender, and ends in a point. The eyes are extremely small; the nostrils placed near them: on the lower part of the nose are four cirri or beards: the mouth is situated far beneath, is small, and unsupported by any jaw bones; neither has it any teeth.

The body is long, pentagonal, and covered with five rows of large bony tubercles: one row of which is placed on the back, and two on each side. The whole under side of the fish, from the end of

* *Phil. Trans.* lvii. 354. a very small quantity is made from this species, and that only designed as presents to great men, as Mr. *Forster* assured me.

** The antients were acquainted with the fish that afforded this drug. *Pliny lib* xxxii. *c.* 7. mentions it under the name of *Icthyocolla*, and says, that the glue that was produced from it had the same title; and afterwards adds, that it was made out of the belly of the fish. The *Mario*, said by *Pliny lib.* ix. *c.* 15. to be found in the *Danube* and the *Borysthenes*, was certainly of this genus, a cartilaginous fish *(nullis ossibus spinisve interfitis)* resembling a small porpesse *(Porculo marino simillimus;)* and very probably may be the same with the *Beluga*, which, according to Mr. *Forster*, *Phil. Trans.* lvii. 354. has a short blunt nose, agreeing in that respect with the porpesse.

the

the nofe to the vent, is flat; on the back, not remote from the tail, is a fingle fin. It has befides two pectoral fins, two ventral and one anal fin. The tail is bifurcated, but the upper part much longer than the lower.

The upper part of the body is of a dirty olive color: the lower part filvery; the middle of the tubercles white.

In the manner of breeding it is an exception among the cartilaginous fifh, being like the bony fifh oviparous, fpawning in winter.

Genus IX. A very deep body, and as if cut off in the middle.
Mouth fmall.
Two teeth only in each jaw.
SUN-FISH.

I. The OBLONG SUN-FISH.

Sun-Fifh from Mount's-Bay. *Borlafe Cornwall*, 268. *tab.* 26. *fig.* 7.

Oftracion lævis. *Gronov. Zooph. No.* 185.

RONDELETIUS has given this genus the fynonym of *Orthragorifcus*, as if it was that which *Pliny** intended by the fame name; but the account left us by that Naturalift is fo brief, that we do not think ourfelves authorized to place it as

* *Lib.* xxxii. *c.* 2.

a fynonymous creature. He fays no more than that it was the greateft of fifh, and that it grunted when it was firft taken, from which probably rofe the name, for according to *Athenæus*, ὀρθραγοριστής *, was that given to a young pig. We are inclined to believe, that this fifh had efcaped the notice of *Pliny*, otherwife he muft have unavoidably made fome remark on its ftriking figure.

They grow to a very large fize: one that was taken near *Plymouth* in 1734, weighing five hundred pounds. Size

In form it refembles a bream, or fome deep fifh cut off in the middle. The mouth is very fmall, and contains in each jaw two broad teeth, with fharp edges. Defcr.

The eyes are little; before each is a fmall femilunar aperture; the pectoral fins very fmall, and placed behind them. The dorfal fin, and the anal fin are high, and placed at the extremity of the body: the tail fin is narrow, and fills all the abrupt fpace between thofe two fins.

The color of the back is dufky, and dappled; the belly filvery: between the eyes and the pectoral fins are certain ftreaks pointing downwards. The fkin is free from fcales.

When boiled, it has been obferved to turn into a glutinous jelly, refembling boiled ftarch when cold, and ferved the purpofes of glue, on being tried on paper and leather.

* *Lib.* iv. *p.* 140.

There

There seems to be no satisfactory reason for the *English* name, yet to prevent confusion from the multiplication of titles, we chuse to retain that it has been so long known by; but care must be taken not to confound it with the sun-fish of the *Irish*, which differs in all respects from this*.

II. The SHORT SUN-FISH.

Orthragoriscus sive Luna piscis. *Rondel.* 424.

Mola *Salviani*, the Sun-fish. *Wil. Icth.* 151. *Raii syn. pisc.* 51.

Ostracion cathetoplateus subrotundus inermis asper, pinnis pectoralibus horizontalibus, foraminibus quatuor in capite. *Arted. synon.* 83.

Tetraodon mola. T. lævis, compressus, cauda truncata, pinna brevissima dorsali analique annexa. *Lin. syst.* 412. *Gronov. Zooph. No.* 186.

Sun-fish, from Loo. *Borlase Cornwall.* 267. *tab.* 26. *fig.* 6.

THIS differs from the former in being much shorter and deeper. The back and the anal fins are higher, and the aperture to the gills not semilunar, but oval. The situation of the fins are the same in both.

This species was taken off *Penzance*, and is engraved in Doctor *Borlase*'s Natural History of *Cornwall*, from one of Mr. *Jago*'s drawings. Both kinds are taken on the western coasts of this kingdom, but in much greater numbers in the warmer parts of *Europe*.

* *Vide p.* 78.

Genus

Genus X. Thick body, arched back.
Ventral fins united.
Four branchioftegous rays.

LUMP FISH.

Lumpus anglorum. *Gefner Paralip.* 25.
Seehaefs, Haffpodde. *Schoneveldc.* 41.
Lump, or Sea-Owl, *Scotis* Cock paddle. *Wil. Ich.* 208. *Raii fyn. pifc.* 77.
Cyclopterus. *Arted. fynon.* 87. *Gronov. Zooph. No.* 197.
Cyclopterus Lumpus. C. corpore fquamis offeis angulato. *Lin. fyft.* 414.
Sjurygg-fifk, Stenbit, Quabbfu. *Faun. fuec. No.* 320.

I. The LUMP FISH.

THIS fingular fifh encreafes to the weight of four pounds, and the length of fixteen inches: the fhape of the body is like that of the bream, deep but very thick, and it fwims edgeways. The back is fharp and elevated, the belly flat.

The irides are of a cherry color; lips, mouth, and tongue, of a deeper red: the jaws lined with innumerable fmall teeth; the tongue very thick; along the ridge of the back is a row of large bony tubercles; from above the eye to within a fmall fpace of the tail is another row; beneath that a third, commencing at the gills; and on each fide the belly a fourth row, confifting of five tubercles like the other: the whole fkin is rough, with fmall tubercles. Defcr.

On the lower part of the back is a thick knob, improperly called a fin, being destitute of spines; beneath that is the dorsal fin, of a brownish hue, reaching within an inch of the tail: on the belly, just opposite, is another of the same form. The belly is of a bright crimson color: the pectoral fins are large and broad, almost uniting at their base. Beneath these is the part by which it adheres to the rocks, &c. It consists of an oval aperture, surrounded with a fleshy muscular and obtuse soft substance, edged with small threaded appendages, which concur as so many claspers: tail and vent fins purple.

By means of this part it adheres with vast force to any thing it pleases. As a proof of its tenacity we have known, that on flinging a fish of this species just caught, into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail by that means was lifted, tho' it held some gallons, and that without removing the fish from its hold.

Great numbers of these fish are found in the *Greenland* seas during the months of *April* and *May*, when they resort near the shore to spawn. Their roe is remarkably large, which the *Greenlanders* boil to a pulp, and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food: they call them *Nipisets*, or *Catfish*, and take quantities of them during the season*.

This fish is sometimes eaten in *England*, being stewed like carp, but is both flabby and insipid.

* *Crantz's Hist. Greenland*, I. 96.

II. The

II. The SEA SNAIL.

Liparis? *Rondel.* 272. *Gefner pifc.* 483.
Liparis noftras *Dunelm et Eborac.* Sea Snail. *Wil. Icth. App.* 17. *Raii fyn. pifc.* 74. *Pet. Gaz. tab.* 51. *fig.* 5.
Liparis. *Arted. fynon.* 117.
Cyclopterus Liparis. C. corpore nudo, pinnis dorfali anali caudalique unitis. *Lin. fyft.* 414.
Cyclogafter. *Gronov. Zooph. No.* 198.

THE fea fnail takes its name from the foft and unctuous texture of its body, refembling that of the land fnail. It is almoft tranfparent, and foon diffolves and melts away.

It is found in the fea near the mouths of great rivers.

The length is five inches: the color when frefh taken a pale brown: the fhape of the body round, but near the tail compreffed fideways: the belly is white, and very protuberant. Defcr.

The head is large, thick, and round. There are no teeth in the mouth, but the jaws are very rough: the tongue very large.

The orifice to the gills is very fmall.

The pectoral fins are very broad, thin, and tranfparent, and almoft unite under the throat. The firft ray next the throat is very long, extends far beyond the reft, and is as fine as a hair. Over the bafe of each is a fort of operculum, or lid, ending in a point: this is capable of being raifed or depreffed at pleafure.

Behind the head begins the dorfal fin, which extends quite to the end of the tail: the ventral fin begins at the anus, and unites with the other at the tail.

Beneath the throat is a round depreffion of a whitifh color, like the impreffion of a feal, furrounded by twelve fmall pale yellow tubera, by which it is probable it adheres to the ftones like the other fpecies.

Genus XI. Nofe long and tubular.
No orifice to the gills:
The breathing aperture on the hind part of the head.
No ventral fins.
The body covered with a ftrong cruft. PIPE FISH.

I. The LONGER PIPE FISH.

Acus *Ariftotelis* caudâ fcrpentinâ. *Sib. Scot.* 24. *tab.* 19.
Typhle altera. *Gefner pifc.* 1025.
Syngnathus corpore quadrangulo, pinnâ caudæ carens? *Arted. Spec.* 3.
Syngnathus barbarus. S. pinnis caudæ anique nullis, corpore fexangulato? *Lin. fyft.* 417.

THIS fpecies, defcribed by Sir *Robert Sibbald*, was two feet in length; that we examined only fixteen inches.

The nofe was an inch long, compreffed fideways, and the end of the lower mandible turned up: the aperture of the mouth was very fmall.

The

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PIPE FISH.

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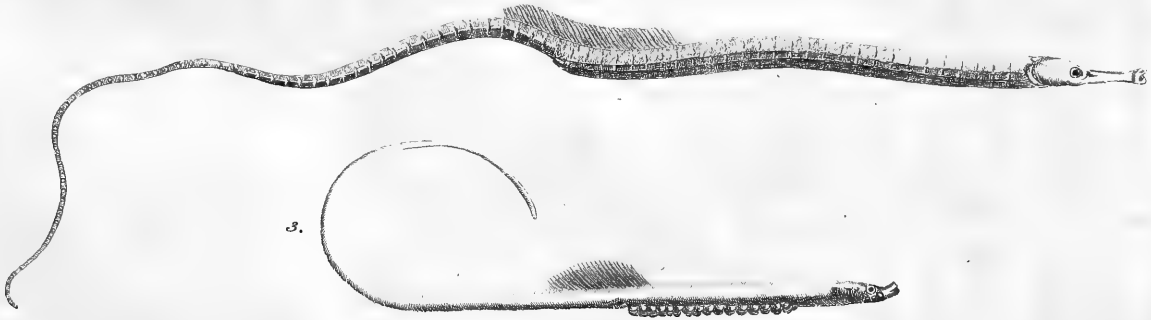
2.



3.

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The irides were red; behind each eye was a deep brown line.

The body, in the thickeft part, was about equal to a fwan's quil, and angular; but the angles not being very fharp, they were not eafily feen till the fifh was dried: the belly was flightly carinated, and marked along the middle with a dufky line.

The general color of the fifh was an olive brown: the fides marked with numbers of bluifh lines pointing from the back to the belly, which, in dried fifh, feemed like the figns of fo many joints. Thofe in a frefh fubject ceafed beyond the vent; all beyond that was fpotted with brown.

The dorfal fin was narrow and thin, confifting of thirty-eight rays, was two inches long, and placed rather nearer to the head than the tail.

The vent was feven inches from the tip of the nofe; the body to that orifice was of an equal thicknefs, but from thence tapered to a very fmall point, having no mark of a fin.

The pectoral fins were alfo wanting; in fhort, all except the back fin.

When this fifh and the next fpecies are dried, they appear covered with numbers of angular crufts, finely radiated from their centre.

They are viviparous; for on crufhing one that was juft taken, hundreds of very minute ones were obferved to crawl about.

As we want a generical name in our language for this genus, we call it the *Pipe Fifh*, from its flender body.

II. The SHORTER PIPE FISH.

L'Orueul marin. *Belon.* 446.
Acus secunda species, sive, acus *Aristotelis. Rondel.* 229.
Typhle. *Gesner pisc.* 1025.
Trummeter, Meherschlange. *Schonevelde*, 11.
Acus *Aristotelis* seu secunda. *Wil. Icth.* 158. *Raii syn. pisc.* 47.
Syngnathus corpore medio heptagono, caudâ pinnatâ. *Arted. synon.* 2.
Syngnathus acus. S. pinnis caudæ ani pectoralibusque radiatis, corpore septem-angulato. *Lin. syst.* 416.
Kantnahl. *Faun. suec. No.* 376.
Syngnathus cauda pinnata. *Gronov. Zooph. No.* 172.
Sea-adder. *Barlase Cornw.* 267.

THIS is shorter and thicker than the former, not exceeding twelve inches in length. The middle of the body in some is hexangular, in others heptangular. *Linnæus* constitutes two species of them, his *Syngnathus Typhle*, and his *Syngnathus Acus*; but we join with Doctor *Gronovius*, in thinking them only varieties of the same fish.

The mouth is formed like that of the former: the irides are yellow: close behind the head are the pectoral fins, which are small and short.

On the lower part of the back is one narrow fin; beyond the vent the tail commences, which is long and quadrangular.

At the extremity is a fin round and radiated.

The body is covered with a strong crust, elegantly divided into small compartments.

The belly is white; the other parts brown.

Besides these species of hard-skinned Pipe fish, we have been informed, that the *Syngnathus Hippocampus* of *Linnæus*, or what the *English* improperly call the sea horse, has been found on the southern shores of this kingdom.

III. The

III. The LITTLE PIPE FISH.

Acui *Ariftotelis* congener pifciculus, pueris cornubienfibus *Sea Adder*, Acus Lumbriciformis, aut Serpentinus. *Wil. Icth.* 160. *Raii fyn. pifc.*
Syngnathus teres, pinnis pectoralibus caudaque carens. *Arted. fynon.* 2.
Syngnathus ophidion. *Lin. fyft.* 417.
Hafsnahl, Tangfnipa. *Faun. fuec. No.* 375.

THE little pipe fifh feldom exceeds five inches in length, is very flender, and tapers off to a point. It wants both the pectoral and tail fins; is covered with a fmooth fkin, not with a cruft as the two former kinds are.

The nofe is fhort and turns a little up; the eyes prominent.

On the back is one narrow fin.

This fpecies is not viviparous: on the belly of the female is a long hollow, to which adhere the eggs, difpofed in two or three rows, are large, and not numerous.

Doctor *Gronovius* makes this fynonymous with the fifh defcribed by Sir *Robert Sibbald*, poffibly from not having an opportunity of comparing them. To fhew their differences the more ftrongly, we have caufed both fpecies to be engraved in the fame plate, and alfo the two varieties of our fecond fpecies.

The fynonym of *Serpent* is ufed in feveral languages to exprefs thefe fifh: the *French* call one fpecies *Orueul*, from a fort of fnake not unlike the blindworm: the *Germans* call it *Meherfchlange*; and the *Cornifh*, the fea adder.

Div. III. BONY FISH.

Sect. I. APODAL.

Genus XII. Body, long, ſlender, and ſlippery.
Noſtrils tubular.
Back, ventral, and tail fins, united.
Aperture to the gills ſmall, and placed behind the pectoral fins.
Ten branchioſtegous rays. EEL.

I. The EEL.

Εγχέλυς. *Ariſt. Hiſt. an. lib.* iv. *c.* 11. vi. 14. 16. *Oppian Halieut.* I. 516. iv. 450.
Anguilla *Plinii lib.* ix. *c.* 21.
L'Anguille. *Belon.* 291. *Obſ.* 55.
Anguilla. *Rondel. fluv.* 198. *Geſner piſc.* 40.
Ael. *Schonevelde,* 14.
The Eel. *Wil. piſc.* 109. *Raii ſyn. piſc.* 37.
Muræna unicolor maxilla inferiore longiore. *Art ed. ſyn.* 39.
Muræna anguilla. *Lin. ſyſt.* 426. *Gronov. Zooph. No.* 166.
Ahl. *Faun. ſuec. No.* 301. Aal. *Kram.* 387.

THE eel is a very ſingular fiſh in ſeveral things that relate to its natural hiſtory, and in ſome reſpects borders on the nature of the reptile tribe.

It is known to quit its element, and during night to wander along the meadows, not only for change

change of habitation, but alfo for the fake of prey, feeding on the fnails it finds in its paffage.

During winter it beds itfelf deep in the mud, and continues in a ftate of reft like the ferpent kind. It is very impatient of cold, and will eagerly take fhelter in a whifp of ftraw flung into a pond in fevere weather, which has fometimes been practifed as a method of taking them. *Albertus** goes fo far as to fay, that he has known eels to take fhelter in a hay-rick, yet all perifhed thro' excefs of cold.

It has been obferved, that in the river *Nyne*** there is a variety of fmall eel, with a leffer head and narrower mouth than the common kind, that is found in clufters in the bottom of the river, and is called the *Bed-eel:* thefe are fometimes rouzed up by violent floods, and are never found at that time with meat in their ftomachs. This bears fuch an analogy with the cluftering of blindworms in their quiefcent ftate, that we cannot but confider it as a further proof of a partial agreement in the nature of the two genera.

Generation. The antients adopted a moft wild opinion about the generation of thefe fifh, believing them to be either created from the mud, or that the fcrapings of their bodies which they left on the ftones, were animated and became young eels. Some moderns gave into thefe opinions, and into others that were equally extravagant. They could not account for

* *Gefner pifc.* 45.

** *Morton's Hift. Northampt.* 419, *Pliny* obferves, that the eels of the lake *Benacus* collect together in the fame manner in the month of *October*, poffibly to retreat from the winter's cold. *lib.* ix. *c.* 22.

the

the appearance of thefe fifh in ponds that never were ftocked with them, and that were even fo remote as to make their being met with in fuch places a phænomenon that they could not folve. But there is much reafon to believe, that many waters are fupplied with thefe fifh by the aquatic fowl of prey, in the fame manner as vegetation is fpread by many of the land birds, either by being dropped as they carry them to feed their young, or by paffing quick thro' their bodies, as is the cafe with herons; and fuch may be occafion of the appearance of thefe fifh in places where they were never feen before. As to their immediate generation, it has been fufficiently proved to be effected in the ordinary courfe of nature, and that they are viviparous. Viviparous.

They are extremely voracious, and very deftructive to the fry of fifh.

No fifh lives fo long out of water as the eel: it is extremely tenacious of life, as its parts will move a confiderable time after they are flayed and cut into pieces.

The eel is placed by *Linnæus* in the genus of *Muræna*, his firft of the apodal fifh, or fuch which want the ventral fins. Defcr.

The eyes are placed not remote from the end of the nofe: the irides are tinged with red: the under jaw is longer than the upper: the teeth are fmall, fharp, and numerous: beneath each eye is a minute orifice: at the end of the nofe two others, fmall and tubular.

This

This fifh is furnifhed with a pair of pectoral fins, rounded at their ends. Another narrow fin on the back, uniting with that of the tail; and the anal fin joins it in the fame manner beneath.

Behind the pectoral fins is the orifice to the gills, which are concealed in the fkin.

Silver Eels. Eels vary much in their colors, from a footy hue to a light olive green; and thofe which are called filver eels, have their bellies white, and a remarkable clearnefs throughout.

Grigs. Befides thefe there is another variety of this fifh known in the *Thames* by the name of *Grigs*, and about *Oxford* by that of *Grigs* or *Gluts*. Thefe are fcarce ever feen near *Oxford* in the winter, but appear in fpring, and bite readily at the hook, which common eels in that neighborhood will not. They have a larger head, a blunter nofe, thicker fkin, and lefs fat than the common fort; neither are they fo much efteemed, nor do they often exceed three or four pounds in weight.

Common eels grow to a large fize, fometimes fo great as to weigh fifteen or twenty pounds, but that is extremely rare. As to inftances brought by *Dale* and others, of thefe fifh encreafing to a fuperior magnitude, we have much reafon to fufpect them to have been congers, fince the enormous fifh they defcribe, have all been taken at the mouths of the *Thames* or *Medway*.

The eel is the moft univerfal of fifh, yet is fcarce ever found in the *Danube*, tho' it is very common in the lakes and rivers of *Upper Auftria*.

The

The *Romans* held this fifh very cheap, probably from its likenefs to a fnake:

> Vos anguilla manet longæ cognata colubræ*,
> Vernula riparum pinguis torrente cloaca.

For you, is kept a fink-fed fnake-like eel.

On the contrary, the luxurious *Sybarites* were fo fond of thefe fifh, as to exempt from every kind of tribute the perfons who fold them**.

II. The CONGER.

Κόγγρος. *Arift. Hift. an. lib.* I. &c.
Γόγγρος. *Oppian Halieut.* I. 113. 521.
Conger. *Ovidii Halieut.* 115. *Plinii lib.* ix. *c.* 16. 20.
Le Congre. *Belon.* 159.
Conger. *Rondel.* 394. *Gefner pifc.* 290.
The Conger, or Conger Eel. *Wil. Icth.* iii. *Raii fyn. pifc.* 37.
Muræna fupremo margine pinnæ dorfalis nigro. *Arted. fynon.* 40.
Muræna Conger. M. roftro tentaculis duobus, linea laterali ex punctis albida. *Lin. fyft.* 426.

THE conger grows to a vaft fize. Doctor *Borlafe*, to whom we are obliged for feveral informations relating to this fpecies, affure us, that they are fometimes taken near *Mount's-Bay* of one hundred pounds weight†. Size.

They differ from the common eel in the following particulars: 1. Their color in general is more dark. 2. Their eyes much larger in proportion. Defcr.

* *Juvenal. Sat.* v. 103. ** *Athenæus. lib.* xii. *p.* 521.
† We have heard of fome taken near *Scarborough* that were ten feet and a half long, and eighteen inches in circumference in the thickeft part.

3. The

3. The irides of a bright silvery color. 4. The lower jaw is rather shorter than the upper. 5. The side line is broad, whitish, and marked with a row of small spots; Mr. *Ray* says a double row, but we did not observe it in the fish we examined. 6. The edges of the dorsal and anal fins are black. 7. They have more bones than the common eel, especially along the back quite to the head. 8. They grow to a much larger size.

As to the distinction that Mr. *Ray*, and other writers, make of the small beards at the end of the nose, we think it not to be depended on, being sometimes found in both kinds, and sometimes entirely wanting.

We believe they generate like the fresh-water species: innumerable quantities, of what are supposed to be their fry, come up the *Severn* about the month of *April*, preceding the *Shads*, which it is conjectured migrate into that river to feed on them: they are called *Elvers*. They quite swarm during their season, and are taken in a kind of sieve made of hair-cloth, fixed to a long pole; the fisherman standing on the edge of the water during the tide, puts in his net as far as he can reach, and drawing it out again takes multitudes at every sweep, and will take as many during one tide as will fill a bushel. They are dressed, and reckoned very delicate.

Elvers.

Congers are extremely voracious, preying on other fish, and on crabs at the time they have lost their shell, and are in a soft state. They and eels in general are also particularly fond of carcasses of any kind,

kind, being frequently found lodged in fuch that are accidentally taken up.

Thefe fifh are an article of commerce in *Cornwall*; numbers are taken on that coaft, and exported to *Spain* and *Portugal*, particularly to *Barcelona*. The quantities that were fent from *Mount's-Bay* for five years, are as follow:

	Cwt.	*qr.*	*lb.*
1756	46	0	13
1757	164	0	21
1758	164	1	3
1759	213	0	3
1760	71	3	0

Some are taken by a fingle hook and line, but (becaufe that way is tedious, and does not anfwer the expence of time and labor) they are chiefly caught by *Bulters*, which are ftrong lines five hundred feet long, with fixty hooks, each eight feet afunder, baited with pilchards or mackrel: the *Bulters* are funk to the ground by a ftone faftened to them: fometimes fuch a number of thefe are tied together as to reach a mile. Capture.

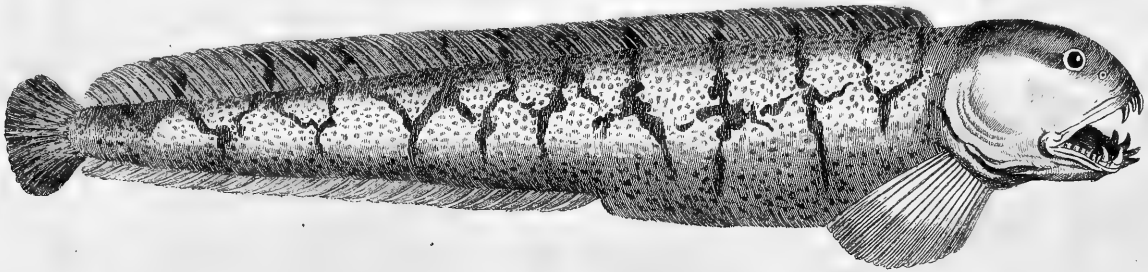
We have been told that the fifhermen are very fearful of a large conger, leaft it fhould endanger their legs by clinging round them; they therefore kill them as foon as poffible by ftriking them on the navel.

They are afterwards cured in this manner: they are flit, and hung on a frame till they dry, having a confiderable quantity of fat, which it is neceffary fhould Cure.

ſhould exude before they are fit for uſe. It is remarkable that a conger of a hundred weight will waſte by drying to twenty-four pounds; the people therefore prefer the ſmalleſt, poſſibly becauſe they are ſooneſt cured. During the proceſs there is a conſiderable ſtench; and it is ſaid that in the fiſhing villages the poultry are fed with the maggots that drop from the fiſh.

The *Portugueſe* and *Spaniards* uſe thoſe dried congers after they have been ground into a powder, to thicken and give a reliſh to their ſoups. We think they are ſold for about forty ſhillings the quintal, which weighs one hundred and twenty-ſix pounds.

Genus



P. Mazell Del. et Sculp.

Genus XIII. Blunt head: long body.
One dorsal fin reaching
almost from the head to tail.
Fore teeth, conic and large.
Grinders flat and round.

WOLF FISH.

I. The WOLF FISH.

Anarrhichas. *Gesner Paralip.* 4.
Lupus marinus *Caii opusc.* 113.
Lupus marinus nostras, quem *incolæ* Wolff. *Schonevelde* 45. *tab.* 5.
Cat-Fish. *Sib. Scot.* iii. 25. *tab.* 16.
Wolf Fish, Sea Wolf, or Woof. *Wil. Icth.* 130. *Raii syn. pisc.* 40.
Steen-bider. *Pontop. Norway.* ii. 151.
Kigutilik *i. e.* dentatus. *Crantz. Greenl.* I. 96.
Anarhichas. *Arted. synon.* 39.
Anarhichas Lupus. *Lin. syst.* 430.
Zee Wolf. *Gronov. Mus. No.* 44. *Zooph. No.* 400.

THIS fish seems to be confined to the northern parts of the globe. We find it in the seas of *Greenland*, in those of *Iceland** and *Norway*, on the coasts of *Scotland*, and of *Yorkshire*, and lastly, in that part of the *German* ocean, which washes the shores of *Holland*, the most southern of its haunts we can with any certainty mention. Place.

It is a most ravenous and fierce fish, and when taken fastens on any thing within its reach: the fishermen dreading its bite, endeavor as soon as possi-

* Where it is called *Steinbeisser. Schonevelde*, 45.

ble to beat out its fore teeth, and then kill it by striking it behind the head. *Schonevelde* relates, that its bite is so hard that it will seize on 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 was capable of crushing even stones with its jaws.

Food. It feeds almost entirely on crustaceous animals, and shell fish, such as crabs, lobsters, prawns, muscles, scollops, large whelks, &c. these it grinds to pieces with its teeth, and swallows with the lesser shells. It does not appear they are dissolved in the stomach, but are voided with the fœces, for which purpose the aperture of the anus is wider than in other fish of the same size.

It is full of roe in *February*, *March*, and *April*, and spawns in *May* and *June*.

This fish has so disagreeable and horrid an appearance, that nobody at *Scarborough* except the fishermen will eat it, and they prefer it to holibut. They always before dressing take off the head and skin.

Size. The sea wolf grows to a large size: those on the *Yorkshire* coast are sometimes found of the length of four feet, and, according to Doctor *Gronovius*, have been taken near *Hitland* seven feet long, and even more. That which we examined was three feet two inches and an half from the tip of the nose to the end of the tail: the length of the head was eight inches, from the gills to the vent, ten; from thence to the tip of the tail, twenty and one half.

The

The circumference of the head was feventeen inches, at the fhoulders twenty, but near the tail only four and a half.

Its weight was twenty pounds and a quarter.

The head is a little flatted on the top: the nofe blunt; the noftrils very fmall; the eyes fmall, and placed near the end of the nofe.

The teeth are very remarkable, and finely adapted to its way of life. The fore teeth are ftrong, conical, diverging a little from each other, ftand far out of the jaws, and are commonly fix above, and the fame below, tho' fometimes there are only five in each jaw: thefe are fupported within-fide by a row of leffer teeth, which makes the number in the upper jaw feventeen or eighteen, in the lower eleven or twelve. Teeth.

The fides of the under jaw are convex inwards, which greatly adds to their ftrength, and at the fame time allows room for the large mufcles with which the head of this fifh is furnifhed.

The *dentes molares*, or grinding teeth of the under jaw, are higher on the outer than the inner edges, which inclines their furfaces inward: they join to the canine teeth in that jaw, but in the upper are feparate from them.

In the centre are two rows of flat ftrong teeth, fixed on an oblong bafis upon the bones of the palate and nofe.

Thefe and the other grinding teeth are often found foffil, and in that ftate called *Bufonites*, or *Toad-ftones*: they were formerly much efteemed for their

imaginary virtues, and were set in gold, and worn as rings.

The two bones that form the under jaw are united before by a loose cartilage, which mechanism admitting of a motion from side to side, most evidently contributes to the design of the whole, *viz.* a facility of breaking, grinding, and comminuting its testaceous and crustaceous food.

The body is long, and a little compressed sideways; the skin smooth and slippery: it wants the lateral line.

The pectoral fins consist of eighteen rays, are five inches long, and seven and a quarter broad.

The dorsal fin extends from the hind part of the head almost to the tail; the rays in the fresh fish are not visible.

The anal fin extends as far as the dorsal fin.

The tail is round at its end, and consists of thirteen rays.

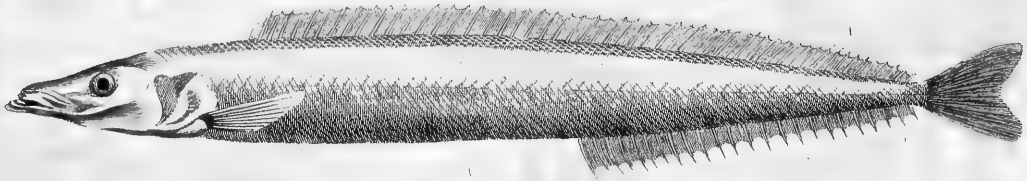
Color. The sides, back, and fins, are of a livid lead color; the two first marked downwards wiith irregular obscure dusky lines; these in different fish have different appearances.

We think ourselves much indebted to Mr. *Travis*, Surgeon, at *Scarborough*, for his ingenious remarks on this fish, as well as on several others that frequent that coast, being a gentleman much skilled in icthyology, and extremely liberal in communicating his knowlege.

Genus

MORRIS.

LAUNCE.



d. Morell

Genus XIV. Head slender.
Body long and square.
Upper lip doubled in.
Dorsal and anal fin reaching almost to the tail.
Seven branchiostegous rays.

LAUNCE.

I. The LAUNCE.

Ammodytes piscis, ut nos vocavimus pro *anglico* Sandilz. *Gesner Paralip.* 3.
Tobian, vel Tobias, Sandtspiring. *Schonevelde*, 76.
Ammodytes. *Gesneri Wil. Icth.* 113.
Sand Eels, or Launces. *Raii syn. pisc* 38, 165.
Ammodytes. *Arted. synon.* 29.
Ammodytes Tobianus. *Lin. syst.* 430.
Tobis. *Faun. suec.* 302. *Gronov. Zooph. No.* 404.

THE launce is found on most of our sandy shores during some of the summer months: it conceals itself on the recess of the tides beneath the sand, in such places where the water is left at the depth of about a foot, and are in some places dug out, in others drawn up by means of a hook contrived for that purpose. They are commonly used for baits for other fish, but they are also very delicate eating.

These fish are found in the stomachs of the *Porpesse*, an argument that the last roots up the sand with its nose as hogs do the ground.

Size. They grow sometimes the length of nine or ten inches: the females are longer and slender than the males.

The form of the body is square, the sides are rounded, and the angles not sharp: it is nevertheless long and slender.

The head is small and taper; the under jaw much longer than the upper: the upper jaw is moveable, capable of being protruded, so that when open the gape is very wide.

The irides are silvery.

The dorsal fin runs almost the whole length of the back, is very narrow, and consists of fifty-eight rays: the pectoral fins small, and have twelve: the anus is placed much nearer the tail than the head, is narrow, and extends almost to the former.

The tail is forked, but the lobes rounded at their extremities.

The color of the back is blue, varying with green; on each side the back is a narrow dusky line or two. The sides and belly are silvery; the lateral line strait.

Genus

Genus XV. Small head.
Body extremely thin, compressed sideways.
No pectoral fins. MORRIS.

I. The MORRIS.

Leptocephalus. *Gronov. Zooph. No.* 409. *tab.* 13. *fig.* 3.

THIS species was discovered in the sea near *Holyhead* by the late Mr. *William Morris*, and in memory of our worthy friend we have given it his name: on receiving it from Mr. *Morris*, we communicated it to that accurate Icthyologist Doctor *Laurence Theodore Gronovius*, of *Leyden*, who has described it in his *Zoophylacium*, under the title of *Leptocephalus*, or small head.

The length was four inches; the head very small; the body compressed sideways, extremely thin, and almost transparent, about the tenth of an inch thick, and in the deepest part about one-third of an inch; towards the tail it grew more slender, and ended in a point; towards the head it sloped down, the head lying far beneath the level of the back. Descr.

The eyes large; the teeth in both jaws very small.

The lateral line strait: the sides marked with oblique strokes, that met at the lateral line.

The aperture to the gills large.

It wanted the pectoral, ventral, and caudal fins: the dorsal fin was extremely low, and thin, extending the whole length of the back very near the tail. The anal fin was of the same delicacy, and extended to the same distance from the anus.

Genus XVI. The upper jaw extending to a great length, hard, slender, and pointed.
No teeth.
Eight branchiostegous rays.
Slender body. SWORD FISH.

I. The SWORD FISH.

Ξιφίας. *Arist. Hist. an. lib.* ii. *c.* 13. viii. *c.* 19. *Oppian. Halieut. lib.* ii. 462. iii. 442.
Xiphias. *Ovid. Halieut.* 97.
Xiphias, *i. e.* Gladius *Plinii lib.* xxxii. *c.* 2.*
L'Heron de mer, ou grand Espadaz. *Belon.* 102,
Xiphias. *Rondel.* 251.
Xiphias, *i. e.* Gladius piscis. *Gesner pisc.* 1049. *Caii opusc.* 104.
Schwert-fische. *Schonevelde*, 35.
Sword-fish. *Wil. Icth.* 161. *Raii syn. pisc.* 52.
Xiphias. *Arted. synon.* 47.
Xiphias Gladius. *Lin. syst.* 432.
Sword-fisk. *Faun. suec. No.* 303.

THIS fish sometimes frequents our coasts, but is much more common in the *Mediterranean* sea, especially in the part that separates *Italy* from *Sicily*, which has been long celebrated for it: the promontory *Pelorus**, now *Capo di Faro*, was a place noted for the resort of the *Xiphias*, being possibly the station of the *speculatores*, or the persons who watched and gave notice of the approach of the fish.

Place.

* *Athenæus*, 314.

The

The antient method of taking them is particularly defcribed by *Strabo**, and agrees exactly with that practifed by the moderns. Capture.

A man afcends one of the cliffs that overhangs the fea: as foon as he fpies the fifh, he gives notice either by his voice or by figns of the courfe it takes. Another, that is ftationed in a boat, climbs up the maft, and on feeing the fword fifh, directs the rowers towards it. As foon as he thinks they are got within reach, he defcends, and taking a fpear in his hand, ftrikes it into the fifh, which, after wearying itfelf with its agitation, is feized and drawn into the boat. It is much efteemed by the *Sicilians*, who buy it up eagerly, and at its firft coming into feafon give about fix-pence *Englifh* per pound. The feafon lafts from *May* till *Auguft* **. The antients ufed to cut this fifh into pieces, and falt it, whence it was called *Tomus Thurianus* †, from *Thurii*, a town in the bay of *Tarentum*, where it was taken and cured.

Kircher, in his *Mufurgia*, has preferved a ftrange incantation ufed by the *Sicilian* fifhermen, at the capture of the *Pefce Spada*, as they call it, which is expreffed in the following unintelligible jargon:

Mamaffu di pajanu,
Paletta di pajanu,
Majuffu di ftignela,
Palettu di paenu pale,
Pale la ftagnetta,
Mancuta ftigneta.
Pro naftu, vardu, preffu da
Vifu & da terra.

* *Lib.* I. *p.* 16.
** *Ray's Travels*, I. 271.
† *Tomus Thurianus, quem alii* Xiphiam *vocant.* Plinii *lib.* xxxii. *c.* 11.

But this use of charmed words is not confined to *Sicily*; the *Irish* have their song at the taking of the razor shell; and the *Cornish* theirs, at the taking of the whistle fish.

The sword fish is said to be very voracious, and that it is a great enemy to the Tunny, who (according to *Belon*) are as much terrified with it as sheep are at the sight of a wolf.

> *Ac durus* Xiphias, *ictu non mitior ensis*;
> *Et pavidi magno fugientes agmine* Thunni.
> Ovid. Halieut. 97.

> Sharp as a sword the *Xiphias* does appear;
> And crowds of flying *Tunnies* struck with fear.

Size. It grows to a very large size; the head of one, with the pectoral fins, found on the shore near *Laugharn*, in *Caermarthenshire*, alone weighing seventy-five pounds: the snout was three feet long, rough, and hard, but not hard enough to penetrate ships and sink them, as *Pliny* pretends*.

Snout. The snout is the upper jaw, produced to a great length, and has some resemblance to a sword, from whence the name. It is compressed at the top and bottom, and sharp at the point. The under jaw is four times as short as the upper, but likewise sharp pointed. The mouth is destitute of teeth.

The body is slender, thickest near the head, and growing less and less as it approaches the tail.

The skin is rough, but very thin: the color of the back is dusky, of the belly silvery.

* Xiphiam, *id est*, Gladium, *rostro mucronato esse*, *ab hoc naves perfossas mergi in oceano*. Plin. *lib.* xxxii. *c.* 11.

The

The dorfal fin begins a little above the gills, and extends almoft to the tail: it is higheft at the beginning and the end, but very low in the middle: a little above the tail, on each fide, the fkin rifes and forms two triangular protuberances, not unlike the fpurious fins of the tunny.

The pectoral fins are long, and of a fcythe-like form, and their firft rays the longeft.

The anus is placed at the diftance of one-third part of the body from the tail; beneath are two anal fins.

The tail is exactly of the fhape of a crefcent.

Sect. II. JUGULAR.

Genus XVII. Upper lip doubled.
Eyes near each other.
Two breathing apertures on the hind part of the head.
First rays of the dorsal fin very long. DRAGONET.

I. The DRAGONET.

La tierce espece de Exocetus? *Belon.* 218.
Dracunculus. *Rondel.* 304.
Dracunculus, aranei species altera. *Gesner pisc.* 80.
Dragon fish. *Marten's Spitzberg.* 123.
Yellow Gurnard. *Phil. Transf. No.* 293.
Lyra Harvicensis. *Pet. Gaz. tab.* 22. *Dale Harwich.* 431.
Callionymus Lyra. C. dorsalis prioris radiis longitudine corporis. *Lin. syst.* 433. *Faun. suec. No.* 110.
Uranoscopus, *Gronov. Zooph. No.* 206.
Floy-fiske. *Pontop. Norway*, ii. iii.
Dracunculus marinus. *Borlase Cornwall.* 270. *Seb. Mus.* iii. 92. *tab.* 30. *fig.* 7.

Name. LINNÆUS has given this genus the name of *Callionymus*, a fish mentioned by several of the antients; but the notices they have left of it are so very slight, as to render it difficult to determine what species they intended. * *Pliny* makes it a synonym to the *Uranoscopus*, a fish frequent in the *Italian* seas, but very different from our *Dragonet*, a name we

* *Lib.* xxxii. *c.* 11.

have

have taken the liberty of forming, from the diminutive *Dracunculus*, a title given it by *Rondeletius*, and other authors. The *English* writers have called it the Yellow Gurnard, which having no one character of the *Gurnard* genus, we think ourselves obliged to drop that name.

It is found as far north as *Spitzbergen*, and as far south as the *Mediterranean* sea, and is not unfrequent on the *Scarborough* coasts. We have also received it from *Norway*, among several other curiosities which that honest well-meaning prelate, *Erich Pontoppidan**, made us a present of. Place.

This species grows to the length of ten or twelve inches: the body is slender, round, and smooth. Descr.

The head is large, and flat at the top; in the hind part are two orifices, thro' which it breathes, and also forces out the water it takes in at the mouth, in the same manner as the cetaceous fish.

The apertures to the gills are closed: on the end of the bones that cover them is a very singular trifurcated spine.

The eyes are large, and placed very near each other on the upper part of the head, so that they look upwards; for which reason it has been ranked among the *Uranoscopi*: the pupils are of a rich sappharine blue, the irides of a fine yellow.

The upper jaw projects much farther than the lower: the mouth is very wide: the teeth are small.

* Bishop of *Bergen*. He was also vice-chancellor of the university of *Copenhagen*, in which station he died, *December* 20, 1764, aged 66, much respected by his countrymen.

The

The pectoral fins are round, and of a light-brown color; the ventral placed before them, are very broad, and consist of five branched rays.

The first dorsal fin is very singular, the first ray being setaceous, and so long as to extend almost to the tail: those of the second dorsal fins are of a moderate length, except the last, which is produced far beyond the others.

The anus is placed about the middle of the belly; the anal fin is broad, and the last ray the longest. *Pontoppidan* calls this species the flying fish: whether it makes use of any of its fins to raise itself out of the water, as he was informed they did, we cannot pretend to say.

The tail is rounded and long, and consists of ten rays.

Colors. The side line is strait: the colors are yellow, blue, and white, and make a beautiful appearance when the fish has been just taken.

II. The

II. The LESSER DRAGONET.

Dracunculus. *Wil. Icth.* 136. *Raii fyn. pifc.* 79.
Cottus pinna fecunda dorfi alba. *Arted. fynon.* 77.
Callionymus Dracunculus. C. dorfalis prioris radiis corpore brevioribus. *Lin. fyft.* 434.

THIS fpecies we received from Mr. *Travis.* Its length was only fix inches and an half.

The head was compreffed; the forehead floped down to the nofe, being not fo level as that of the preceding.

The eyes large, and almoft contiguous.

The mouth fmall; the teeth very minute.

Over the gills was a ftrong trifurcated broad fpine.

The firft dorfal fin had four rays; the firft fetaceous, extending a little higher than the others, the laft very fhort: the two firft rays and webs were yellow, the others black.

The fecond had ten foft rays, their ends extending beyond the webs, which were pellucid.

The pectoral fins confifted of twenty rays, and were ferruginous, fpotted with a deeper caft of the fame: the ventral fins confifted of five broad and much branched rays, like thofe of the firft fpecies.

The anal fin was white, and had ten rays; the tail had ten rays. In both fpecies they are bifurcated at their ends, and the ray next the anal fin in both is very fhort.

In colors this is far inferior to the former, being of a dirty yellow, mixed with white and dufky fpots; the belly is entirely white.

Genus

Genus XVIII. Lower jaw sloping down.
Gill covers aculeated.
Six branchiostegous rays.
Two dorsal fins.
Anus near the breast. WEEVER.

I. The WEEVER.

Δρακων? *Arist. Hist. an. lib.* viii. *c.* 13. *Ælian. Hist. an. lib.* ii. *c.* 50. *Oppian. Halieut.* ii. 459.
Draco marinus *Plinii lib.* ix. *c.* 27. Draco, Dracunculus. *lib.* xxxii. *c.* 11. Araneus. *lib.* ix. *c.* 48.
La vive. *Belon.* 209.
Draco. *Rondel.* 300. *Gesner pisc.* 77. 78.
Peter-manniken, Schwertfische. *Schonevelde.* 16.
The Weever. *Wil. Icth.* 238. *Raii syn. pisc.* 91.
Trachinus maxilla inferiore longiore, cirris destituta. *Arted. syn.* 71.
Trachinus Draco. *Lin. syst.* 453. *Gronov. Zooph. No.* 274.
Farsing, Fiassing. *Faun. suec. No.* 305.

THE qualities of this fish were well known to the antients, who take notice of them without any exaggeration: the wounds inflicted by its spines are exceedingly painful, attended with a violent burning, and most pungent shooting, and sometimes with an inflammation that will extend from the arm to the shoulder*.

It is a common notion 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 left into such as is made by

* It is probable that the malignity of the symptoms arises from the habit of body the person is in, or the part in which the wound is given.

the

the ſpines that form the firſt dorſal fin, which is dyed with black, and has a moſt ſuſpicious aſpect. The remedy uſed by a fiſherman in our neighbourhood is the ſea ſand, with which he rubs the place affected for a conſiderable time *.

This fiſh buries itſelf in the ſands, leaving only its noſe out, and if trod on immediately ſtrikes with great force; and we have ſeen them direct their blows with as much judgment as fighting cocks. Notwithſtanding this noxious property of the ſpines, it is exceeding good meat.

The *Engliſh* name ſeems to have no meaning, being corrupted from the *French*, *la vive*, ſo called as being capable of living long out of the water, according to the interpretation of *Belon*. Name.

It grows to the length of twelve inches, but is commonly found much leſs. Deſcr.

The irides are yellow: the under jaw is longer than the upper, and ſlopes very much towards the belly: the teeth are ſmall.

The back is ſtrait, the ſides flat, the belly prominent, the lateral line ſtrait: the covers of the gills are armed with a very ſtrong ſharp ſpine.

The firſt dorſal fin conſiſts of five very ſtrong ſharp ſpines, which, as well as the intervening membranes are tinged with black; this fin, when quieſcent, is lodged in a ſmall hollow.

The ſecond conſiſts of ſeveral ſoft rays, commences juſt at the end of the firſt, and continues

* In the *Univerſal Muſeum* for *November* 1765, is an inſtance of a perſon who was reduced to great danger by a wound from this fiſh, and who was cured by the application of ſweet oil, and taking *opium* and *venice treacle*.

almoft to the tail. The pectoral fins are pretty broad and angular; the ventral fins fmall.

The vent is placed remarkably forward, very near the throat: the anal fin extends from it to a fmall diftance from the tail, is a little hollowed in the middle, but not fo much as to be called forked.

The fides of this fifh are marked lengthways with two or three dirty yellow lines, and tranfverfely by numbers of fmall ones: the belly is filvery.

II. The LESSER WEEVER.

Araneus minor, feptentrionalibus *Anglis*, an Otter Pike.	*Raii fyn. pifc.* 92. *Wil. Icth.* 289.

THIS is a fpecies which Mr. *Ray* fays he heard was found in the north of *England*, but that he was acquainted with it only by name.

Genus

Genus XIX. Head fmooth.
Seven flender branchioftegous rays.
Body oblong; fcales deciduous.
All the fins covered with a common fkin.
Ventral fins flender, and ending in a point.
Teeth in the jaws; and in the palate a feries of minute teeth clofely fet together. COD FISH.

*

With three dorfal fins; the chin bearded.

I. The COMMON COD FISH.

La Morue. *Belon.* 121.
Molva. *Rondel.* 280.
Molva five morhua altera. *Gefner pifc.* 88.
Kablauw. *Schonevelde.* 18.
Afellus major vulgaris. *Wil. Icth.* 165.
Cod-fifh, or Keeling. *Raii fyn. pifc.* 53.
Gadus dorfo tripterygio, ore cirrato, cauda æquali fere cum radio primo fpinofo. *Arted. fynon.* 35.
Gadus morhua. *Lin. fyft.* 436. *Gronov. Zooph. No.* 319.
Cabblia. *Faun. fuec. No.* 398.

THIS fifh is found only in the northern part of the world; it is, as *Rondeletius* calls it, an ocean fifh, and never met with in the *Mediterranean* fea *. It affects cold climates, and feems confined

* None (fays Captain *Armftrong* in his Hiftory of *Minorca*) of the *Afelli* or cod fifh kind, frequent our fhores, *p.* 163.

between the latitudes 66 and 50: what are caught north and south of those degrees being either few in quantity, or bad in quality. The *Greenland* fish are small and emaciated thro' want of food, being very voracious, and having in those seas a dearth of provision.

This locality of situation is common to many other species of this genus, most of them being inhabitants of the cold seas, or such that lie within zones that can just clame the title of temperate. There are nevertheless certain species found near the *Canary Islands*, called *Cherny**, of which we know no more than the name; but according to the unfortunate Captain *Glas*, are better tasted than the *Newfoundland* kind.

The great rendezvouz of the cod fish is on the Banks of *Newfoundland*, and the other sand banks that lie off the coasts of *Cape Breton*, *Nova Scotia*, and *New England*. They prefer those situations, by reason of the quantity of worms produced in those sandy bottoms, which tempt them to resort there for food: but another cause of the particular attachment the fish have to these spots, is their vicinity to the polar seas, where they return to spawn; there they depose their roes in full security, but want of food forces them, as soon as the first more southern seas are open, to repair thither for subsistence.

Few are taken north of *Iceland*, but on the south and west coasts they abound: they are again found to swarm on the coasts of *Norway*, in the *Baltic*, off the *Orkney* and the *Western Isles*; after which their

* *Hist. Canary Islands*, 198.

numbers

numbers decrease, in proportion as they advance towards the south, when they seem quite to cease before they reach the mouth of the Straits of *Gibraltar*.

Before the discovery of *Newfoundland*, the greater fisheries of cod were in the seas of *Iceland*, and of our *Western Isles*, which were the grand resort of ships of all the commercial nations; but it seems that the greatest plenty was met with near *Iceland*; for we find Queen *Elizabeth* condescending to ask permission to fish in those seas from *Christian* the IVth. of *Denmark*, yet afterwards she so far repented her request, as to instruct her embassadors to that court, to insist on the right of a free and universal fishery *.

But the *Spanish*, the *French*, and the *Britons*, had much the advantage of us in all fisheries at the beginning, as appears by the state of that in the seas of *Newfoundland* in the year 1578 **, when the number of ships belonging to each nation stood thus:

Spaniards, 100, besides 20 or 30 that came from *Biscaie*, to take whale for train, being about five or six thousand tons.

Portuguese, 50, or three thousand tons.

French and *Britons*, 150, or seven thousand tons.

English, from 30 to 50.

But Mr. *Anderson*, in his Dictionary of Commerce, I. 363, says, that the *French* began to fish there so

* *Rymer's Fœd.* xvi. 275, 425.
** *Hackluyt's Coll. Voy.* iii. 132.

early as 1536; and we think we have somewhere read, that their first pretence for fishing for cod in those seas, was only to supply an *English* convent with that article.

The encrease of shipping that resort to those fertile banks, are now unspeakable: our own country still enjoys the greatest share, which ought to be esteemed our chiefest treasure, as it brings wealth to individuals, and strength to the state.

All this immense fishery is carried on by the hook and line only*; the bait is herring, a small fish called a *Capelin*, a shell fish called *Clams*, and bits of sea fowl; and with these are caught fish sufficient to find employ for near fifteen thousand *British* seamen, and to afford subsistence to a much more numerous body of people at home, who are engaged in the various manufactures which so vast a fishery demands.

Food. The food of the cod is either small fish, worms, testaceous, or crustaceous animals, such as crabs, large whelks, &c. and their digestion is so powerful, as to dissolve the greatest part of the shells they swallow. They are very voracious, and catch at any small body they perceive moved by the water, even stones and pebbles, which are often found in their stomachs.

Vastly prolific. Providence hath kindly ordained that this fish, so useful to mankind, should be so very prolific as to

* We have been informed that they fish in the depth of from fifteen to sixty fathoms, according to the inequality of the *Bank*, which is represented as a vast mountain under water above five hundred miles long, and near three hundred broad, and that seamen knew when they approach it by the great swell of the sea, and the thick mists that impend over it.

supply

fupply more than the deficiencies of the multitudes annually taken. *Leuwenhoek* counted nine millions three hundred and eighty-four thoufand eggs in a cod fifh of a middling fize, a number fure that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean to exterminate, and which will fecure to all ages an inexhauftible fupply of grateful provifion.

In our feas they begin to fpawn in *January*, and depofite their eggs in rough ground, among rocks. Some continue in roe till the beginning of *April*. The cod fifh in general recover quicker after fpawning than any other fifh, therefore it is common to take fome good ones all the fummer. When they are out of feafon they are thin tailed and loufy, and the lice chiefly fix themfelves on the infide of their mouths.

The fifh of a middling fize are moft efteemed for the table, and are chofen by their plumpnefs and roundnefs, efpecially near the tail, by the depth of the fulcus or pit behind the head, and by the regular undulated appearance of the fides, as if they were ribbed. The glutinous parts about the head lofe their delicate flavor after it has been twenty-four hours out of the water, even in winter, in which thefe and other fifh of this genus are in higheft feafon.

The largeft that we ever heard of taken on our coafts weighed fixty-nine pounds, but the general weight on the *Yorkfhire* feas is from fourteen to forty. Size.

This fpecies is fhort in proportion to its bulk, the belly being very large and prominent. Defcr.

The jaws are of an equal length, at the end of the lower is a ſmall beard; the teeth are diſpoſed in the palate as well as jaws.

The eyes are large.

On the back are three ſoft fins; the firſt has fourteen, the two laſt nineteen rays a-piece. The ventral fins are very ſlender, and conſiſt but of ſix rays; the two firſt extending far beyond the others. It has two anal fins; the firſt conſiſting of twenty, the laſt of ſixteen rays.

The tail is almoſt even at the end: the firſt ray on each ſide is ſhort, and compoſed of a ſtrong bone.

The color of this fiſh is cinereous on the back and ſides, and commonly ſpotted with yellow: the belly is white, but they vary much, not only in color* but in ſhape, particularly that of the head.

Side line The ſide line is white and broad, ſtrait, till it reaches oppoſite the vent, when it bends towards the tail.

* Codlings are often taken of a yellow, orange, and even red color, while they remain among the rocks, but on changing their place aſſume the color of other cod fiſh.

II. The

II. The TORSK.

Afellus varius vel ftriatus, Dorfch, Pamuchelen. *Schonevelde*, 19. *Wil. Icth.* 172. *Raii fyn. pifc.* 54.

Gadus dorfo tripterygio, ore cirrato, colore vario, maxilla fuperiore longiore, cauda æquali. *Arted. fynon.* 35.

Gadus callarias. G. tripterygius, cirratus varius, cauda integra, maxilla fuperiore longiore. *Lin. fyft.* 436.

Torfk. *Faun. fuec. No.* 307.

THESE fifh are found in great quantities in the *Baltic*, and the northern feas, particularly in *Braffa Sound**, and about the *Orkney Ifles*, and are fuppofed never to wander into the more fouthern feas.

It is a fifh much efteemed for its delicacy; the meat divides into flakes on being boiled, like that of a falmon: for which reafon, as *Schonevelde* tells us, the *Germans* call it *Scheibendorfch*.

It never grows to a large fize, the greateft not exceeding thirty inches**.

The head is fmall: the upper jaw is a little longer than the lower: in the firft the teeth are difpofed in a fingle row; in the upper in feveral. In the roof of the mouth is a rough triangular bone: at the end of the lower jaw is a fmall beard.

Between the head and the firft dorfal fin is a deep groove.

* Where it is called *Tufk*. *Martin's Weft. Ifles.* 385.

** We find this account of its length in the M. S. Journal of the late Bifhop of *Meath*, Doctor *Richard Pocock*; but we believe it is very feldom they are found fo large.

The

The belly is a little prominent; the side line white, broad, placed nearer the back than the belly, and a little incurvated.

The dorsal fins are dusky, the two first spotted: the back, head, and sides of a deep olive color, in some whitish, and marked with numerous yellow spots: the belly white.

The tail even at the end, and its rays soft.

III. The HADOCK.

Aigrefin, ou aiglefin. *Belon.* 118.
Tertia asellorum species. *Rondel.* 277.
Tertia asel. Sp. Eglefinus. *Gesner pisc.* 86.
Onos sive asinus veterum. *Turner epist. ad Gesner.*
Asellus minor, Schelfisch. *Schonevelde.* 18.
Hadock. *Wil. Icth.* 170. *Raii syn. pisc.* 55.
Gadus dorso tripterygio, ore cirrato, max. sup. longiore, corpore albicante, cauda parum bifurca. *Arted. synon.* 36.
Gadus Æglefinus. G. tripterygius cirratus albicans, cauda biloba. *Lin. syst.* 435.
Kolja. *Faun. suec. No.* 306.
Gronov. Zooph. No. 321.

Name. OUR countryman *Turner* conjectured this species to have been the Ονος, or *Asinus*, of the antients, and *Belon*, that it was the Κριὸς, and the Πρόβατος of *Oppian*. We have carefully consulted most of the antient naturalists, but cannot discover any marks by which we can determine the species they intended. The words *Ονος, **Asinus, Asellus, † Callarias, and *Bacchus*, are familiarly applied

* *Arist. Hist. an. lib.* viii. *c.* 15. *Oppian Halieut.* I. 151. iii. 191.
** *Ovidii Halieut. lin.* 131. *Plinii lib.* ix. *c.* 16. 17. † *Lib. c.* 17.

to feveral of our fpecies of cod fifh by the more modern writers; yet the antients from whom they are borrowed, have not authorized the application to any particular kind, either by defcription or any other method.

Different reafons have been affigned for giving the name of Ovος, or *Afinus* to this genus, fome imagining it to be from the color of the fifh, others becaufe it ufed to be carried on the backs of affes to market; but we fhall drop this uncertain fubject, and proceed to what we have fuller affurance of.

Large hadocks begin to be in roe the middle of *November*, and continue fo till the end of *January*; from that time till *May* they are very thin tailed, and much out of feafon. In *May* they begin to recover, and fome of the middling-fized fifh are then very good, and continue improving till the time of their greateft perfection. The fmall ones are extremely good from *May* till *February*, and fome even in *February*, *March*, and *April*, viz. thofe which are not old enough to breed. Season.

The fifhermen affert, that in rough weather hadocks fink down into the fand, and ooze in the bottom of the fea, and fhelter themfelves there till the ftorm is over, becaufe in ftormy weather they take none, and thofe that are taken immediately after a ftorm are covered with mud on their backs.

In fummer they live on young herrings and other fmall fifh; in winter on the ftone-coated worms*, which the fifhermen call *hadock meat*. Food.

* A fpecies of *Serpula*.

The

Vast shoals.

The grand shoal of hadocks 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 farther 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 hadocks were sold from eightpence to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a halfpenny per score*.

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

It is no less remarkable than providential, that all kinds of fish (except mackrel) which frequent the *Yorkshire* coast, approach the shore, and as if it were offer themselves to us, generally remaining there as long as they are in high season, and retire from us when they become unfit for use.

* Here Mr. *Travis*, to whom I am much obliged for a most accurate account of the *Yorkshire* fish, with great humanity projects an inland navigation, to convey at a cheap and easy method, those gifts of Providence to the thousands of poor manufacturers who inhabit the distant parts of that vast county.

It

It is the commoneft fpecies in the *London* markets.

They do not grow to a great bulk, one of fourteen pounds being of an uncommon fize, but thofe are extremely coarfe; the beft for the table weighing from two to three pounds. Defcr.

The body is long, and rather more flender than thofe of the preceding kinds: the head flopes down to the nofe: the fpace between the hind part of the firft dorfal fin is ridged: on the chin is a fhort beard.

On the back are three fins refembling thofe of the common cod fifh: on each fide beyond the gills is a large black fpot. Superftition affigns this mark to the impreffion St. *Peter* left with his finger and thumb when he took the tribute out of the mouth of a fifh of this fpecies, which has been continued to the whole race of hadocks ever fince that miracle.

The lateral line is black: the tail is forked.

The color of the upper part of this fpecies is dufky or brown; the belly and lower part of the fides filvery.

IV. The

IV. The WHITING POUT.

Asellus mollis latus. Mr. *Lister apud Wil. Icth. App.* 22.
Whiting Pout, *Londinensibus. Raii syn. pisc.* 55.
Gadus dorso tripterygio, ore cirrato, longitudine ad latitudinem tripla, pinna ani prima osiculorum triginta. *Arted. synon.* 37.
Gadus barbatus. G. tripterygius cirratus maxilla inferiore punctis utrinque septem. *Lin syst.* 437. *Gronov. Zooph. No.* 320.
Sma-Torsk. *Faun. suec. No.* 311.

THIS species nevers grows to a large size, seldom exceeding a foot in length.

It is distinguished from all others by its great depth; one of the size abovementioned being near four inches deep in the broadest part.

The back is very much arched; the mouth small; the beard short.

The first dorsal fin is triangular, and terminates in a long fibre: the color of the fins and tail black: at the bottom of the pectoral fins is a black spot.

The lateral line is white, broad, and crooked.

The tail is even at the end.

The color of the body is white, but more obscure on the back than the belly.

This fish was first discovered by Doctor *Lister*, and communicated by him, with several other species, to Mr. *Ray*.

V. The

V. The B I B.

Afellus nanus, Dwergdorfch, Krumftert ? *Schonevelde*, 20.
Bib & Blinds *Cornubienfibus. Wil. Icth.* 169.
Afellus lufcus. *Raii fyn pifc.* 54.
Gadus dorfo tripterygio, ore cirrato, officulo pinnarum ventralium primo in longam fetam producto. *Arted. fynon.* 35.
Gadus lufcus. *Lin. fyft.* 437.

THIS fpecies is fuppofed by *Artedius* to be the fame with the former; but fince it does not appear that he had an opportunity of examining it, we fhall depend on the judgment of Mr. *Ray*, who had feen both, and fhall form a feparate article of it from his defcription, as it has not yet fell in our way.

It grows to the length of one foot: the body is deep, and the fides compreffed: the fcales larger than thofe of the cod fifh, and adhere to the fkin: the eyes are covered with a loofe membrane, which it is faid the fifh can at pleafure blow up like a bladder. The mouth fmall; the teeth difpofed like others of the kind: on the chin is a beard, which in grown fifh is an inch long.

On the back are three fins; the firft has twelve rays; the middle fin, which is the longeft, has twenty-three; the laft twenty.

The pectoral fins have about fixteen rays; the ventral fins feven or eight, the firft of which is very long and flender.

The

The vent is placed at the distance of only one-third the length of the whole fish from the tip of the nose; behind the vent are two fins.

The tail is almost even at the end.

Color. The color of the back is light olive, or dirty yellow; the belly silvery.

It is esteemed a good eating fish, not unlike the whiting in taste.

VI. The POOR.

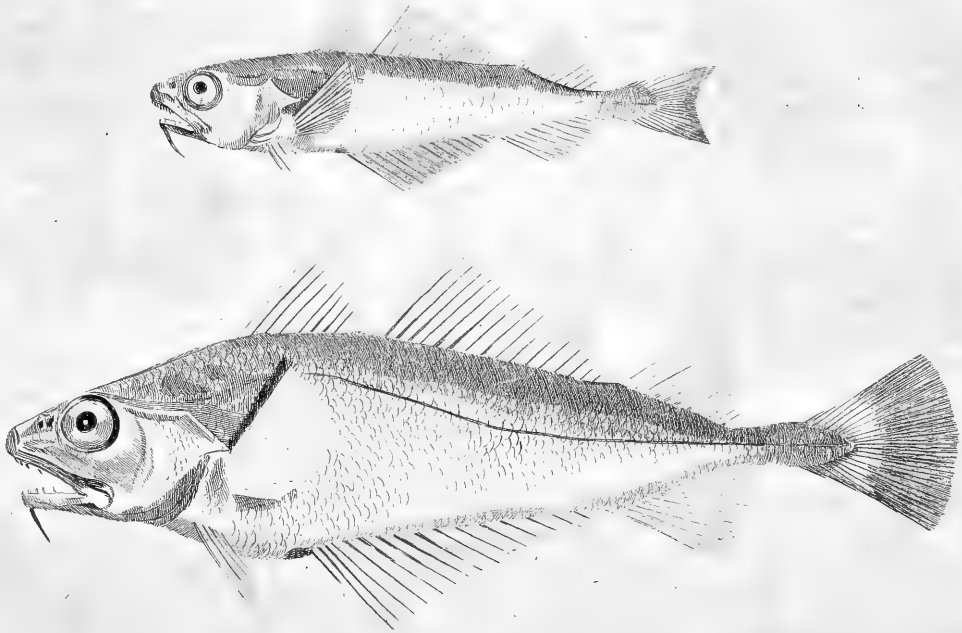
Le Merlan? *Belon.* 120.
Anthiæ secunda species. *Rondel.* 191. *Gesner pisc.* 56.
Asellus mollis minor, seu asellus omnium minimus. MOLLO *Venetiis.* CAPELAN *Massiliæ.* *Wil. Icth.* 171.
Poor or Power *Cornub.* Mr. *Jago. Raii syn. pisc.* 163. *fig.* 6.
Gadus dorso tripterygio, ore cirrato, corpore sescunciali, ano in medio corporis. *Arted. synon.* 36.
Gadus minutus. *Lin. syst.* 438.

THIS is the only species of cod fish with three dorsal fins that we (at this time*) are assured is found in the *Mediterranean* sea. It is taken near *Marseilles*, and sometimes in such quantities as to become a perfect nusance; for no other kinds of fish are taken during that time**. It is esteemed a good fish, but is incapable of being salted or dried:

* Mr. *Ray*, who visited the *Italian* and *Sicilian* seas, and was a most diligent observer, says he could discover no other kind; but it is with pleasure we acquaint the reader, that our learned correspondent Doctor *Gouan*, of *Montpellier*, will soon favor us with ample information on that head, it being the design of that able Naturalist soon to publish his *Ichtyology*, which will doubtlessly point out the fish of his own seas.

** *Rondel.* 191.

Belon



BIB.

J. Wilkinson del. P. Mazell Sculp.

Belon fays, that when it is dried in the fun, it grows as hard as horn; *C'eft dela que les* ANGLOIS *l'ont nommé Bouclzs horn.*

It is the fmalleft fpecies yet difcovered, being little more than fix inches long. Defcr.

On the chin is a fmall beard: the eyes are covered with a loofe membrane: on the gill-covers, and the jaws are on each fide, nine punctures.

The firft dorfal fin has twelve rays; the fecond nineteen; the third feventeen.

The pectoral fins thirteen; the ventral fins fix: the firft anal fin twenty-feven; the fecond feventeen.

The color on the back is a light brown; on the belly a dirty white.

We owe the difcovery of this kind in our feas to the Rev. Mr. *Jago.*

**

Three dorsal fins: chin beardless.

VII. The COAL FISH.

Colfisch. *Belon.* 128.
Colfisch *Anglorum.* *Gesner pisc.* 89.
Asellus niger. Kolfisch, Koler. *Schonevelde,* 19.
Cole fish *Septentrionalium anglorum.* Rawlin Pollack *Cornubiensium.* *Wil. pisc.* 168. *Raii syn. pisc.* 54.
Gadus dorso tripterygio, ore imberbi, maxilla inferiore longiore et linea laterali recta. *Arted. synon.* 34.
Gadus carbonarius. *Lin. syst.* 438. *Gronov. Zooph. No.* 317.

THE coal fish takes its name from the black color that it sometimes assumes. *Belon* calls it the *Colfisch*, imagining it was so named by the *English*, from its producing the *Icthyocolla*, but *Gesner* gives the true etimology.

These fish are common on most of our rocky and deep coasts, but particularly those of the north of *Great Britain.*

Young. The young begin to appear on the *Yorkshire* coast the beginning of *July* in vast shoals, and are at that time about an inch and an half long. In *August* they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but grow so coarse when they are a year old that few people will eat them. Fish of that age are from eight to fifteen inches long, and begin to have a little black-

ness

neſs near the gills, and on the back, and the blackneſs encreaſes as they grow older.

The fry is known by different names in different places: they are called at *Scarborough Parrs*, and when a year old, *Billets*. About nine or ten years ago ſuch a glut of *Parrs* viſited that part, that for ſeveral weeks it was impoſſible to dip a pail into the ſea without taking ſome.

Tho' this fiſh is ſo little eſteemed when freſh, yet it is ſalted and dried for ſale; a perſon laſt year having cured above a thouſand at *Scarborough*.

The coal fiſh is of more elegant form than the cod fiſh: they generally grow to the length of two feet and an half, and weigh about twenty-eight or thirty pounds at moſt. The head is ſmall; the under jaw a little longer than the upper: the irides ſilvery, marked on one ſide with a black ſpot. Deſcr.

It has three dorſal fins, the firſt conſiſts of fourteen, the next of twenty, the laſt of twenty-two rays.

The pectoral fins of eighteen; the ventral of ſix: the firſt anal fin of twenty-two, the ſecond of nineteen.

The tail is broad and forked.

Theſe fiſh vary in color. We have ſeen ſome whoſe back, noſe, dorſal fins and tail were of a deep black: the gill covers ſilver and black: the ventral and anal fins white; the belly of the ſame color.

We have ſeen others duſky, others brown, but in all the lateral line was ſtrait and white, and the lower part of the ventral and anal fins white.

VIII. The POLLACK.

Asellus virescens, Schwartres Kolmulen. *Schonevelde*, 20.
Asellus flavescens; Gelbe Kolmulen. *Ibid.*
Asellus Huitingo-Pollachius. *Wil. Icth.* 167.
Whiting Pollack. *Raii syn. pisc.* 53.
Gadus dorso tripterygio, ore imberbi, max. inf. longiore, linea laterali curva. *Arted. synon.* 35.
Gadus Pollachius. *Lin. syst.* 439. *Gronov. Zooph. No.* 318. *Norwegis* Scy. *Bahusiis* Grasik? *Faun. suec. No.* 309.

THIS species is common on many of our rocky coasts: during summer they are seen in great shoals frolicking on the surface of the water, and flinging themselves into a thousand forms. They are at that time so wanton as to bite at any thing that appears on the top of the waves, and are often taken with a goose's feather fixed to the hook. They are a very strong fish, being observed to keep their station at the feet of the rocks in the most turbulent and rapid sea.

They are a good eating fish: they do not grow to a very large size; at left the biggest we have seen not exceeding six or seven pounds: but we have heard of some that were taken in the sea near *Scarborough*, which they frequent during winter, that weighed near twenty-eight pounds.

The under jaw is longer than the upper; the head and body rises pretty high, as far as the first dorsal fin.

The side line is incurvated, rising towards the middle of the back, then sinking and running strait to the tail; it is broad, and a brown color.

The

The firſt dorſal fin has eleven rays, the middle nineteen, the laſt ſixteen: the tail is a little forked.

The color of the back is duſky, of ſome inclining to green: the ſides beneath the lateral line marked with lines of yellow; the belly white.

IX. The WHITING.

Secunda aſellorum ſpecies. *Rondel.* 276.
Merlanus. *Rondel. Geſner piſc.* 85.
Aſellus candidus primus, Witling. *Schonevelde*, 17.
Aſellus mollis major, ſeu albus. *Wil. Icth.* 170.
Whiting. *Raii ſyn. piſc.* 55.
Gadus dorſo tripterygio, ore imberbi corpore albo, maxilla ſuperiore longiore. *Arted. ſynon.* 34.
Gadus merlangus. *Lin. ſyſt.* 438. *Gronov. Zooph. No.* 316.
Hwitling, Widding. *Faun. ſuec. No.* 310.

WHITINGS appear in vaſt ſhoals on our ſeas in the ſpring, keeping at the diſtance of about half a mile to that of three from the ſhore. They are caught in vaſt numbers by the line, and afford excellent diverſion.

They are the moſt delicate as well as the moſt wholeſome of any of the genus, but do not grow to a large ſize; the biggeſt we ever ſaw * not exceeding twenty inches, but that is very uncommon, the uſual length being ten or twelve.

It is a fiſh of an elegant make: the upper jaw is the longeſt; the eyes large, the noſe ſharp, the teeth of the upper jaw long, and appear over the lower when cloſed.

* We have been informed that whitings, from four to eight pounds in weight, have been taken in the deep water at the edge of the *Dogger-Bank*.

The first dorsal fin has fifteen rays, the second eighteen, the last twenty.

The color of the head and back is a pale brown; the lateral line white, and is crooked; the belly and sides silvery; the last streaked lengthways with yellow.

* *
*

With only two dorsal fins.

X. The HAKE.

Le Merluz. *Belon.* 115.
Asellus, ὄνος, ὀνισκος. *Rondel.* 272.
Merlucius. *Gesner pisc.* 84.
Asellus primus sive Merlucius. *Wil. Icth.* 174.
The Hake. *Raii syn. pisc.*
Gadus dorso dipterygio, maxilla inferiore longiore. *Arted. synon.* 36.
Gadus Merlucius. *Lin. syst.* 439. *Faun. suec. No.* 314. *Gronov. Zooph. No.* 315.

A FISH that is found in vast abundance on many of our coasts, and of those of *Ireland*. There was formerly a vast stationary fishery of *Hake* on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in *June*, during the *Mackrel* season, the other in *September*, at the beginning of the *Herring* season, probably in pursuit of those fish: 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. These were salted and sent to *Spain*, particularly to *Bilboa*. * We are

* *Smith's Hist. Waterford*, 261.

at

at this time uninformed of the ftate of this fifhery, but find that Mr. *Smith*, who wrote the Hiftory of the County of *Waterford*, complain even in his time (1746) of its decline. Many of the gregarious fifh are fubject to change their fituations, and defert their haunts for numbers of years, and then return again. We fee p. 78, how unfettled the *Bafking Shark* appears to be: Mr. *Smith* inftances the lofs of the *Hadock* on the *Waterford* fhores, where they ufed to fwarm; and to our own knowledge we can bring the capriciousnefs of the herrings, which fo frequently quit their ftations, as another example.

Sometimes the irregular migration of fifh is owing to their being followed and haraffed by an unufual number of fifh of prey, fuch as the fhark kind.

Sometimes to deficiency of the fmaller fifh, which ferved them as food.

And laftly, in many places to the cuftom of trawling, which not only demolifhes a quantity of their fpawn, which is depofited in the fand, but alfo deftroys or drives into deeper waters numberlefs worms and infects, the repaft of many fifh.

The hake is in *England* efteemed a very coarfe fifh, and is feldom admitted to table either frefh or falted *.

Thefe fifh are from a foot and an half to near twice that length: they are of a flender make, of a pale afh color on their backs, and of a dirty white on their bellies. Defcr.

* When cured it is known by the name of *Poor John*.

Their head is flat and broad; the mouth very wide; the teeth very long and sharp, particularly those of the lower jaw.

The first dorsal fin is small, consisting of nine rays; the second reaches from the base of the former almost to the tail, and is composed of forty rays, of which the last are the highest: the pectoral fins have about twelve, the ventral seven; the anal thirty-nine.

The tail is almost even at the end.

XI. The LESSER HAKE.

Galee, claria marina. *Belon.* 126.
Phycis. *Rondel.* 186. *Gesner pisc.* 718.
Tinca marina. *Aldr. Wil. Icth.* 205. *Raii syn. pisc.* 75.
Phycis. *Arted. synon. App.* iii.
Blennius Phycis. *Lin. syst.* 442.

THIS is the fish to which *Rondeletius* gives the name of *Phycis*, borrowing it from *Aristotle* and *Pliny*, who have not so sufficiently characterized it, as to enable us to judge what species they intended. It is found in the *Mediterranean* more frequently than in our seas, and we believe is the fish mentioned by Mr. *Armstrong*, and Doctor *Cleghorn**, in their Histories of *Minorca*, under the name of *Molio*, *Mollera*, and *Molle*. It is known on the coast of *Cornwall* by the name of the greater forked beard**, where it was first discovered by Mr. *Jago*.

* *Armstrong*, 161. *Cleghorn*, 43.
** *Barbus major* Cornubiensis *cirris bifurcatis*; the great forked beard. Mr. *Jago*. *Raii syn. pisc.* 163. *fig.* 7.

We

We place it in this genus, as it has more the appearance of the cod-fifh kind, the hake efpecially, than of the *Blenny*, into which genus *Linnæus* has flung it; we therefore have given this fpecies the name of the *Leffer Hake*.

The length of one that was taken on the *Flintfhire* fhores was eleven inches and an half, its greateft depth three inches; but according to Doctor *Borlafe*, fome grow to be above eighteen inches long.

The head floped down to the nofe in the fame eafy manner with others of this genus: the mouth large: befides the teeth in the jaws was a triangular congeries of fmall teeth in the roof of the mouth.

At the end of the lower jaw was a fmall beard. The firft dorfal fin was triangular; the firft ray extended far beyond the reft, and was very flender: the fecond fin began juft behind the firft, and extended almoft to the tail: the ventral fins were three inches long, and confifted of only two rays, joined at the bottom, and feparated or bifurcated towards the end: the vent was in the middle of the body: the anal fin extended from thence juft to the tail: the lateral line was incurvated: the tail was rounded.

The color was a cinereous brown.

XII. The

XII. The LESST HAKE.

Barbus minor *Cornubiensis* cirris bifurcis. The lesser forked beard. Mr. *Jago*. *Raii syn. pisc.* 164. *fig.* 8.

WE never saw this species, and having but very imperfect descriptions of it, cannot with any certainty pronounce it to be of this genus, but are unwilling to separate them, as we found them united by that judicious Icthyologist Mr. *Jago*.

It is said not to exceed five inches in length: the first dorsal fin (in the print) is shorter than that of the preceding; the second resembles that of the other kind: the ventral fins bifurcated. It has a small beard, and a rounded tail, but the head is shorter and more steep; the color black, the skin smooth, and the appearance disagreeable.

XIII. The LING.

Ling, Lingfische. *Belon.* 130. *Gesner pisc.* 95.
Molva major *Charleton ex. pisc.* 3.
Asellus longus, eine Lenge. *Schonevelde*, 18.
Ling. *Wil. Icth.* 175. *Raii syn. pisc.* 56.
Gadus dorso dipterygio, ore serrato, maxilla superiore longiore. *Arted. synon.* 36.
Gadus molva. *Lin. syst.* 439.
Langa. *Faun. succ. No.* 313.

THE ling takes its name from its length, being corrupted from the word *long*. It abounds about the *Scilly Isles*, on the coasts of *Scarborough*, and

and those of *Scotland* and *Ireland*, and forms a considerable article of commerce *.

In the *Yorkshire* seas they are in perfection from the beginning of *February* to the beginning of *May*, and some till the end of that month. In *June* they spawn, depositing their eggs in the soft oozy ground of the mouth of the *Tees:* at that time the males separate from the females, and resort to some rocky ground near *Flamborough Head*, where the fishermen take great numbers without ever finding any of the female or roed fish among them.

While a ling is in season its liver is very white, and abounds with a fine flavored oil; but as soon as the fish goes out of season, the liver becomes red as that of a bullock, and affords no oil. The same happens to the cod and other fish in a certain degree, but not so remarkably as in the ling. When the fish is in perfection, a very large quantity of oil may be melted out of the liver by a slow fire, but if a violent sudden heat be used for that purpose, they yield very little. This oil, which nature hoards up in the cellular membranes of fishes, returns into their blood, and supports them in the engendring season, when they pursue the business of generation with so much eagerness as to neglect their food. Oil.

Vast quantities of ling is salted for exportation, as well as for home consumption. When it is cut or split for curing, it must measure twenty-six inches or upwards from the shoulder to the tail; if less than

* This branch of trade was considerable so long ago as the reign of *Edward* III. an act for regulating the price of *Lob*, *Ling*, and *Cod*, being made in his 31st year.

that

that it is not reckoned a fizeable fifh, and confequently not entitled to the bounty on exportation; fuch are called *Drizzles*, and are in feafon all fummer.

Defcr. The ufual fize of a ling is from three to four feet; but we have heard of one that was feven feet long.

The body is very flender; the head flat; the upper jaw the longeft; the teeth in that jaw fmall and very numerous; in the lower, few, flender, and fharp: on the chin is a fmall beard.

The firft dorfal fin is fmall, placed near the head, and confifts of fifteen rays: the fecond is very long, reaching almoft to the tail, and confifts of fixty-five rays: the pectoral fins have fifteen radiated rays, the ventral fins fix; the anal fixty-two: the tail is rounded at the end.

Color. Thefe fifh vary in color, fome being of an olive hue on the fides and back, others cinereous; the belly white.

XIV. The

XIV. The BURBOT.

Strinfias, ou Botatriffa. *Belon.* 300.
Lota. *Rondel. fluviat.* 165. *Gefner pifc.* 599.
Quappen, Elff-quappen, Tider-quappen, Trufchen? *Schonevelde*, 49.
Burbot, or Bird-bolt. *Plot. Staff.* 241. *tab.* 22. *fig.* 4.
Muftela fluviatilis noftratibus Eel-pout. *Wil. Icth.* 125. *Raii fyn. pifc.* 67.
Aal-rutte, Rutte. *Kram.* 388.
Gadus dorfo dipterygio, ore cirrato, maxillis æqualibus. *Arted. fynon.* 38.
Gadus Lota. *Lin. fyft.* 440. *Gronov. Zooph. No.* 97.
Lake. *Faun. fuec. No.* 113.

THIS fifh is found in the *Trent*, but in greater plenty in the river *Witham*, and in the great *Eaft Fen* in *Lincolnfhire*. It is a very delicate fifh for the table, tho' of a difgufting appearance when alive. It is very voracious, and preys on the fry and leffer fifh. It does not often take a bait, but is generally caught in weels. Place.

It abounds in the lake of *Geneva*, where it is called *Lota*, and it is alfo met with in the *Lago Maggiore*, and *Lugano*.

The largeft that we ever heard was taken in our waters weighed between two and three pounds, but abroad they are fometimes found of double that weight. Defcr.

Their body has fome refemblance to that of an eel, only fhorter and thicker, and its motions alfo refemble thofe of that fifh: they are befides very fmooth, flippery, and flimy.

The

The head is very ugly, being flat, and shaped like that of a toad: the teeth are very small, but numerous: the irides yellow.

On the end of the nose are two small beards; on the chin another: the number of its branchiostegous rays are seven.

The first dorsal fin is short: the second is placed immediately behind it, and extends almost to the tail: the pectoral fins are rounded: the ventral fins consist of six rays, of which the two first are divided near their ends from each other: the vent is placed in the middle of the belly, and the anal fin reaches almost to the tail: the tail is rounded at the end.

Color. The color of this species varies; some are dusky, others of a dirty green, spotted with black, and oftentimes with yellow, and the belly in some is white; but the real colors are frequently concealed by the slime.

XV. The SPOTTED WHISTLE FISH.

Mustella vulgaris. *Rondel.* 281. *Gesner pisc.* 89.
Sea Loche *Cestriæ*, Whistle Fish *Cornubiæ*. *Wil. Icth.* 121. *Raii syn. pisc.* 67. Rockling, Mr. *Jago*. *Raii syn. pisc.* 164. *fig.* 9.

THIS species commonly frequents the rocky shores of these islands, and is sometimes taken with a bait.

It grows to the length of one foot: the head is large and flat: the eyes not remote from the end of

of the nofe: the body is long, flender, and compreffed fideways, efpecially towards the tail: at the end of the upper jaw are two beards; on the chin one.

The teeth are numerous and fmall, difpofed along the jaws in form of a broad plate: in the roof of the mouth is a fet of fmall teeth, difpofed in a triangular form.

The number of branchioftegous rays is feven.

The firft dorfal fin is lodged in a deep furrow juft beyond the head, and confift of a number of fhort unconnected rays: the fecond rifes juft behind it, and reaches very near the tail: the pectoral fins are broad and round: the ventral fins fmall; the fecond ray the longeft: the anal fin reaches almoft to the tail: the tail rounded at the end.

The fcales are very fmall: the color of the body and head a reddifh yellow, marked above the lateral line with large black fpots: the back fin and tail are darker; the vent fin of a brighter red, but all are fpotted. The lateral line bends in the middle, then paffes ftrait to the tail.

XVI. The BROWN WHISTLE FISH.

Gadus dorfo dipterygio, fulco magno ad pinnam dorfi primam, ore cirrato? *Arted. fynon.* 37.

Gadus muftela. G. dipterygius cirris 5, pinna dorfali priore exoleta. *Lin. fyft.* 440. *Gronov. Zooph. No.* 314.

MR. *Willoughby* makes this fpecies with five beards, a variety only of the former; but having opportunity of examining feveral fpecimens, we muft diffent from his opinion, having always obferved

served the number of beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five. The first ray of the first dorsal fin is very long. There is also some difference in the form as well as color, this species being rather thicker in proportion than the former.

Excepting these particulars, and the number of beards, there is a general agreement in the parts of both. The beards on the upper jaw are four, viz. Two at the very end of the nose, and two a little above them: on the end of the lower jaw is a single one.

These fish are of a deep olive brown, their belly whitish. They grow to the same size as the former.

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 the *Sicilian* fishermen repeat their *Mamassu di pajanu*, &c. when they are in pursuit of the *Sword Fish**.

* *Vide p.* 127.

Genus

Genus XX. Head blunt at the end, and very fteep.
Body fmooth and flippery.
Teeth flender.
Body compreffed fideways.
Ventral fins confifting generally of only two united rays. One dorfal fin.
Six branchioftegous rays. BLENNY†.

*

With a crefted head.

I. The CRESTED BLENNY.

Adonis, qu exocetus. *Belon.* 219.
Galerita. *Rondel.* 204. *Gefner pifc.* 14, 17, 18.
Alauda criftata, five Galerita. *Wil. Icth.* 134. *Raii fyn. pifc.* 73.
Blennius crifta capitis tranfverfa cutacea. *Arted. fynon.* 44.
Blennius Galerita. *Lin. fyft.* 441.

THIS fpecies is found, tho' not frequently, on our rocky fhores, and is commonly about four or five inches long.

On the head is a fmall creft-like fin, which it can erect or depref at pleafure. On the top of the head between the eyes is a triangular lump pointing backwards, and red about its edges.

† There being no *Englifh* name for this genus, *Blenny* is given it, derived from the word *Blennius*, the generical term ufed by *Artedius*, who forms it from Βλέννα *mucus*, it being of a flimy nature.

The skin at the corner of the upper jaw is loose, and projects.

From the hind part of the head almost to the tail extends the dorsal fin: the ventral fin is small: the vent is placed under the ends of the pectoral fins.

The body is smooth and slippery: the color brown, and spotted.

II. The GATTORUGINE.

Scorpioides. *Rondel.* 204. *Gesner pisc.* 847.
Gattorugine *Venetiis. Wil. Icth.* 132. *Raii syn. pisc.* 72.
Blennius pinnulis duabus ad oculos, pinna ani osticulorum viginti trium. *Arted. synon.* 44.
Blennius Gattorugine. *Lin. syst.* 442.

Place. THIS curious kind was discovered to be a *British* fish, by the Rev. Mr. *Williams*, who found it on the *Anglesea* coast, and favored us with it.

Descr. Its length was seven inches and an half: the body was smooth, and compressed on the sides: the belly a little prominent: the vent situated as in the preceding fish.

The teeth slender, almost setaceous, and very close set: between the eyes was a small hollow, and above each just on the summit was a narrow loose membrane, trifurcated at the top, which distinguishes this from all other species.

The pectoral fins broad and rounded, consisting of fourteen rays, which extend beyond the webs, making the edges appear scalloped.

The

The ventral fins like thofe of others of the genus: the dorfal fin confifted of fourteen ftrong fpiny rays, and nineteen foft rays; the laft of which were higher than the fpiny rays.

The anal fin had twenty-one rays: the ends in every fin extended beyond their webs.

The tail was rounded at the end, and confifted of twelve rays, divided towards their extremities.

This fifh in general was of a dufky hue, marked acrofs with wavy lines: the belly of a light-afh color.

The lower part of the pectoral fins, and the ends of the ventral fins, of an orange color.

**

With a fmooth head.

III. The SMOOTH BLENNY.

La tierce efpece de Exocetus? *Belon.* 219.
Alauda non criftata. *Rondel.* 205. *Gefner pifc.* 18.
Mulgranoc, & Bulcard *Cornubiæ. Wil. Icth.* 133. *Raii fyn. pifc.* 73.
Cataphractus lævis *Cornubienfis*, Smooth Shan. *Mr. Jago apud Raii fyn. pifc.* 164. *fig.* 10.
Blennius maxilla fuperiore longiore, capite fummo acuminato. *Arted. fynon.* 45.
Blennius Pholis. *Lin. fyft.* 443. *Gronov. Zooph. No.* 259.

WE difcovered this fpecies in plenty lying under the ftones among the tang on the rocky coafts of *Anglefea*, at the lower water-mark. It was very active and vivacious, and would by the help Place.

of its ventral fins creep up between the stones with great facility. It bit extremely hard, and would hang at ones finger for a considerable time. It was very tenacious of life, and would live for near a day out of water.

It feeds on shells and small crabs, whose remains we found in its stomach.

Descr. The length in general was five inches: the head large, and sloping suddenly to the mouth: the irides red.

The teeth slender, very sharp, and close set: there were twenty-four in the upper, and nineteen in the lower jaw.

The pectoral fins broad and rounded, consisting of thirteen rays: the ventral fins of only two thick rays, separated near their ends.

The dorsal fin consisted of thirty-two soft rays, and reached from the hind part of the head almost to the tail.

The vent was in the middle of the body: the anal fin extended almost to the tail, and consisted of nineteen rays, tipt with white.

The tail rounded at the end, and composed of twelve branched rays.

The color varied, some were quite black, but generally they were of a deep olive, prettily marbled with a deeper color; others spotted with white: the last often disposed in rows above and beneath the lateral line.

IV. The

IV. The SPOTTED BLENNY.

Gunnellus *Cornubienfium*, nonnullis *Butter-fifh*, q. d. Liparis. *Wil. Icth.* 115. *Raii fyn. pifc.* 144.

Blennius maculis circiter decem nigris limbo albicante utrinque ad pinnam dorfalem. *Arted. fynon.* 45.

Blennius Gunnellis. B. pinna dorfali ocellis X nigris. *Lin. fyft.* 443. *Faun. fuec. No.* 318. *Seb. Muf.* iii. p. 91. *tab.* 30. *fig.* 6.

Pholis maculis annulatis ad pinnam dorfalem, pinnis ventralibus obfoletis. *Gronov. Zooph. No.* 267.

THIS fpecies is found in the fame place with the preceding, lurking like it under ftones, is equally vivacious, and is ufed as a bait for larger fifh.

Its length is fix inches: the depth only half an inch: the fides very much compreffed, and extremely thin.

The head and mouth is fmall; the laft points upwards, and the lower jaw flopes confiderably towards the throat.

The teeth are very fmall; the irides whitifh.

The pectoral fins rounded, and of a yellow color: inftead of the ventral fins are two minute fpines.

The dorfal fin confift of feventy-eight fhort fpiny rays, and runs the length of the back almoft to the tail: on the top of the back are eleven round fpots, which reach the lower half of the dorfal fin; they are black, half encircled with white.

The vent is in the middle of the body; the anal fin extends from it almost to the tail.

The tail is rounded, and of a yellow color.

The back and sides are of a deep olive: the belly whitish.

V. The VIVIPAROUS BLENNY.

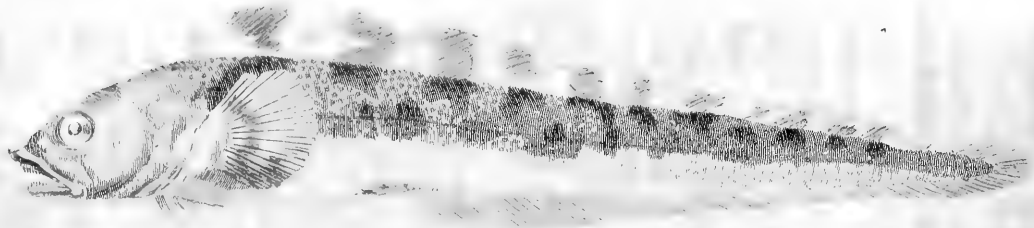
Mustela marina vivipara, Ael-quappe, Ael-pute, Ael-moder. *Schonevelde.* 50. *tab.* 4.
Guffer, Eelpout. *Sib. Scot.* iii. 25.
Mustela vivipara *Schoneveldii. Wil. Icth.* 122. *Raii syn. pisc.* 69.
Blennius capite dorsoque fusco flavescente lituris nigris, pinna ani flava. *Arted. synon.* 45.
Blennius viviparus, B. ore tentaculis duobus. *Lin. syst.* 443.
Tanglake. *Faun. suec. No.* 317. *Mus. Ad. Fr.* I. 69. *tab.* 32.
Enchelyopus corpore lituris variegato; pinna dorsi ad caudam sinuata. *Gronov. Zooph. No.* 265.

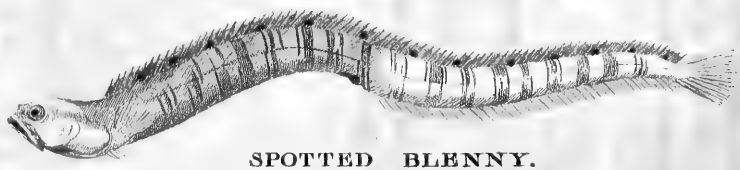
SCHONEVELDE first discovered this species; Sir *Robert Sibbald* afterwards found it on the *Scotch* coasts; and *Linnæus* has described it in his account of his *Swedish* majesty's *Museum.*

We are unacquainted with this fish; but on the authority of Sir *Robert Sibbald*, give it a place in this work, borrowing our description from *Schonevelde* and *Linnæus.*

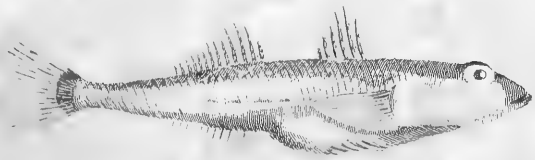
They are viviparous, bringing forth two or three hundred young at a time. Their season of parturition is a little after the depth of winter. Before *Midsummer* they quit the bays and shores, and retire into the deep, where they are commonly taken. They are a very coarse fish, and eat only by the poor.

They





SPOTTED BLENNY.



SPOTTED GOBY.

They are commonly about a foot in length, and of an eel-like form: their ſkin ſmooth and ſlippery. Deſcr.

At the noſtrils are two ſmall beards: the jaws are very rough: the covers of the gills open.

The dorſal fin commences at the hind part of the head, and reaches almoſt to the tail; it conſiſts of eighty rays.

The pectoral fins are rounded, and are compoſed of nineteen rays: the ventral fins of only four very ſhort ones.

The anal fins extends to and unites with the tail, which is ſmall, and ends in a ſharp point.

The color of the back and head is a yellowiſh brown, ſtained with black ſtrokes: the ſides a little lighter: the belly of a dirty white: the dorſal fin marked in the ſame manner as the back.

Sect. III. THORACIC FISH.

Genus XXI. Eyes placed near each other.
Four branchiostegous rays.
Ventral fins united. GOBY*.

I. The BLACK GOBY.

Gobio niger. *Rondel.* 200. *Gesner pisc.* 395.
Schwartzer Goeb. *Schonevelde.* 36.
Sea Gudgeon. Rock-fish. *Wil. Icth.* 206. *Raii syn. pisc.* 76.
Gobius ex nigricante varius, pinna dorsi secunda osciculorum quatuor decim. *Arted. synon.* 46.
Gobius niger. *Lin. syst.* 449.
Eleotris capite cathetoplateo, pinnis ventralibus concretis. *Gronov. Zooph. No.* 281.

IT is to this fish that Naturalists have given the synonym of Κωβιος, and *Gobio*, names of certain species mentioned by *Aristotle*, *Pliny*, and *Oppian*. The two first have not left any characters for us to distinguish them by; and *Oppian* at once shews that he never intended this kind, as he has placed it, among those which are armed with a poisonous spine. *Aristotle* was acquainted with two species; one a sea fish that frequented the rocks, another that was gregarious, and an inhabitant of rivers, which last seems to have been our common gudgeon.

* Formed from *Gobius*, the generic name bestowed by Naturalists on these fish.

This

This ſpecies grows to the length of ſix inches: the body is ſoft, ſlippery, and of a ſlender form: the head is rather large; the cheeks inflated; the teeth ſmall, and diſpoſed in two rows: from the head to the firſt dorſal fin is a ſmall ſulcus. Deſcr.

The firſt dorſal fin conſiſts of ſix rays; the ſecond of fourteen; the pectoral fins of ſixteen or ſeventeen, cloſely ſet together, and the middlemoſt the longeſt; the others on each ſide gradually ſhorter.

The ventral fins coaleſce and form a ſort of funnel, by which theſe fiſh affix themſelves immoveably to the rocks, for which reaſon they are called *Rock-fiſh*.

The tail is rounded at the end.

The color is brown, or deep olive, mixed with dark ſtreaks, and ſpotted with black: the dorſal and anal fins are of a pale blue, the rays marked with minute black ſpots.

II. The

II. The SPOTTED GOBY.

Αφυα? *Athen. lib.* vii. *p.* 284.
Aphia. *Belon.* 207.
Aphya cobites. *Rondel.* 210. *Gesner pisc.* 67. *Wil. pisc.* 207. *Raii syn. pisc.* 76.
Gobius Aphya et marsio dictus. *Arted. synon.* 47.
Gobius Aphya. G. fasciis etiam pinnarum fuscis. *Lin. syst.* 450.

WE saw several of this species taken last summer on our sandy shores in the shrimp nets.

The length of the largest was not three inches: the nose was blunt: the eyes large and prominent, standing far out of the head: the irides sappharine; the head flat; the tongue large; teeth in both jaws.

The first dorsal fin consisted of six rays, the second of eleven, and placed at some distance from the other.

The ventral fins are united: the anal consist of eleven rays: the tail is even at the end.

The body is of a whitish color, obscurely spotted with ferruginous: the rays of the dorsal fins, and the tail, barred with the same color.

Genus

Genus XXII. Large flat head, armed with
ſharp ſpines.
Six branchioſtegous rays.
BULL-HEAD.

I. The BULL-HEAD.

Βοῖτος. *Ariſt. Hiſt. an. lib.* iv. *c.* 8.
Chabot. *Belon.* 213.
Cottus. *Rondel. Fluviat.* 202.
Gobio capitatus. *Geſner piſc.* 401.
Een Miiller. *Schwenckfelt. Siles.* 431.
Bull-head, Miller's Thumb. *Wil. Icth.* 137. *Raii ſyn. piſc.* 76.
Cottus alepedotus glaber, capite diacantho. *Arted. ſynon.* 76.
Cottus Gobio. C. lævis, capite ſpinis duabus. *Lin. ſyſt.* 452.
Sten-ſimpa, Slagg-ſimpa. *Faun. ſuec. No.* 323.
Koppe. *Kram.* 384. *Gronov. Zooph. No.* 270.

THIS ſpecies is very common in all our clear brooks; it lies almoſt always at the bottom, either on the gravel or under a ſtone: it depoſits its ſpawn in a hole it forms in the gravel, and quits it with great reluctance. It feeds on water inſects; and we found in the ſtomach of one the remains of the freſh water ſhrimp, the *pulex aquatilis* of *Ray*.

This fiſh ſeldom exceeds the length of three inches and an half: the head large, broad, flat, and thin at its circumference, being well adapted for inſinuating itſelf under ſtones: on the middle part of the covers of the gills is a ſmall crooked ſpine turning inwards.

The

The eyes are very small: the irides yellow: the teeth very minute, placed in the jaws and the roof of the mouth.

The body grows slender towards the tail, and is very smooth.

The first dorsal fin consists of six rays, the second of seventeen: the pectoral fins are round, and prettily scalloped at their edges, and are composed of thirteen rays; the ventral of only four; the anal of thirteen; the tail of twelve, and is rounded at the end.

The color of this fish is as disagreeable as its form, being dusky, mixed with a dirty yellow: the belly whitish.

II. The POGGE.

Cataphractus, Stein-bicker, Miiller, Turs-bull. *Schoneveldc.* 30. *tab.* 3.
Cataphractus *Schoneveldii* Septentr. *Anglis* a Pogge. *Wil. Icth.* 211. *Raii syn. pisc.* 77.
Cottus cirris plurimis corpore octagono. *Arted. synon.* 77.
Cottus Cataphractus. C. loricatus, rostro verrucoso 2 bifidis, capite subtus cirroso. *Lin. syst.* 451.
Botn-mus. *Faun. suec. No.* 324. *Seb. Mus.* iii. *tab.* 28. *Gronov. Zooph. No.* 271.

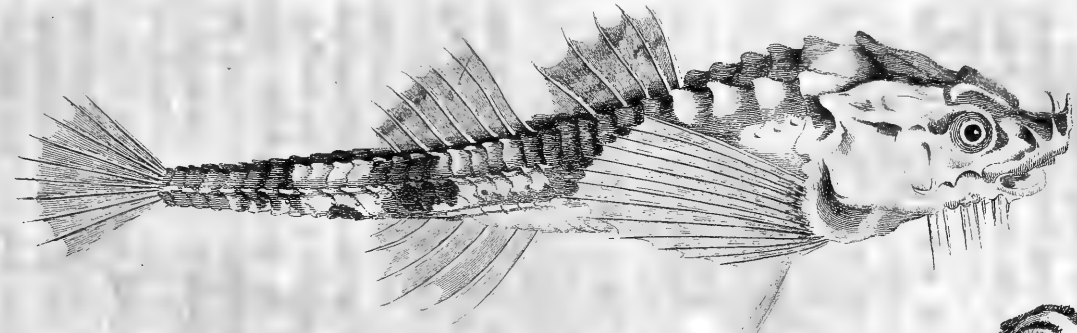
THE pogge is very common on most of the *British* coasts.

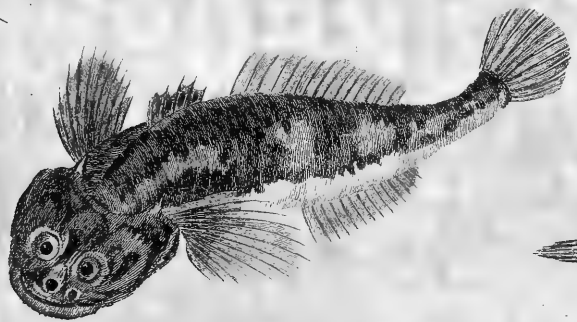
It seldom exceeds five inches and an half in length, and even seldom arrives at that size.

The head is large, bony, and very rugged: the end of the nose is armed with four short upright spines. on the throat are a number of short white beards.

The

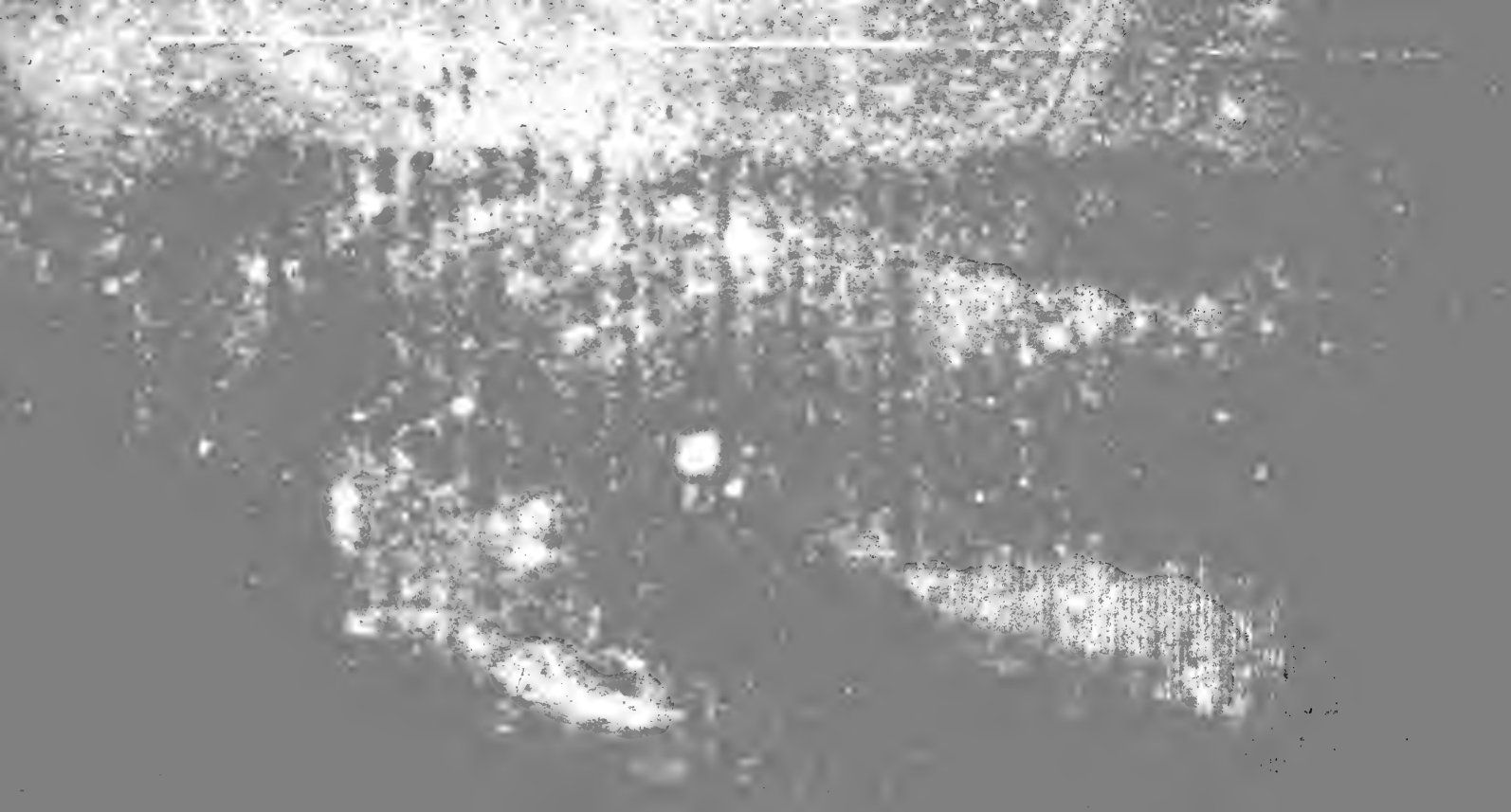
POGGE.





BULL-HEAD.

T. Mazell del & fc.



The teeth are very minute, ſituated in the jaws.

The body is octagonal, and covered with a number of ſtrong bony cruſts, divided into ſeveral compartments, the ends of which project into a ſharp point, and form ſeveral echinated lines along the back and ſides from the head to the tail.

The firſt dorſal fin conſiſts of ſix ſpiny rays: the ſecond is placed juſt behind the firſt, and conſiſts of ſeven ſoft rays.

The pectoral fins are broad and rounded, and are compoſed of fifteen rays.

III. The FATHER-LASHER.

Scorpios. *Ovid. Halieut.* 116.
La Scorpene. *Belon.* 242.
Scorpius marinus, Waelkuke, Buloffe, Schorp-fiſche. *Schonevelde.* 67. *tab.* 6.
Scorpænæ *Belonii* ſimilis *Cornub.* Father-laſher. *Wil. Icth.* 138. *Raii ſyn. piſc.* 145.
Scorpius virginianus. *Idem.* 142. *Wil. Icth. App.* 25.
Cottus ſcorpius. C. capite ſpinis pluribus, maxilla ſuperiore paulo longiore. *Lin. ſyſt.* 452.
Rot-ſimpa, Skrabba, Skialryta. *Faun. ſuec. No.* 323.
Ulke. *Crantz. Greenl.* I. 95. *Gronov. Zooph. No.* 268.
Sea Scorpion. *Edw.* 284.

THIS fiſh is not uncommon on the rocky coaſts of this iſland: it lurks under ſtones, and will take a bait.

It does not grow to a large ſize, ſeldom exceeding (as far as we have ſeen in the ſpecimens that are taken on our ſhores) eight or nine inches. Deſcr.

The head is very large, and has a moſt formidable appearance, being armed with vaſt ſpines, which it can

can oppose to any enemy that attacks it, by swelling out its cheeks and gill covers to a large size.

Et capitis duro nociturus Scorpios *ictu.*
The hurtful *Scorpion* wounding with its head.

Spines. The nose and space contiguous to the eyes are furnished with short sharp spines: the covers of the gills are terminated by exceeding long ones, which are both strong and very sharp pointed.

The mouth is large: the jaws covered with rows of very small teeth: the roof of the mouth is furnished with a triangular spot of minute teeth.

The back is more elevated than that of others of this genus: the belly prominent: the side-line rough, the rest of the body very smooth, and grows slender towards the tail.

The first dorsal fin consists of eight spiny rays; the second of eleven high soft rays: the pectoral fins are large, and have sixteen; the ventral three; the anal eight: the tail is rounded at the end, and is composed of twelve bifurcated rays.

The color of the body is brown, or dusky and white marbled, and sometimes is found also stained with red: the fins and tail are transparent, sometimes clouded, but the rays barred regularly with brown: the belly is of a silvery white.

American. This kind is very frequent in the *Newfoundland* seas, where it is called *Scolping:* it is also as common on the coast of *Greenland* in deep water near shore. It is a principal food of the natives, and the soup made of it is said to be agreeable as well as wholesome.

Genus

Genus XXIII. Body very deep, and compreffed fideways.
Very long filaments iffuing from the firft dorfal fin.
Seven branchioftegous rays.

DOREE.

I. The DOREE.

Χαλκεὺς. *Athen. lib.* vii. 328. *Oppian Halieut.* I. 133.
Faber? *Ovid Halieut.* 110. Zeus idem Faber *Gadibus. Plin. lib.* ix. *c.* 18.
La Dorèe. *Belon.* 146.
Faber five Gallus marinus. *Rondel.* 328. *Gefner pifc.* 369.
A Doree. *Wil. Icth.* 294. *Raii fyn pifc.* 99.
Zeus ventre aculeato, cauda in extremo circinato. *Arted. fynon.* 78.
Zeus Faber. Z. cauda rotundata, lateribus mediis ocello fufco, pinnis analibus duabus. *Lin. fyft.* 454. *Gronov. Zooph. No.* 311.
Zeus fpinofus. *Muf. Fred. Ad.* 67. *tab.* xxxi.

SUPERSTITION hath made the *Doree* rival to the *Hadock*, for the honor of having been the fifh out of whofe mouth St. *Peter* took the tributemony, leaving on its fides thofe inconteftible proofs of the identity of the fifh, the marks of his finger and thumb.

It is rather difficult at this time to determine on which part to decide the difpute; for the *Doree* likewife afferts an origin of its fpots of a fimilar nature, but of a much earlier date than the former. St. *Chriftopher*,

Christopher *, in wading thro' an arm of the sea, having caught a fish of this kind *en passant*, as an eternal memorial of the fact, left the impressions on its sides to be transmitted to all posterity. Could this but be established, we should not hesitate to pronounce in favor of the hadock.

In our own country it was very long before this fish attracted our notice, at left as an edible one. We are indebted to that judicious actor and *bon vivant* the late Mr. *Quin*, for adding a most delicious fish to our table, who overcoming all the vulgar prejudices on account of its deformity, has effectually established its reputation.

Place. This fish was supposed to be found only in the southern seas of this kingdom, but it has been discovered last year on the coast of *Anglesea*. Those of the greatest size are taken in the *Bay* of *Biscay* off the *French* coasts: they are also very common in the *Mediterranean*; *Ovid* must therefore have styled it *rarus Faber*, on account of its excellency not its scarcity.

Descr. The form of this fish is hideous: its body is oval, and greatly compressed on the sides: the head large: the snout vastly projecting: the mouth very wide: the teeth very small.

The eyes great: the irides yellow.

* *Belon. Rondel.* also *Aldrovand de pisc.* 40. St. *Christopher* was of a *Colossal* stature, as is evident from his image in the church of *Notre Dame* at *Paris*, and a still larger at *Auxerre*: the last we think is near seventy feet high. His history is expressed in his name, χριστοφορος, being said to have carried our Saviour, when a child, over an arm of the sea.

The

The lateral line oddly diftorted, finking at each end, and rifing near the back in the middle: beneath it on each fide is a round black fpot.

The firft dorfal fin confifts of ten ftrong fpiny rays, with long filaments, reaching far beyond their ends: the fecond is placed near the tail, and confifts of twenty-four foft rays, the middlemoft of which are the longeft.

The pectoral fins have fourteen rays, the ventral feven; the firft fpiny, the others foft: it has two anal fins; the firft confifts of four fharp fpines, the fecond of twenty-two foft ones, and reaches very near the tail.

The tail is round at the end, and confifts of fifteen branched rays.

The color of the fides are olive, varied with light blue and white, and while living is very refplendent, and as if gilt, for which reafon it is called the *Doree*.

The largeft fifh we have heard of weighed twelve pounds. Size.

Genus XXIV. Body quite flat, and very thin. Eyes, both on the same side the head. Branchiostegous rays from four to seven. FLOUNDER.

*

With the eyes on the right side.

I. The HOLIBUT.

Hippoglossus. *Rondel.* 325. *Gesner pisc.* 669.
Heglbutte, Hilligbutte. *Schonevelde.* 62.
Holibut, *Septentr. Anglis* Turbot. *Wil. Icth.* 99. *Raii syn. pisc.* 33.
Pleuronectes oculis a dextris, totus glaber. *Arted. synon.* 31.
Pleuronectes Hippoglossus. *Lin. syst.* 456.
Halg-flundra. *Faun. suec. No.* 329. *Gronov. Zooph. No.* 247.

Size. THIS is the largest of the genus; some have been taken in our seas weighing from one to three hundred pounds; but much larger are found in those of *Newfoundland*, *Greenland*, and *Iceland*, where they are taken with a hook and line in very deep water. They are part of the food of the *Greenlanders* *, who cut them into large slips, and dry them in the sun.

They are common in the *London* markets, where they are exposed to sale cut into large pieces. They

* *Crantz. Hist. Greenl.* I. 98.

are

are very coarfe eating, excepting the part which adheres to the fide fins, which is extremely fat and delicious, but furfeiting.

They are the moft voracious of all flat fifh. The laft year there were two inftances of their fwallowing the lead weight at the end of a line, with which the feamen were founding the bottom from on board a fhip, one off *Flamborough Head*, the other going into *Tinmouth Haven:* the latter was taken, the other difengaged itfelf.

The holibut, in refpect to its length, is the narroweft of any of this genus except the fole. Defcr.

It is perfectly fmooth, and free from fpines either above or below. The color of the upper part is dufky; beneath of a pure white. We do not count the rays of the fins in this genus, not only becaufe they are fo numerous, but becaufe nature hath given to each fpecies characters fufficient to diftinguifh them by.

Thefe flat fifh fwim fideways; for which reafon *Linnæus* hath ftyled them *Pleuronectes.*

II. The WHIFF.

Passer *Cornubiensis* asper, magno oris hiatu. Mr. *Jago*. *Raii syn. pisc.* 163. *fig.* 2.

BY the figure Mr. *Jago* has left of this species, it bears a great resemblance to the holibut. He calls it the *Whiff*, and says its mouth is large, its skin hard and rough, its color a dirty ash, and its flesh coarse and good for nothing. The skin appears to be much spotted, and the lateral line greatly incurvated at the beginning, and afterwards proceeding in a strait direction to the tail.

III. The PLAISE.

Platessa? *Ausonii Epist. ad. Theon.* 62.
Le Quarlet. *Belon.* 139.
Quadratulus. *Rondel.* 318. *Gesner pisc.* 665.
Scholle, Pladise. *Schonevelde.* 61.
Plaise. *Wil. Icth.* 96. *Raii syn. pisc.* 31.
Pleuronectes oculis et tuberculis sex a dextra capitis, lateribus glabris, spina ad anum. *Arted. synon.* 30.
Pleuronectes Platessa. *Lin. syst.* 456. *Gronov. Zooph. No.* 246.
Skalla, Rodsputta. *Faun. suec. No.* 328.

THESE fish are very common on most of our coasts, and sometimes taken of the weight of fifteen pounds; but they seldom reach that size, one of eight or nine pounds being reckoned a large fish.

The

The best and largest are taken off *Rye*, on the coast of *Sussex*, and also off the *Dutch* coasts. They spawn in the beginning of *February*.

Dutch Plaise is larger than the common Kind: the Number of Fins &c. are similar: the Teeth alike. The Tubercle, the same.

They are very flat, and much more square than the preceding. Behind the left eye is a row of six tubercles, that reaches to the commencement of the lateral line.

The upper part of the body and fins is of a clear brown, marked with large bright orange-colored spots: the belly is white.

IV. The FLOUNDER.

Le Flez. *Belon.* 141.
Passeris tertia species. *Rondel.* 319. *Gesner pisc.* 666, 670.
Struff-butte. *Schonevelde.* 62.
Flounder, Fluke, or But. *Wil. Icth.* 980. *Raii syn. pisc.* 32.
Pleuronectes oculis a dextris, linea laterali aspera, spinulis supiné ad radices pinnarum, dentibus obtusis. *Arted. synon.* 31.
Pleuronectes Flesus. *Lin. syst.* 457. *Gronov. Zooph. No.* 248.
Flundra, Slatt-skadda. *Faun. suec. No.* 327.

THE flounder inhabits every part of the *British* sea, and even frequents our rivers at a great distance from the salt waters; and for this reason some writers call it the *Passer fluviatilis*. It never grows large in our rivers, but is reckoned sweeter than those that live in the sea. It is inferior in size to the plaise, for we never heard of any that weighed more than six pounds.

It may very easily be distinguished from the plaise, or any other fish of this genus, by a row of sharp small spines that surround its upper sides, and are Descr.

placed just at the junction of the fins with the body. Another row marks the side-line, and runs half way down the back.

The color of the upper part of the body is a pale brown, sometimes marked with a few obscure spots of dirty yellow: the belly is white.

We have met with a variety of this fish with the eyes and lateral line on the left side. *Linnæus* makes a distinct species of it under the name of *Pleuronectes Passer*, p. 459; but since it differs in no other respect from the common kind, we agree with Doctor *Gronovius* in not separating them.

V. The D A B.

La Limande. *Belon.* 142.
Passer asper, sive squamosus. *Rondel.* 319. *Gesner pisc.* 665.
Dab. *Wil. Icth.* 97. *Raii syn. pisc.* 32.
Pleuronectes oculis a dextra, squamis asperis, spina ad anum, dentibus obtusis. *Arted. synon.* 33.
Pleuronectes Limanda. Pl. oculis dextris, squamis ciliatis, spinulis ad radicem pinnarum dorsi, aniique. *Lin. syst.* 457.

THE dab is found with the other species, but is less common. It is in best season during *February*, *March*, and *April*: they spawn in *May* and *June*, and become flabby and watery the rest of the summer. They are superior in goodness to the plaise and flounder, but far inferior in size.

Descr. It is generally of an uniform brown color on the upper side, tho' sometimes clouded with a darker. The scales are small and rough, which is a charac-

ter.

ter of this fpecies. The lateral line is extremely incurvated at the beginning, then goes quite ftrait to the tail. The lower part of the body is white.

VI. The SMEAR-DAB.

Rhombus lævis maculis nigris, a Kit. Mr. *Cornubienfis Jago. Raii fyn. pifc.* 162. *fig.* 1.

WE found one of this fpecies at a fifhmonger's in *London* laft winter, where it is known by the name of the fmear-dab.

It was a foot and an half long, and eleven inches broad between fin and fin on the wideft part.

The head appeared very fmall, as the dorfal fin began very near its mouth, and extended very near to the tail. It confifted of feventy nine rays.

The eyes were pretty near each other. The mouth full of fmall teeth.

The lateral line was much incurvated for the firft two inches from its origin, then continued ftrait to the tail.

The back was covered with fmall fmooth fcales, was of a light brown color, fpotted obfcurely with yellow. The belly white, and marked with five large dufky fpots.

It was a fifh of goodnefs equal to the common dab.

VII. The SOLE.

Βογλωσσος. *Athen. lib.* viii. *p.* 288. *Oppian Halieut.* I. 99.
La Sole. *Belon.* 142.
Bugloſſus. *Rondel.* 320. *Geſner piſc.* 666.
Tungen. *Schonevelde.* 63.
Pleuronectes oculis a ſiniſtra corpore oblongo, maxilla ſuperiore longiore, ſquamis utrinque aſperis. *Arted. ſyn.* 32.
Pleuronectes Solea. *Lin. ſyſt.* 457. *Gronov. Zooph. No.* 251.
Tunga, Sola. *Faun. ſuec. No.* 326.

THE ſole is found on all our coaſts, but thoſe on the weſtern ſhores are much ſuperior in ſize to thoſe of the north. On the former they are ſometimes taken of the weight of ſix or ſeven pounds, but towards *Scarborough* they rarely exceed one pound; if they reach two, it is extremely uncommon.

They are uſually taken in the trawl-net: they keep much at the bottom, and feed on ſmall ſhell fiſh.

Deſcr. It is of a form much more narrow and oblong than any other of the genus. The irides are yellow; the pupils of a bright ſappharine color: the ſcales are ſmall, and very rough: the upper part of the body is of a deep brown: the tip of one of the pectoral fins black: the under part of the body is white: the lateral line ſtrait: the tail rounded at the end.

It is a fiſh of a very delicate flavor; but the ſmall ſoles are much ſuperior in goodneſs to large ones,

ones*. The chief fiſhery for them is at *Blixham*, and in *Torbay*.

VIII. The SMOOTH SOLE.

Solea? *Ovid. Halieut.* 124. *Wil. Icth.* 102. *Raii ſyn. piſc.* 34.
Arnogloſſus ſeu Solea lævis.

THIS, as deſcribed by Mr. *Ray*, (for we have not ſeen it) is extremely thin, pellucid, and white, and covered with ſuch minute ſcales, and thoſe inſtantly deciduous, as to merit the epithet ſmooth.

It is a ſcarce ſpecies, but is found in *Cornwall*, where, from its tranſparency, it is called the *Lantern Fiſh*.

It is probable that *Ovid* intended this ſpecies, by his *Solea*; for the common kind does by no means merit his deſcription,

Fulgentes SOLEÆ *candore.*

And *Soles* with white reſplendent.

* By the antient laws of the *Cinque* ports, no one was to take ſoles from the 1ſt of *November* to the 15th of *March*; neither was any body to fiſh from ſun-ſetting to ſun-riſing, that the fiſh might enjoy their night-food.

IX. The

**

With the eyes on the left side.

IX. The TURBOT.

Rhombus. *Ovid. Halieut.*
Le Turbot. *Belon.* 134.
Rhombus, aculeatus. *Rondel.* 310. *Gesner pisc.* 661.
Steinbutt, Torbutt, Treenbutt, Dornbutt. *Schonevelde.* 60.
Turbot. in the *north* a Bret. *Wil. Icth.* 94.
Rhombus maximus asper non squamosus. *Raii syn. pisc.* 31.
Pleuronectes oculis a sinistra, corpore aspero. *Arted. synon.* 32.
Pleuronectes maximus. *Lin. syst.* 459. *Gronov. Zooph. No.* 254.
Butta. *Faun. suec. No.* 325.

Size. TURBOTS grow to a very large size; we have seen them of three and twenty pounds weight, but have heard of some that weighed thirty. They are taken chiefly off the north coast of *England*, and others off the *Dutch* coast; but we believe the last has, in many instances, more credit than it deserves for the abundance of its fish.

Fishery. The large turbots, and several other kinds of flat fish, are taken by the hook and line, for they lye in deep water: the method of taking them in wares, or staked nets, is too precarious to be depended on for the supply of our great markets, because it is by meer accident that the great fish stray into them.

It is a misfortune to the inhabitants of many of our fishing coasts, especially those of the north part of *North Wales*, that they are unacquainted with the most

moft fuccefsful means of capture: for their benefit, and perhaps that of other parts of our ifland, we fhall lay before them the method practifed by the fifhermen of *Scarborough*, as it was communicated to us by Mr. *Travis*.

When they go out to fifh, each perfon is provided with three lines. Each man's lines are fairly coiled upon a flat oblong piece of wicker-work; the hooks being baited, and placed very regularly in the centre of the coil. Each line is furnifhed with 14 fcore of hooks, at the diftance of fix feet two inches from each other. The hooks are faftened to the lines upon fneads of twifted horfe-hair, 27 inches in length. Lines.

When fifhing there are always three men in each coble, and confequently nine of thefe lines are faftened together, and ufed as one line, extending in length near three miles, and furnifhed with 2520 hooks. An anchor and a buoy are fixed at the firft end of the line, and one more of each at the end of each man's lines; in all four anchors, which are commonly perforated ftones, and four buoys made of leather or cork. The line is always laid acrofs the current. The tides of flood and ebb continue an equal time upon our coaft, and when undifturbed by winds run each way about fix hours. They are fo rapid that the fifhermen can only fhoot and haul their lines at the turn of tide; and therefore the lines always remain upon the ground about fix hours*. The fame rapidity of tide prevents their ufing hand-

* In this fpace the *myxine glutinofa* of *Linnæus*, will frequently penetrate the fifh that are on the hooks, and entirely devour them, leaving only the fkin and bones.

lines;

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 sometimes escape to the shore, leaving their lines behind.

Coble. The coble is 20 feet 6 inches long, and 5 feet extreme breadth. It is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purpose of encountering a mountanous sea: they hoist sail when the wind suits.

The five-men boat is 40 feet long and 15 broad, and of 25 tons burthen: it is so called, tho' navigated by six men and a boy, because one of the men is commonly hired to cook, &c. and does not share in the profits with the other five. All our able fishermen go in these boats to the herring fishery at *Yarmouth* the latter end of *September*, and return about the middle of *November*. The boats are then laid up until the beginning of *Lent*, at which time they go off in them to the edge of the *Dogger*, and other places, to fish for turbot, cod, ling, skates, &c. They always take two cobles on board, and when they come upon their ground, anchor the boat, throw out the cobles, and fish in the same manner as those do who go from the shore in a coble, with this difference only; that here each man is provided with double the quantity of lines, and instead of waiting the return of tide in the coble, return to the boat and bait their other lines; thus hawling one set, and shooting another every turn of tide. They

commonly

commonly run into harbour twice a week to deliver their fifh. The five-men boat is decked at each end, but open in the middle, and has two large lug-fails.

The beft bait for all kinds of fifh is frefh herring cut in pieces of a proper fize; and notwithftanding what has been faid to the contrary, they are taken here at any time in the winter, and all the fpring, whenever the fifhermen put down their nets for that purpofe. The five-men boats always take fome nets for that end. Next to herrings are the leffer lampreys*, which come all winter by land-carriage from *Tadcafter*. The next baits in efteem are fmall hadocks cut in pieces, fand worms, mufcles, and limpets (called here *Flidders*;) and laftly, when none of thefe can be had they ufe bullock's liver. The hooks ufed here are much fmaller than thofe employed at *Iceland* and *Newfoundland*. Experience has fhewn that the larger fifh will take a living fmall one upon the hook, fooner than any bait that can be put on; therefore they ufe fuch as the fmall fifh can fwallow. The hooks are two inches and an half long in the fhank, and near an inch wide between the fhank and the point. The line is made of fmall cording, and is always tanned before it is ufed. Bait.

Turbots, and all the rays, are extremely delicate in their choice of baits. If a piece of herring or hadock has been twelve hours out of the fea, and then ufed as bait, they will not touch it.

* The *Dutch* alfo ufe thefe fifh as baits in the turbot fifhery, and purchafe annually from the *Thames* fifhermen as much as amounts to 700*l.* worth, for that purpofe.

This

Descr. This and the pearl are of a remarkable square form: the color of the upper part of the body is cinereous, marked with numbers of black spots of different sizes: the belly is white: the skin is without scales, but greatly wrinkled, and mixed with small short spines, dispersed without any order. The head is covered with numerous small Tubercles

X. The PEARL.

At Exeter The Rite

La Barbue. *Belon.* 137.
Rhombus lævis. *Rondel.* 312. *Gesner pisc.* 662.
Schlichtbutt. *Schonevelde.* 60.
Rhombus non aculeatus squamosus *the Pearl. Londinens. Cornub. Lug-aleaf. Wil. Icth.* 95. *Raii syn. pisc.* 31.
Pleuronectes oculis a sinistris, corpore glabro. *Arted. syn.* 31.
Pleuronectes Rhombus. *Lin. syst.* 458. *Gronov. Zooph. No.* 249.
Pigghvarf. *It wgoth.* 178.

IT is frequently found in the *London* markets, but is inferior to the turbot in goodness as well as size.

The irides are yellow: the skin is covered with small scales, but is quite free from any spines or inequalities.

The upper side of the body is of a deep brown, marked with spots of dirty yellow: the under side is of a pure white.

Genus

Genus XXV. Covers of the gills fcaly.
Five branchioftegous rays.
Fore teeth fharp.
Grinders flat.
One dorfal fin, reaching the whole length of the back.
Forked tail. GILT-HEAD.

I. The GILT-HEAD.

χρυσοφρυς. *Oppian Halieut.* I. 169.
Chryfophrys. *Ovid. Halieut.* iii.
Aurata *Plinii. lib.* IX. *c.* 16.
La Dorade. *Belon.* 186. Chryfophry *Caii opus.* 112.
Aurata. *Rondel.* 115. *Gefner pifc.* 110. 112.
Gilt-head or Gilt-poll. *Wil. Icth.* 307. *Raii fyn. pifc.* 131.
Sparus dorfo acutiffimo, linea arcuata inter oculos. *Arted. fynon.* 63.
Sparus lunula aurea inter oculos. *Lin. fyft.* 467. *Gronov. Zooph. No.* 220.

THIS is one of the *pifces faxatiles*, or fifh that haunt deep waters on bold rocky fhores: thofe that form this genus, as well as the following, feed chiefly on fhell fifh, which they comminute with their teeth before they fwallow; the teeth of this genus in particular being extremely well adapted for that purpofe, the grinders being flat and ftrong, like thofe of certain quadrupeds: befides thofe are certain bones in the lower part of the mouth, which affift in grinding their food.

They

They are but a coarse fish; nor did the *Romans* hold them in any esteem, except they had fed on the *Lucrine* oyster.

> *Non omnis laudem pretiumque* AURATA *meretur,*
> *Sed cui solus erit concha* LUCRINA *cibus* *.

> No praise, no price a *Gilt-head* e'er will take,
> Unfed with oysters of the *Lucrine* lake.

Descr. They grow to the weight of ten pounds: the form of the body is deep, not unlike that of a bream: the back is very sharp and of a dusky green color: the irides of a silvery hue: between the eyes is a semilunar gold color'd spot, the horns of which point towards the head: on the upper part of the gills is a black spot, beneath that another of purple.

The dorsal fin extends almost the whole length of the back, and consists of twenty-four rays, the eleven first spiny, the others soft: the pectoral fins consist of seventeen soft rays; the ventral of six rays, the first of which is very strong and spiny: the anal fin of fourteen; the three first spiny.

The tail is much forked.

Color. It takes its name from its predominant color; that of the forehead and sides being as if gilt, but the last is tinged with brown.

* *Martial. lib.* xiii. *ep.* 90.

II. The

II. The SEA BREAM.

Pagur? *Ovid. Halieut.* 107.
Le Pagrus. *Belon.* 245.
Pagrus. *Rondel.* 142. *Geſner. piſc.* 656.
Sea Bream. *Wil. Icth.* 312. *Raii ſyn. piſc.* 131.
Sparus rubeſcens, cute ad radicem pinnarm dorſi et ani in ſinum producta. *Arted. ſynon.* 64.
Sparus Pagrus. *Lyn. ſyſt.* 469.

THIS ſpecies grows to a ſize equal with that of the former: its ſhape and the figure of the teeth are much the ſame. Deſcr.

The irides are ſilvery: the inſide of the covers of the gills, the mouth, and the tongue, are of a fine red.

At the baſe of the pectoral fins is a ferruginous ſpot.

What is peculiar to this ſpecies is, that the ſkin at the end of the dorſal and anal fins is gathered up, and hides the laſt rays.

The ſcales are large: the tail forked.

The color of the whole body is red. Color.

The Eyes are remarkably large like Calf's Eyes, but Yellow. The Dorsal fin consists of 23 sharp strong Rays placed in a Groove; the Anal of 15 placed also in a Groove, at least the first spinous ones. The Pectoral fins consists of 3 Rays, the middle one the longest, & its Base is placed in a kind of Socket. At the Base of the Pectoral fins, next the Gills is a dark-colour'd blackish Spot.

III. The

III. The LESSER SEA BREAM.

Brama marina cauda forcipata D. *Jonfton. Raii fyn. pifc.* 115.

THIS fpecies was communicated to Mr. *Ray* by his friend Mr. *Jonfton*, a *Yorkfhire* gentleman, who informed him it was found on the fands near the mouth of the *Tees*, *Sept.* 18, 1681.

It was a deep fifh, formed like a roch, twenty-fix inches long, ten broad, and grew very flender towards the tail.

The eyes large, like thofe of quadrupeds. In the lower jaw were two rows of teeth, in the upper a fingle row of fmall ones. The aperture of the gills very large, and like thofe of a falmon: the body fcaly.

In the middle of the back was one fin extending almoft to the tail; behind the vent another.

The back black; the fides of a brighter color; the belly quite of a filvery brightnefs.

Genus

Genus XXVI. Deep body.
Very minute fcales.
Setaceous teeth on the tongue only.
One long dorfal fin. OPAH.

I. The O P A H.

Opah, or King-Fifh. *Phil. Tranf. Abridg. vol.* xi. 879. *tab.* v.

WE have only four inftances of this fifh being taken in our feas, each of them in the *North*, viz. twice off *Scotland* *, once off *Northumberland*, and once in *Filey-Bay*, *Yorkfhire*. This laft was caught about two years ago, and exhibited as a fhew at *Scarborough*.

It is of that genus which *Linnæus* diftinguifhes by the name of *Chætodon*, from its briftly teeth, and is faid to be very common on the coaft of *Guinea*.

It is well defcribed by an anonymous writer in the *London Magazine* for *October*, 1767, which we fhall borrow, as the account is confirmed to us by Mr. *Travis*, who had an opportunity of examining one of the fame fpecies.

Newcaftle, *Sept.* 12. On *Saturday* laft was thrown upon the fands at *Blyth*, a very rare and beautiful fifh, weighing between feventy and eighty pounds**,

* The fifh engraved by Sir *Robert Sibbald*, *Hift. Scot. tab.* 6. and thus defcribed, is of this kind. *Pifcis maculis aureis afperfus non fcriptus, pollices* 42 *longus.*

** That defcribed in the *Philofophical Tranfactions* weighed eighty-two pounds.

ſhaped like the ſea bream. The length was three feet and an 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 thick, reſembling that of a man, but rough and thick ſet with beards or prickles, pointing backwards, 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 away 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 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 a kind of bright green, variegated with whi-

* The writer omitted the deſcription of the tongue and its ſetaceous teeth, which we ſupply from the *Tranſactions*.

tiſh

tiſh ſpots, and enriched with a ſhining golden hue, much reſembling the ſplendor of the peacock's feathers; this by degrees vaniſhes in a bright ſilver; and near the belly the gold begins again to predominate in a lighter ground than on the back.

Genus XXVII. Covers of the gills ſcaly.
Branchioſtegous rays unequal in number*.
Teeth conic, long and blunt at their ends. One tuberculated bone in the bottom of the throat: two above oppoſite to the other.
One dorſal fin reaching the whole length of the back: a ſlender ſkin extending beyond the end of each ray.
Rounded tail. WRASSE.

1. The WRASSE.

or Wrath in Cornwal.

Vieille, Poule de mer, Gallot, une Roſſe. *Belon.* 248.
Turdorum undecimum genus. *Rondel.* 179. *Geſner piſc.* 1019.
Turdus vulgatiſſimus. *Wil. Icth.* 319.
Wraſſe, or Old Wife. *Raii ſyn. piſc.* 136.
Labrus roſtro ſurſum reflexo cauda in extremo circulari. *Arted. ſynon.* 56.
Labrus Tinca. *Lin. ſyſt.* 477.

THIS ſpecies is found in deep water adjacent to the rocks. It will take a bait, tho' its uſual food is ſhell-fiſh, and ſmall cruſtacea.

* *Linnæus* ſays ſix: this ſpecies had only four; the ſecond, ſix; the third and fourth, five. We alſo find the ſame variation in the rays of the fins, the numbers being different in fiſh of the ſame ſpecies, not only of this but of other *genera*.

It grows to the weight of four or five pounds: it bears some resemblance to a carp in the form of the body, and is covered with large scales.

The nose projects; the lips are large and fleshy, and the one turns up, the other hangs down: the mouth is capable of being drawn in or protruded.

Teeth. The irides are red: the teeth are disposed in two rows; the first are conic, the second very minute, and as if supporters to the others: in the throat just before the gullet are three bones, two above of an oblong form, and one below of a triangular shape; the surface of each rising into roundish protuberances: these are of singular use to the fish, to grind its shelly food before it arrives at the stomach.

The dorsal fin consists of sixteen sharp and spiny rays, and nine soft ones, which are much longer than the others.

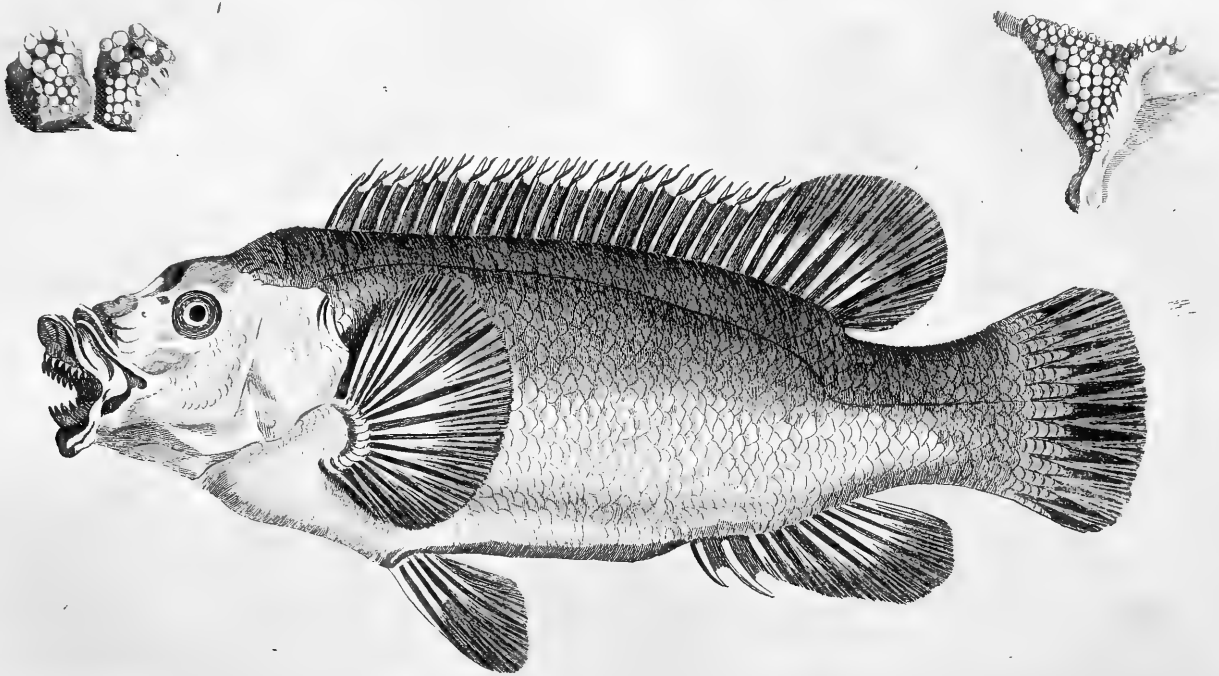
The pectoral fins large and round, and are composed of fifteen rays.

The ventral of six; the first sharp and strong: the anal of three sharp spines, and nine flexible.

The tail is rounded at the end, and is formed of fourteen soft branching rays.

The lateral line much incurvated near the tail.

Color. These fish vary infinitely in color: we have seen them of a dirty red, mixed with a certain duskiness; others



G Wilkinson del. P Mazell Sculp

others moft beautifully ftriped, efpecially about the head, with the richeft colors, fuch as blue, red, and yellow. Moft of this genus are fubject to vary; therefore care muft be taken not to multiply the fpecies from thefe accidental teints, but to attend to the form which never alters.

The *Welch* call this fifh *Gwrach*, or the old woman; the *French*, *la Vieille*; and the *Englifh* give it the name of *Old Wife*. Why they all agree in thefe fynonyms it is difficult to affign a reafon, except one too ill-bred and malignant to pollute our page. Name.

II. The BIMACULATED WRASSE.

Labrus bimaculata. L. pinna dorfali ramentacea, macula fufca in latere medio, et ad caudam. *Lin. fyft.* 477. Sciæna bimaculata. *Mus. Ad. Fred.* I. 66. *tab.* xxxi. *fig.* 66.

MR. *Brunnich* obferved this fpecies at *Penzance*, and referred me to *Linnæus*'s defcription of it in the *Mufeum Ad. Fred.* where it is defcribed under the name of *Sciæna Bimaculata*.

The body is pretty deep, and of a light color, marked in the middle on each fide with a round brown fpot; on the upper part of the bafe of the tail is another: the lateral line is incurvated. Defcr.

The branchioftegous rays are fix in number *: the firft fifteen rays of the dorfal fin are fpiny; the other eleven foft, and lengthened by a fkinny appendage: the pectoral fins confift of fifteen rays; the ventral

* *Linnæus*, in his laft edition, has removed this fpecies from the genus of *Sciæna*, to that of *Labrus*, tho' it does not agree with the laft in *his* number of branchioftegous rays.

of six; the first spiny; the second and third ending in a slender bristle: the anal fin is pointed; the four first rays being short and spiny; the rest long and soft.

III. The TRIMACULATED WRASSE.

THE species we examined was taken on the coast of *Anglesea*; its length was eight inches.

It was of an oblong form; the nose long; the teeth slender; the fore teeth much longer than the others.

The eyes large: branchiostegous rays, five.

The back fin consisted of seventeen spiny rays, and thirteen soft ones; beyond each extended a long nerve.

The pectoral fins were round, and consisted of fifteen branched rays.

The ventral fins consisted of six rays; the first spiny.

The anal fin of twelve; the three first short, very strong, and spiny; the others soft and branched.

The tail was rounded.

The lateral line was strait at the beginning of the back, but grew incurvated towards the tail.

The body covered with large red scales; the covers of the gills with small ones.

On each side of the lower part of the back fin were two large spots, and between the fin and the tail another.

IV. The

IV. The STRIPED WRASSE.

THIS was taken off the *Skerry Isles*, on the coast of *Anglesea*; its length was ten inches.

The form was oblong, but the beginning of the back a little arched: the lips large, double, and much turned up: the teeth like those of the preceding: branchiostegous rays, five. Descr.

The number of rays in the back, pectoral, and ventral fins, the same as in those of the former.

In the anal fin were fifteen rays; the three first strong and spiny.

The tail almost even at the end, being very little rounded: the covers of the gills cinereous, striped with fine yellow.

The sides marked with four parallel lines of greenish olive, and the same of most elegant blue. Color.

The back and belly red; but the last of a much paler hue, and under the throat almost yellow.

Along the beginning of the back fin was a broad bed of rich blue; the middle part white; the rest red.

At the base of the pectoral fins was a dark olive spot.

The ends of the anal fin, and ventral fins, a fine blue.

The upper half of the tail blue; the lower part of its rays yellow.

V. The

V. The GIBBOUS WRASSE.

THIS ſpecies was taken off *Angleſea*: its length was eight inches; the greateſt depth three: it was of a very deep and elevated form, the back being vaſtly arched, and very ſharp or ridged.

From the beginning of the head to the noſe, was a ſteep declivity.

The teeth like thoſe of the others.

The eyes of a middling ſize; above each a duſky ſemilunar ſpot.

The neareſt cover of the gills finely ſerrated.

The ſixteen firſt rays of the back ſtrong and ſpiny; the other nine ſoft and branched.

The pectoral fins conſiſted of thirteen, the ventral of ſix rays; the firſt ray of the ventral fin was ſtrong and ſharp.

The anal fin conſiſted of fourteen rays, of which the three firſt were ſtrongly aculeated.

The tail was large, rounded at the end, and the rays branched; the ends of the rays extending beyond the webs.

The lateral line was incurvated towards the tail.

The gill covers and body covered with large ſcales.

Color. The firſt were moſt elegantly ſpotted, and ſtriped with blue and orange, and the ſides ſpotted in the ſame manner; but neareſt the back the orange was diſpoſed in ſtripes: the back fin and anal fin were of a ſea green, ſpotted with black.

The

The ventral fins and tail a fine pea green.

The pectoral fins yellow, marked at their bafe with tranfverfe ftripes of red.

VI. The GOLDSINNY.

Goldfinny *Cornubienfium.* Mr. *Jago. Raii fyn. pifc.* 163. *fig.* 3.
See Vol. 4. Pl. 27.

THIS and the two following fpecies were difcovered by Mr. *Jago* on the coaft of *Cornwall*: we never had an opportunity of examining them, therefore are obliged to have recourfe to his defcriptions, retaining their local names.

In the whole form of the body, lips, teeth, and fins, it refembles the *Wraffe:* it is faid never to exceed a palm in length: near the tail is a remarkable black fpot: the firft rays of the dorfal fin are tinged with black.

The *Melanurus* of *Rondeletius* (adds he) takes its name from the black fpot near the tail; but in many inftances it differs widely from this fpecies, the tail of the firft is forked, that of the *Goldfinny* is even at the end.

VII. The

VII. The COMBER.

Comber *Cornub. Raii syn. pisc.* 163. *fig.* 5.

See Vol. 4. Pl. 27

THE comber is a small scaly fish, with the skin of a vermilion color. By the figure it is of an oblong form, and the tail rounded.

VIII. The COOK.

Cook (*i. e.* coquus) *Cornubiensium. Raii syn. pisc.* 163. *fig.* 4.

THIS species, Mr. *Jago* says, is sometimes taken in great plenty on the *Cornish* coasts. It is a scaly fish, and does not grow to any great size. The back is purple and dark blue; the belly yellow. By the figure it seems of the same shape as the comber, and the tail rounded.

Besides these species we recollect seeing taken at the *Giants 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.

Genus

Genus XXVIII. The edges of the gill-covers ferrated.
Seven branchioftegous rays.
Body covered with rough fcales.
Firft dorfal fin fpiny; the fecond foft *. PERCH.

I. The P E R C H.

Πέρκη *Arift. Hift. an. lib.* vi. *c.* 14.
Perca *Aufonii Mofella.* 115.
Une Perche de riviere. *Belon.* 291.
Perca fluviatilis. *Rondel. fluviat.* 196. *Gefner. pifc.* 698.
Ein Barfs. *Schonevelde.* 55.
A Perch. *Wil. Icth.* 291. *Raii fyn. pifc.* 97.
Perca lineis utrinque fex tranfverfis nigris, pinnis ventralibus rubris. *Arted. fynon.* 66.
Perca fluviatilis. P. pinnis dorfalibus diftinctis, fecunda radiis fedecim. *Lin. fyft.* 481. *Gronov. Zooph. No.* 301.
Abborre. *Faun. fuec. No.* 332.
Perfchling, Barfchieger. *Kram.* 384. *Wulff Borufs. No.* 27.

THE perch of *Ariftotle* and *Aufonius* is the fame with that of the moderns. That mentioned by *Oppian*, *Pliny*, and *Athenæus* **, is a fea-fifh probably of the *Labrus* or *Sparus* kind, being enumerated by them among fome congenerous fpecies. Our perch was much efteemed by the *Romans*:

Nec te delicias menfarum Perca, *filebo*
Amnigenos inter pifces dignande marinis. AUSONIUS.

* The *Ruffe* is an exception, having only one dorfal fin, but the fourteen firft rays of it are fpiny.

** *Oppian Halieut.* I. 124. *Plinii lib.* ix. *c.* 16. *Athenæus lib.* vii. *p.* 319.

It

It is not leſs admired at preſent as a firm and delicate fiſh; and the *Dutch* are particularly fond of it when made into a diſh called *Water Soucky*.

It is a gregarious fiſh, and loves deep holes and gentle ſtreams. It is a moſt voracious fiſh, and eager biter: if the angler meets with a ſhoal of them, he is ſure of taking every one.

It is a common notion that the pike will not attack this fiſh, being fearful of the ſpiny fins which the perch erects on the approach of the former. This may be true in reſpect to large fiſh; but it is well known the ſmall ones are the moſt tempting bait that can be laid for the pike.

The perch is a fiſh very tenacious of life: we have known them carried near ſixty miles in dry ſtraw, and yet ſurvive the journey.

Size. Theſe fiſh ſeldom grow to a large ſize: we once heard of one that was taken in the *Serpentine* river, *Hyde-Park*, that weighed nine pounds, but that is very uncommon.

Deſcr. The body is deep: the ſcales very rough: the back much arched.

The irides golden: the teeth ſmall, diſpoſed in the jaws and on the roof of the mouth: the edges of the covers of the gills ſerrated: on the lower end of the largeſt is a ſharp ſpine.

The firſt dorſal fin conſiſts of fourteen ſtrong ſpiny rays; the ſecond of ſixteen ſoft ones: the pectoral fins are tranſparent, and conſiſt of fourteen rays; the ventral of ſix; the anal of eleven.

The tail is a little forked.

The

The colors are beautiful: the back and part of the sides being of a deep green, marked with five broad black bars pointing downwards: the belly is white, tinged with red: the ventral fins of a rich scarlet; the anal fins and tail of the same color, but rather paler. Color.

In a lake called *Llyn Raithlyn*, in *Merionethshire*, is a very singular variety of perch: the back is quite hunched, and the lower part of the back bone, next the tail, strangely distorted: in color, and in other respects, it resembles the common kind, which are as numerous in the lake as these deformed fish. They are not peculiar to this water, for *Linnæus* takes notice of a similar variety found at *Fahlun*, in his own country. Crooked Perch.

II. The BASSE.

Ἀδρᾶξ? *Arist. Hist. an. lib.* iv. *c.* 10. &c.
Lupus? *Ovid. Halieut.* 112.
Le Bar, le Soup. *Belon.* 113.
Lupus. *Rondel.* 268. *Gesner pisc.* 506.
A Basse. *Wil. Icth.* 271. *Raii syn. pisc.* 83.
Perca radiis pinnæ dorsalis secundæ tredecim, ani quatuordecim. *Arted. synon.* 69.
Perca Labrax. *Lin. syst.* 482. *Gronov. Zooph. No.* 300.

THE basse is a strong, active, and voracious fish: *Ovid* calls them *rapidi lupi*, a name continued to them by after-writers.

That which we had an opportunity of examining was small; but they are said to grow to the weight of fifteen pounds. Size.

The

The irides are silvery: the mouth large: the teeth are situated in the jaws, and are very small: in the roof of the mouth is a triangular rough space, and just at the gullet are two others of a roundish form.

The scales are of a middling size, are very thick set, and adhere closely.

The first dorsal fin has nine strong spiny rays, of which the first is the shortest, the middlemost the highest; the second dorsal fin consists of thirteen rays, the first spiny, the others soft.

The pectoral fins have fifteen soft rays; the ventral six rays, the first spiny: the anal fourten rays, the three first spiny, the others soft: the tail is a little forked.

The body is formed somewhat like that of a salmon.

The color of the back is dusky, tinged with blue.

The belly white. In young fish the space above the side line is marked with small black spots.

It is esteemed a very delicate fish.

III. The

III. The RUFFE.

Cernua. *Belon.* 186.
Percæ fluviatilis genus minus. *Gesner pisc.* 701.
Aspredo *Caii opusc.* 107.
Ein stuer, stuerbars. *Schoneveldе.* 56.
Cernua fluviatilis. *Wil. Icth.* 334.
Ruffe. *Raii syn. pisc.* 143.
Perca dorso monopterygio, capite cavernoso. *Arted. syn.* 68.
Perca cernua. P. pinnis dorsalibus unitis radiis 27. spinis 15. cauda bifida. *Lin. syst.* 487. *Gronov. Zooph. No.*
Giers, Snorgers. *Faun. suec. No.* 119.
Schroll, Pfaffenlaus. *Schaeff. pisc.* 37. *tab.* ii. *Wulff Borus. No.* 35.

THIS fish is found in several of the *English* streams: it is gregarious, assembling in large shoals, and keeping in the deepest part of the water.

It is of a much more slender form than the perch, and seldom exceeds six inches in length.

The teeth are very small, and disposed in rows.

It has only one dorsal fin extending along the greatest part of the back: the first rays like those of the perch are strong, sharp, and spiny; the others soft.

The pectoral fins consist of fifteen rays; the ventral of six; the anal of eight; the two first strong and spiny: the tail a little bifurcated.

The body is covered with rough compact scales.

The back and sides are of a dirty green, the last inclining to yellow, but both spotted with black.

The dorsal fin is spotted with black: the tail marked with transverse bars.

IV. The BLACK RUFFE.

The Black Fish. Mr. *Jago*. *Borlase Cornwall*. 271, *tab*. xxv. *fig*. 8.

MR. *Jago* has left so brief a description of this fish, that we find difficulty in giving it a proper class: it agrees with the *Ruffe* in the form of the body, and the smallness of the teeth, in having a single extensive fin on the back, a forked tail, and being of that section of bony fish, termed *Thoracic*: these appear by the figure, the teeth excepted. The other characters must be borrowed from the description.

" It is smooth, with very small thin scales, fifteen " inches long, three quarters of an inch broad; " head and nose like a peal or trout; little mouth; " very small teeth, beginning from the nose four " inches and three quarters, near six inches long; " a forked tail; a large double nostril. Two taken " at *Loo*, *May* 26, 1721, in the *Sean*, near the " shore, in sandy ground with small ore weed."

Genus

Genus XXIX. Three branchioftegous rays.
The belly covered with bony plates.
One dorfal fin, with feveral fharp fpines between it and the head.
STICKLEBACK.

I. The THREE SPINED S. BACK.

La Grande Efpinoche, un Epinard, une Artiere. *Belon.* 328.
Pifciculi aculeati prius genus. *Rondel. fluviat.* 206. *Gefner pifc.* 8.
Stickleblack, Banftickle, or Sharpling. *Wil. Icth.* 341. *Raii fyn. pifc.* 145.
Gafterofteus aculeis in dorfo tribus. *Arted. fynon.* 80.
Gafterofteus aculeatus. *Lin. fyft.* 489. *Gronov. Zooph. No.* 406.
Spigg, Horn-fifk. *Faun. fuec. No.* 336.
Stichling, Stachel-fifch. *Wulff. Borufs. No.* 37.

THESE are common in many of our rivers, but no where in greater quantities than in the *Fens* of *Lincolnfhire*, and fome of the rivers that creep out of them. At *Spalding* there are, once in feven or eight years, amazing fhoals that appear in the *Welland*, and come up the river in form of a vaft column. They are fuppofed to be the multitudes that have been wafhed out of the fens by the floods of feveral years, and collected in fome deep hole, 'till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is fo great, that they are ufed to manure the land, 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 halfpenny per buſhel.

Deſcr. This ſpecies ſeldom reaches the length of two inches: the eyes are large: the belly prominent: the body near the tail ſquare: the ſides are covered with large bony plates, placed tranſverſely.

On the back are three ſharp ſpines, that can be raiſed or depreſſed at pleaſure: the dorſal fin is placed near the tail: the pectoral fins are broad: the ventral fins conſiſt each of one ſpine, or rather plate, of unequal lengths, one being large, the other ſmall; between both is a flat bony plate, reaching almoſt to the vent: beneath the vent is a ſhort ſpine, and then ſucceeds the anal fin.

The tail conſiſts of twelve rays, and is even at the end.

The color of the back and ſides is an olive green; the belly white; but in ſome the lower jaws and belly are of a bright crimſon.

II. The

II. The TEN SPINED S. BACK.

La petite Efpinoche. *Belon.* 328.
Pifciculi aculeati alterum genus. *Rondel. fluviat.* 206. *Gefner pifc.* 8.
Leffer Stickleback. *Wil. Icth.* 342. *Raii fyn. pifc.* 145.
Gafterofteus aculeis in dorfo decem. *Arted. fynon.* 80.
Gafterofteus pungitius. *Lin. fyft.* 491. *Gronov. Zooph. No.* 405.
Benunge, Gaddfur, Gorquad. *Faun. fuec. No.* 337.

THIS fpecies is much fmaller than the former, and of a more flender make.

The back is armed with ten fhort fharp fpines, which do not incline the fame way, but crofs each other.

The fides are fmooth, not plated like thofe of the preceding: in other particulars it refembles the former.

The color of the back is olive: the belly filvery.

III. The FIFTEEN SPINED S. BACK.

Aculeatus, five Pungitius marinus longus, Stein-bicker, Ersfkruper. *Schonevelde.* 10. *tab.* iv. *Sib. Scot.* iii. 24. *tab.* 19.

Aculeatus marinus major. *Wil. Icth.* 340. *App.* 23. *Raii fyn. pifc.* 145.

Gafterofteus aculeis in dorfo quindecim. *Arted. fynon.* 81.

Gafterofteus fpinachia. *Lin. fyft.* 492. *Gronov. Zooph. No.* 407. *Faun. fuec. No.* 338.

THIS fpecies inhabits the fea, and is never found in frefh water.

Its length is above fix inches: the nofe is long and flender: the mouth tubular: teeth fmall.

The fore part of the body is covered on each fide with a row of bony plates, forming a ridge; the body afterwards grows very flender, and is quadrangular.

Between the head and the dorfal fin are fifteen fmall fpines: the dorfal fin is placed oppofite the anal fin: the ventral fins are wanting.

The tail is even at the end.

The color of the upper part is a deep brown: the belly white.

Genus

Genus XXX. Seven branchioftegous rays. Several fmall fins between the dorfal fin and the tail. MACKREL.

I. The MACKREL.

Σκόμβρος. *Arift. Hift. an. lib.* vi. *c.* 17. ix. *c.* 2, *Athenæus. lib.* iii. 121. vii. 321. *Oppian Halieut.* I. 142.
Scomber. *Ovid. Halieut.* 94. *Plinii lib.* ix. *c.* 15, xxxi. *c.* 8.
Macarello, Scombro. *Salvian.* 241 *.
Le Macreau. *Belon.* 197.
Scomber. *Rondel.* 233. *Gefner pifc.* 841. (pro 861.)
Makerel. *Schonevelde.* 66.
Mackrell, or Macarel. *Wil. Icth.* 181. *Raii fyn. pifc.* 58.
Scomber pinnulis quinque in extremo dorfo, polypterygio, aculeo brevi ad anum. *Arted. fynon.* 48.
Scomber Scomber. *Lin. fyft.* 492. *Gronov. Zooph. No.* 304.
Mackrill. *Faun. fuec. No.* 339.

THE mackrel is a fummer fifh of paffage that vifits our fhores in vaft fhoals. It is lefs ufeful than other fpecies of gregarious fifh, being very tender, and unfit for carriage; not but that it may be preferved by pickling and falting, a method, we believe, practifed only in *Cornwall* **, where it proves a great relief to the poor during winter.

It was a fifh greatly efteemed by the *Romans*, becaufe it furnifhed the pretious *Garum*, a fort of pickle that gave a high relifh to their fauces, and was befides ufed medicinally. It was drawn from different Garum.

* This is the firft opportunity we have had of looking into *Salvianus*, whofe *Italian* fynonyms we make ufe of.

** *Borlafe Cornwall.* 269.

kinds of fish, but that made from the mackrel had the preference: the best was made at *Carthagena*, vast quantities of mackrel being taken near an adjacent isle, called from that circumstance, *Scombraria**, and the *Garum*, prepared by a certain company in that city, bore a high price, and was distinguished by the title of *Garum Sociorum* **.

This fish is easily taken by a bait, but the best time is during a fresh gale of wind, which is thence called a *mackrel* gale.

Size. It is not often that it exceeds two pounds in weight, yet we heard that there was one sold last summer in *London* that weighed five and a quarter.

Descr. The nose is taper and sharp pointed: the eyes large: the jaws of an equal length: the teeth small, but numerous.

The form of this fish is very elegant.

The body is a little compressed on the sides: towards the tail it grows very slender, and a little angular.

The first dorsal fin is placed a little behind the pectoral fin, is triangular, and consists of nine or ten stiff rays; the second lies at a distance from the other, and has twelve soft rays; the pectoral twenty; the ventral six: at the base of the anal fin is a strong spine.

Between the last dorsal fin and the tail, are five small fins, and the same number between the anal fin and the tail.

* *Strabo lib.* iii. 109.

** *Plinii lib.* xxxi. *c.* 8.

The

The tail is broad and femilunar: The color of the back and fides above the lateral line, is a fine green, varied with blue, marked with black lines, pointing downwards; beneath the line the fides and belly are of a filvery color. Color.

It is a moft beautiful fifh when alive; for nothing can equal the brilliancy of its color, which death impairs, but does not wholly obliterate.

II. The T U N N Y.

Θύννος. *Arift. Hift. an. lib.* ii. *c.* 13. &c. *Athenæus. lib.* vii. 301. *Oppian Halieut.* iii. 620.
Thunnus. *Ovid. Halieut.* 95. 95. *Plinii. lib.* ix. *c.* 15.
Tonno. *Salvian.* 123.
Le Thon. *Belon.* 99.
Thunnus. *Rondel.* 241. *Gefner pifc.* 957.
Thunnus vel orcynus. *Schonevelde.* 75.
Tunny fifh, or Spanifh Mackrell. *Wil. Icth.* 176. *Raii fyn. pifc.* 57.
Scomber pinnulis octo vel novem in extremo dorfo, ex fulco ad pinnas ventrales. *Arted. fynon.* 49.
Scomber Thunnus. Sc. pinnulis utrinque octo. *Lin. fyft.* 493. *Gronov. Zooph.* No. 305.

THE tunny was a fifh well known to the antients, it made a confiderable branch of commerce; the time of its arrival into the *Mediterranean* from the ocean was obferved, and ftations for taking them eftablifhed in places it moft frequented; the eminencies above the fifhery were ftyled Θυννοσκοπεῖα*, and the watchmen that gave notice to thofe below of the motions of the fifh, Θυννοσκόποι**. From one of the for-

* *Strabo. lib.* v. 156.

** *Oppian Halieut.* iii. 638. This perfon anfwers to what the *Cornifh* call a *Huer*, who watches the arrival of the pilchards.

mer

mer the lover in *Theocritus* threatened to take a desperate leap, on account of his mistress's cruelty.

ἒκ επακκεις ?
Τάν ϐαίταν ἀποδὺς εἰς κυματα τηνα ἁλευμαι
Ωπερ τὼς ΘΥΝΝΩΣ σκοπιάζεται Ὄλπις ο γριπεύς.

Do you not hear? then, rue your Goat-herd's fate,
For, from the rock where *Olpis* doth descry
The numerous *Thunny*, I will plunge and die.

The very same station, in all probability, is at this time made use of, as there are very considerable thunny fisheries on the coast of *Sicily*, as well as several other parts of the *Mediterranean* *, where they are cured, and make a great article of provision in the adjacent kingdoms. They are caught in nets, and amazing quantities are taken, for they come in vast shoals, keeping along the shores.

Size. They grow to a large size, sometimes being found of above a hundred weight.

They are not common in our seas, but are sometimes taken off the west of *England*.

Descr. Its form is less elegant than that of the mackrel, being rather thicker in the middle: the jaws are of an equal length; the mouth black within: besides the teeth of the jaws, are others in the roof of the mouth.

The first dorsal fin is placed not remote from the head, and consists of fourteen rays, and is lodged in a small channel; the second is almost contiguous to the other, and has the same number of rays.

* Many of them are the same that were used by the antients, as we learn from *Oppian* and others.

The

The pectoral fin confifts of thirty-four rays; the ventral fins are fmall, and have fix rays; the anal, thirteen: between the laft dorfal fin and the tail, are from eight to ten fmall ones, and between the anal fin and the tail eight.

The body near the tail is flender, and almoft quadrangular; the tail is in the form of a crefcent.

The color of the upper part of the body is dufky, varied with blue and green: the fides and the belly filvery. Color.

III. The S C A D.

Sauro. *Salvian.* 79.
Un Sou, Macreau baftard. *Belon.* 186.
Trachurus. *Rondel.* 233.
Lacertus *Bellonii. Gefner pifc.* 467.
Mufeken, Stocker. *Schonovelde.* 75.
Scad, Horfe-mackrell. *Wil. Icth.* 290. *Raii fyn. pifc.* 92.
Scomber linea laterali aculeata, pinna ani officulorum 30. *Arted. fynon.* 50.
Scomber Trachurus. Sc. pinnis unitis, fpina dorfali recumbente, linea laterali loricata. *Lin. fyft.* 494. *Gronov. Zooph. No.* 308.

THAT which we examined was fixteen inches long: the nofe fharp; the eyes very large; the irides filvery: the lower jaw a little longer than the upper: the edges of the jaws were rough, but without teeth.

On the upper part of the covers of the gills was a large black fpot.

The fcales were large and very thin: the lower half of the body quadrangular, and marked each

fide

ſide with a row of thick ſtrong ſcales, prominent in the middle, extending to the tail.

The firſt dorſal fin conſiſted of eight ſtrong ſpines: the ſecond lay juſt behind it, and conſiſted of thirty-four ſoft rays, and reached almoſt to the tail: the pectoral fins narrow and long, and compoſed of twenty rays: the ventral of ſix branched rays.

The vent was in the middle of the belly; the anal fin extended from it to the tail, which was greatly forked.

The head and upper part of the body varied with green and blue: the belly ſilvery.

This fiſh was taken in the month of *October*, was very firm and well taſted, having the flavor of mackrel.

Genus

Genus XXXI. Head compreffed, fteep, and covered with fcales.
Two branchioftegous rays.
Body covered with large fcales, eafily dropping off.

SURMULLET.

I. The RED SURMULLET.

Τρίγλη? *Arift. Hift. an. lib.* ii. *Oppian Halieut.* I. 590.
Τρίγλη Σώφρων. *Athenæus. lib.* vii. 325.
Mullus. *Ovid. Halieut.* 123. *Plinii lib.* ix. *c.* 17.
Triglia. *Salvian.* 235.
Le Rouget barbé, Surmurlet. *Belon.* 170.
Mullus barbatus. *Rondel.* 290. *Gefner pifc.* 565.
Petermanneken, Goldeken. *Schonevelde.* 47.
Mullus *Bellonii. Wil. Icth.* 285. *Raii fyn. pifc.* 90.
Trigla capite glabro, cirris geminis in maxilla inferiore. *Artedi. fynon.* 71.
Mullus cirris geminis, corpore rubro. *Lin. fyft.* 495. *Gronov. Zooph. No.* 286.

THIS fifh was highly efteemed by the *Romans*, and bore an exceeding high price. The capricious epicures of *Horace*'s* days, valued it in proportion to its fize, not that the larger were more delicious, but that they were more difficult to be got. The price that was given for one in the time of *Juvenal*, and *Pliny*, is a ftriking evidence of the luxury and extravagance of the age:

Mullum *fex millibus emit*
Æquantem fane paribus feftertia libris **.

The lavifh flave
Six thoufand pieces for a Mullet gave,
A fefterce for each pound. DRYDEN.

* *Sat. lib.* ii. *f.* ii. 33. ** *Juvenal. Sat.* iv. 48 l. 8 s. 9 d.

But

But *Asinius Celer* *, a man of consular dignity, gave a still more unconscionable sum, for he did not scruple bestowing eight thousand nummi, or sixty-four pounds eleven shillings and eight-pence, for a fish of so small a size as the mullet; for according to *Horace*, a *Mullus trilibris*, or one of three pounds, was a great rarity; so that *Juvenal*'s spark must have had a great bargain in comparison of what *Celer* had.

But *Seneca* says that it was not worth a farthing, except it died in the very hand of your guest: that such was the luxury of the times, that there were stews even in the eating rooms, so that the fish could at once be brought from under the table, and placed on it: that they put the mullets in transparent vases, that they might be entertained with the various changes of its rich color while it lay expiring **. *Apicius* †, a wonderful genius for luxurious inventions, first hit upon the method of suffocating them in the exquisite *Carthaginian* ‡ pickle, and afterwards procured a rich sauce from their livers. This is the same gentleman whom *Pliny*, in another place, honors with the title of *Nepotum omnium altissimus gurges* §, an expression too forcible to be rendered in our language

* *Plin. lib.* ix, *c.* 17.

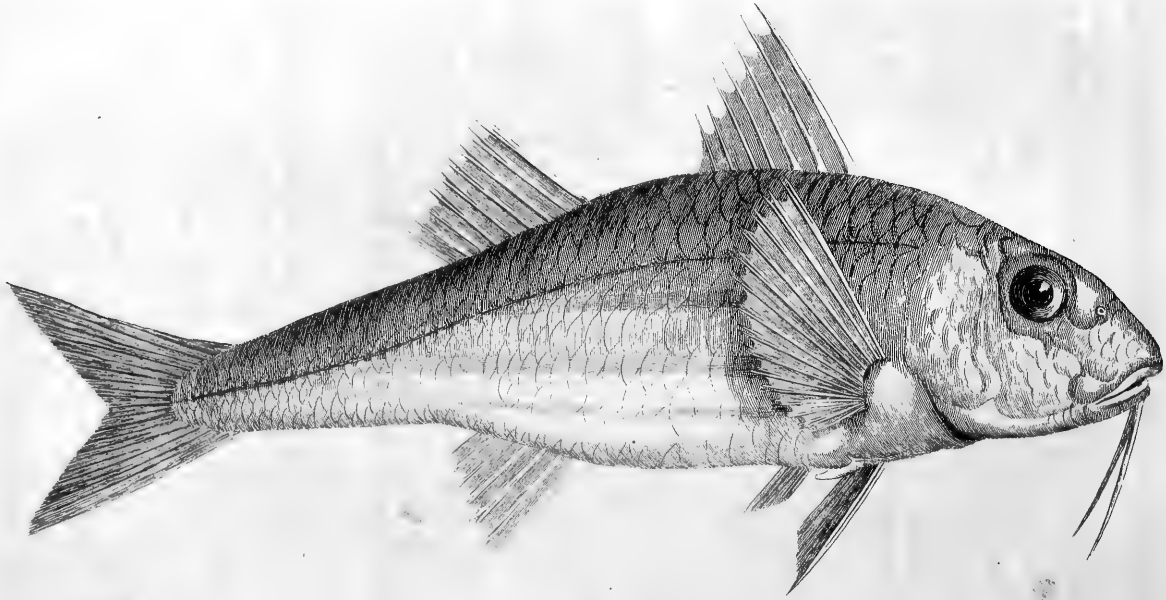
** *In cubili natant pisces: et sub ipsa mensa capitur, qui statim transferitur in mensam: parum videtur recens* mullus *nisi qui in convivæ manu moritur. Vitreis ollis inclusi offeruntur, et observatur morientium color, quem in multas mutationes luctante spiritu vertit.* Seneca. Nat. Quæst. lib. iii. c. 16.

† *Ad omne luxus ingenium mirus.*

‡ *Garum Sociorum*, vide p. 222.

§ *Lib.* x. *c.* 48.

We



P. Mazell del. & Sculp.

We have heard of this fpecies being taken on the coaft of *Scotland*, but had no opportunity of examining it; and whether it is found in the weft of *England* with the other fpecies, or variety, we are not at this time informed. *Salvianus* makes it a diftinct fpecies, and fays, that it is of a purple color, ftriped with golden lines, and that it did not commonly exceed a palm in length: no wonder then that fuch a prodigy as one of fix pounds fhould fo captivate the fancy of the *Roman* epicure.

Mr. *Ray* eftablifhes fome other diftinctions, fuch as the firft dorfal fin having nine rays, and the color of that fin, the tail, and the pectoral fins, being of a very pale purple.

On thefe authorities we form different fpecies of thefe fifh, having only examined what *Salvianus* and Mr. *Ray* call the *Mullus major*, which we defcribe under the title of

II. The STRIPED SURMULLET.

Mullus major. *Salvian.* 236.
Mullus major nofter et *Salviani.* 95. *Cornubienfibus.*
A Surmullet. *Wil. Icth.* 285. *Raii fyn. pifc.* 91.
Trigla capite glabro, lineis utrinque quatuor luteis, longitudinalibus, parallelis. *Arted. fynon.* 72.
Mullus cirris geminis lineis luteis longitudinalibus. *Lin. fyft.* 496.

THIS fpecies was communicated to us by Mr. *Pitfield* of *Exeter*: its weight was two pounds and an half; its length was fourteen inches; the thickeft circumference eleven. It appears on the coaft,

coast of *Devonshire* in *May*, and retires about *November*.

The head steep: the nose blunt: the body thick: the mouth small: the lower jaw furnished with very small teeth: in the roof of the mouth is a rough hard space: at the entrance of the gullet above is a single bone, and beneath are a pair, each with echinated surfaces, that help to comminute the food before it passes down.

From the chin hung two beards, two inches and an half long.

The eyes large: the irides purple: the head and covers of the gills very scaly.

The first dorsal fin was lodged in a deep furrow, and consisted of six strong, but flexible rays; the second of eight; the pectoral fins of sixteen; the ventral of six branched rays; the anal of seven: the tail is much forked.

The body very thick, and covered with large scales; beneath them the color was a most beautiful rosy red*; the changes of which, under the thin scales, gave that entertainment to the *Roman* epicures as above mentioned: the scales on the back and sides were of a dirty orange; those on the nose a bright yellow: the tail a reddish yellow.

The sides were marked lengthways with two lines of a light yellow color: these with the red color of the dorsal fins, and the number of their rays, Mr. *Ray* makes the character of the *Cornish Surmullet*: these are notes so liable to vary by accident, that till

* This color is most vivid during summer.

we

we receive further informations from the inhabitants of our *Western* coasts, where these fish are found, we shall remain doubtful whether we have done right in separating this from the former, especially as *Doctor Gronovius* has pronounced them to be only varieties.

Genus XXXII. Nose sloping.
Head covered with strong bony plates.
Seven branchiostegous rays.
Three slender appendages at the base of the pectoral fins.
GURNARD.

I. The GREY GURNARD.

Gurnatus seu Gurnardus griseus, the Grey Gurnard. *Wil. Icth.* 279. *Raii syn. pisc.* 88.
Trigla vario rostro diacantho, aculeis geminis ad utrumque oculum. *Arted. synon.* 74.
Trigla Gurnardus, Tr. digitis ternis dorso maculis nigris rubrisque. *Lin. syst.* 497. *Gronov. Zooph. No.* 283.

THE nose pretty long, and sloping: the end bifurcated, and each side armed with three short spines.

The eyes very large; above each were two short spines: the forehead and covers of the gills silvery; the last finely radiated.

The teeth small, placed in the lower and upper jaws, in the roof of the mouth, and base of the tongue.

Noftrils minute, and placed on the fides of the nofe.

On the extremity of the gill covers was a ftrong, fharp, and long fpine: beneath that, juft above the pectoral fins, another.

The firft dorfal fin confifted of eight fpiny rays; the fides of the three firft tuberculated.

The fecond dorfal fin of nineteen foft rays: both fins lodged in a groove, rough on each fide, but not ferrated.

The pectoral fins tranfparent, and fupported by ten rays, bifurcated from their middle: the three beards at their bafe as ufual.

The ventral fins had fix rays, the firft fpiny, and the fhorteft of all.

The anal fin nineteen, each foft.

The tail bifurcated.

The lateral line very prominent, and ftrongly ferrated.

The back, tail, and a fmall fpace beneath the fide line, were of a deep grey, covered with fmall fcales, and in parts fpotted with white; the belly filvery. We could not perceive any yellow fpots, as Mr. *Ray* mentions, but poffibly they vary.

II. The

II. The RED GURNARD.

Κόκκυξ? *Arist. Hist. an. lib.* iv. *c.* 9. *Oppian Halieut.* I. 97.
Κοκκυξ ἐρυθρος. *Athenæus lib.* vii. 309.
Pesce capone, Cocco, Organo. *Salvian.* 191.
Le Rouget. *Belon.* 199.
Cuculus. *Rondel.* 287. *Gesner pisc.* 305.
Smiedeeknecht, Kurre-fische. *Schonevelde.* 32.
Red Gurnard, or Rotchet. *Wil. Icth.* 281. *Raii syn. pisc.* 89.
Trigla tota rubens, rostro parum bicorni, operculis branchiarum striatis. *Arted. synon.* 74.
Trigla cuculus. Tr. digitis ternis, linea laterali mutica. *Lin. syst.* 497.

THIS species agrees in its general appearance with the tub fish; but in these particulars differs.

The covers of the gills are radiated: the spines are less and shorter in those of the red gurnard.

The fins and body are of a fuller red: the scales are larger: the head less: the pectoral fins are shorter, and edged with purple, not with blue.

III. The PIPER.

Αυρα? *Arist. Hist. an. lib.* iv. *c.* 9.
Lyra. *Rondel.* 298. *Gesner pisc.* 516.
The Piper. *Wil. Ich.* 282. *Raii syn. pisc.* 89.
Trigla rostro longo diacantho, naribus tubulosis. *Arted. syn.* 74.
Trigla Lyra. Tr. digitis ternis, naribus tubulosis. *Lin. syst.* 496.

THIS species is frequently taken on the western coasts of this kingdom, and esteemed an excellent fish.

The weight of one which was communicated to us by Mr. *Pitfield**, was three pounds and an half; the thickest circumference thirteen inches, the left, which was next the tail, only three: the length near two feet.

The head was very large, and that part of the body next to it very thick: the nose divided into two broad plates, each terminated with three spines: on the inner corner of each eye is a strong spine: the bony plates of the head terminate on each side with another.

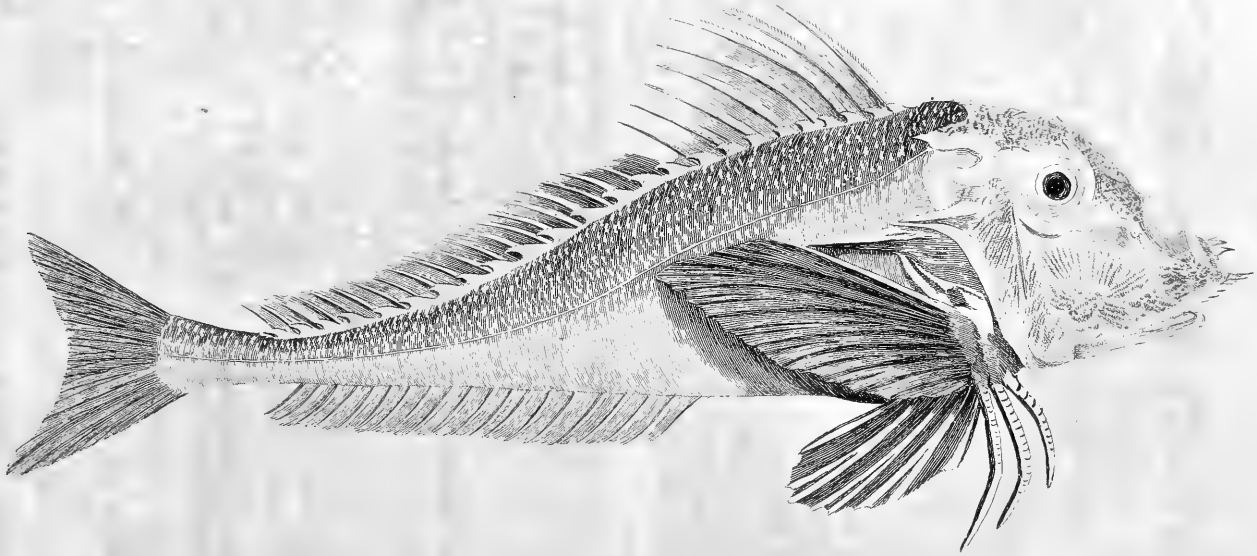
The covers of the gills are armed with one very sharp and strong spine, and are prettily striated: immediately over the pectoral fin is another spine very large and sharp pointed.

The nostrils very minute: the eyes large.

The lower jaw much shorter than the upper: the teeth in both very minute.

* We have been informed that this fish is found at all times of the year on the western coasts, and is taken in nets.

The



G. Hautier pinx.

P. Mazell fc.

The firft dorfal fin confifted of nine very ftrong fharp fpines, the fecond of which is the longeft; the fecond fin begins juft behind the firft, and confifts of eighteen foft rays: the pectoral fins were long, and had twelve branched rays; the ventral fins fix, very ftrong and thick: the anal eighteen, the firft fpiny: the tail fmall, in proportion to the fize of the fifh, and forked.

The back on each fide the dorfal fin was armed with a fet of ftrong and very large fpines, pointing towards the tail like the teeth of a faw.

The fcales were fmall, but very hard and rough: the lateral line bent a little at its beginning, that went ftrait to the tail, and was almoft fmooth.

IV. The TUB FISH.

Hirundo *Aldrov.* the Tub-fifh, *Cornub. Wil. Icth.* 280. *Raii fyn. pifc.* 88.

Trigla capite aculeato, appendicibus utrinque tribus ad pinnas pectorales. *Arted. fynon.* 73.

Trigla hirundo. Tr. digitis ternis, linea laterali aculeata. *Lin. fyft.* 497.

Knorrhane, Knoding, Knot, Smed. *Faun. fuec. No.* 340.

THIS fpecies is of a more flender form than the preceding.

The pupil of the eye is green: on the inner corner of each are two fmall fpines. But what at once diftinguifhes this from the other fpecies is the breadth and colors of the pectoral fins, which are very broad, of a pale green, moft beautifully edged, and fpotted with rich deep blue.

The dorſal fins are lodged between two rows of ſpines, of a ſerrated form: the back is of a greeniſh caſt: the ſide line is rough: the ſides are tinged with red; the belly white.

Theſe fiſh are found on the coaſt of *Cornwall*. We have alſo taken them off *Angleſea*.

V. The STREAKED GURNARD.

Cuculus lineatus, the Streaked Gurnard. *Raii ſyn. piſc.* 165. *fig.* 11.

THIS is one of the *Corniſh* fiſh communicated to Mr. *Petiver* by Mr. *Jago*. He ſays the head is large, and diſtinguiſhed with ſtellated marks; the eyes great; the covering of the gills thorny; the mouth ſmall, and without teeth. By the figure the noſe ſeems not to be bifurcated. The pectoral fins large, and ſpotted, beneath them three filaments: the color of the body red: the belly white, marked with many ſtreaks, pointing downwards, from the back.

Mr. *Jago* imagines it to be the *Mullis imberbis* of *Rondeletius*. *Wil. Icth.* 278.

Sect. IV. ABDOMINAL.

Genus XXXIII. Eyes in the upper part of the head.
Aperture to the gills clofed below.
Several beards on the end of the upper jaw.
Body of almoft an equal thicknefs.
One dorfal fin. LOCHE.

I. The LOCHE.

La Loche franche. *Belon.* 321.
Cobitis barbatula. *Rondel. fluviat.* 204.
Cobitis fluviatilis barbatula. *Gefner pifc.* 404.
Smerling, Smerle. *Schonevelde.* 31.
Loche, or Groundling. *Wil. Icth.* 265. *Raii fyn. pifc.* 124.
Cobitis tota glabra maculofa, corpore fubtereti. *Arted. fynon.* 2.
Cobitis Barbatula. C. cirris fex capite inermi compreffo. *Lin. fyft.* 499. *Gronov. Zooph. No.* 202.
Gronling. *Faun. fuec. No.* 341.
Grundel. *Kram.* 396. *Wulff. Borufs. No.* 40.

THE loche is found in feveral of our fmall rivers, keeping at the bottom on the gravel, and is on that account, in fome places, called the *Groundling*: it is frequent on the ftream near *Amefbury*, in *Wiltfhire*, where the fportfmen, thro' frolick, fwallow it down alive in a glafs of white wine.

The largeft we ever heard of was four inches and three quarters in length, but they feldom arrive to that fize. Defcr.

The mouth is ſmall, placed beneath, and has no teeth: on the upper mandible are ſix ſmall beards, one at each corner of the mouth, and four at the end of the noſe.

The dorſal fin conſiſts of eight rays; the pectoral of eleven; the ventral of ſeven; the anal of ſix: the tail is broad, and has ſixteen or ſeventeen rays.

Color. The body is ſmooth and ſlippery, and almoſt of the ſame thickneſs: the color of the head, back, and ſides, is in ſome white, in others of a dirty yellow, very elegantly marked with large ſpots, conſiſting of numberleſs minute black ſpecks: the pectoral, dorſal, and caudal fins are alſo ſpotted: the belly and ventral fins of a pure white: the tail broad, and a little rounded.

Genus

Genus XXXIV. Branchioftegous rays unequal in number.
Two dorfal fins; the fecond thick, and without rays. SALMON.

*

With teeth.

I. The SALMON.

Salmo *Plinii lib.* ix. *c.* 18. *Aufonius. Mofel.* 97.
Salmone. *Salvian.* 100.
Le Saulmon. *Belon.* 271.
Salmo. *Rondel. fluviat.* 167. *Gefner pifc.* 824. *Schonevelde.* 64.
Salmon. *Wil. Icth.* 189. *Raii fyn. pifc.* 63.
Salmo roftro ultra inferiorem maxillam fæpe prominente. *Arted. fynon.* 22.
Salmo Salar. *Lin. fyft.* 509. *Gronov. Zooph. No.* 369.
Lax. *Faun. fuec. No.* 122.
Lachfs. *Wulff. Borufs. No.* 42.

THE falmon is a northern fifh, being unknown in the *Mediterranean* fea, and other warm climates: it is found in *France* in fome of the rivers that empty themfelves into the ocean*, and north as far as *Greenland*; whether it reaches *America* we are not at this time affured: *Charlevoix*, *Laufon*, and *Catefby* do not mention it; nor have we any authority for its being found there, except that of the romantic *Lahontan*. Salmons are taken in the rivers of *Kamtfchatka* **, but whether they are of the fame fpecies with the *European* kind is not very certain.

* *Rondel. fluviat.* 167. ** *Hift. Kamtfch.* 143.

They

They are in several countries a great article of commerce, being cured different ways, by salting, pickling, and drying: there are stationary fisheries in *Iceland*, *Norway* *, and the *Baltic*, but we believe no where greater than those at *Colraine* in *Ireland*; and in *Great-Britain* at *Berwick*, and in some of the rivers of *Scotland*.

The salmon was known to the *Romans* but not to the *Greeks*: *Pliny* speaks of it as a fish found in the rivers of *Aquitaine*: *Ausonius* enumerates it among those of the *Mosel*.

Nec te puniceo rutilantem viscere Salmo
Transierem, latæ cujus vaga verbera caudæ
Gurgite de medio summas referuntur in undas,
Occultus placido cum proditur æquore pulsus.
Tu loricato squamosus pectore, frontem
Lubricus, et dubiæ facturus fercula cænæ,
Tempora longarum fers incorrupta morarum,
Præsignis maculis capitis, cui prodiga nutat
Alvus, opimatoque fluens abdomine venter.

Nor I thy scarlet belly will omit,
O Salmon, whose broad tail with whisking strokes
Bears thee up from the bottom of the stream
Quick to the surface; and the secret lash
Below, betrays thee in the placid deep.
Arm'd in thy flaky mail, thy glossy snout
Slippery escapes the fisher's fingers; else
Thou makest a feast for nicest judging palates:
And yet long uncorrupted thou remainest:
With spotted head remarked, and wavy spread,
Of paunch immense o'erflowing wide with fat.

ANONYMOUS.

Ascends rivers.

The salmon is a fish that lives both in the salt and fresh waters, quitting the sea at certain seasons for

* There was about the year 1578 a pretty considerable salmon fishery at *Cola*, in *Russian Lapland*. *Hackluyt. voy.* I. 416.

the

the fake of depofiting its fpawn in fecurity, in the gravelly beds of rivers remote from their mouths. There are fcarce any difficulties but what they will overcome, in order to arrive at places fit for their purpofe: they will afcend rivers hundreds of miles, force themfelves againft the moft rapid ftreams, and fpring with amazing agility over cataracts of feveral feet in height. Salmon are frequently taken in the *Rhine* as high up as *Bafil*; they gain the fources of the *Lapland* rivers* in fpite of their torrent-like currents, and furpafs the perpendicular falls of *Leixflip***, *Kennerth*†, and *Pont aberglaftyn*‡; thefe laft feats we have been witnefs to, and feen the efforts of fcores of fifh, fome of which fucceeded, others mifcarried during the time of our ftay. Salmon leaps.

It may here be proper to contradict the vulgar error of their taking their tail in their mouth when they attempt to leap; fuch as we faw, fprung up quite ftrait, and with a ftrong tremulous motion.

Other particulars relating to the natural hiftory of this fifh, we fhall relate in our accounts of the fifheries, either from our own obfervations, or from fuch as have been communicated to us from different places: the fulleft we have been favored with is from Mr. *Potts*, of *Berwick*, to whom the publick is indebted for the following very curious hiftory of the falmon fifhery on the *Tweed*. *Tweed* fifhery.

* *Scheff. Lap.* 139.

** Near *Dublin*.

† On the *Tivy* in *South Wales*, which *Michael Drayton* celebrates in his *Polyolbion* on this account.

‡ Amidft *Snowdon* hills, a wild fcene in the ftyle of *Salvator Rofa*.

At

At the latter end of the year, or in the month of *November*, the salmon begin to press up the rivers as far as they can reach, in order to spawn; when that time approaches they search for a place fit for the purpose: the male and female unite in forming a proper receptacle for it in the sand or gravel, about the depth of eighteen inches; in this the female deposits her spawn, the male his milt, which they cover carefully, as it is said, with their tails, for after spawning they are observed to have no skin on that part.

Spawning.

The spawn lies buried till spring, if not disturbed by violent floods; but the salmon hasten to sea as soon as they are able, to purify and cleanse themselves, and to recover their strength; for after spawning they become very poor and lean, and then are called *Kipper*.

About the latter end of *March* the spawn begins to exclude the young, which gradually increase to the length of four or five inches, and are then termed *Smelts* or *Smouts*: about the beginning of *May* the river is full of them; it seems to be all alive; there is no having an idea of the numbers without seeing them; but a seasonable flood then hurries them all to the sea, scarce any or very few being left in the river.

About the middle of *June* the earliest of the fry begin to drop, as it were, into the river again from the sea, at that time about twelve, fourteen, or sixteen inches, and by a gradual progress, increase in number and size till about the end of *July*, which is at *Berwick* termed the height of *Gilse* time, the name

name given to the fish at that age: the end of *July*, or beginning of *August* they lessen in number, but encrease in size, some being six, seven, eight, or nine pounds in weight; this appears to be a surprising quick growth, yet we have received from a gentleman at *Warrington*, an instance still more so: a kipper salmon weighing 7lb. three quarters, taken on the 7th of *February*, being marked with a scissars on the back, fin, and tail, and turned into the river, was again taken the 17th of *March* following, and then was found to weigh 17lb. and a half. Quick growth.

The capture in the *Tweed*, about the month of *July*, is prodigious; in a good fishery, often a boat load, and sometimes near two, are taken in a tide: some few years ago there were above seven hundred fish taken at one hawl, but from fifty to a hundred is very frequent: the coopers in *Berwick* then begin to salt both *Salmon* and *Gilses* in pipes, and other large vessels, and afterwards barrel* them to send abroad, having then far more than the *London* markets can take off their hands. Capture.

Most of the salmon taken before *April*, or to the setting in of the warm weather, is sent fresh to *London* in baskets, unless now and then the vessel is disappointed by contrary winds, of sailing immediately; in that case the fish is brought ashore again to the coopers offices, and boiled, pickled, and kitted, and sent to the *London* markets by the same ship, and fresh salmon put in the baskets in lieu of the stale ones. At the beginning of the season, when a ship

* The salmon barrel holds above forty-two gallons, wine measure.

is

is on the point of sailing, a fresh clean salmon will sell from a shilling to eighteen pence a pound, and most of the time that this part of the trade is carried on, the prices are from five to nine shillings per stone *, the value rising and falling according to the plenty of fish, or the prospect of a fair or foul wind. Some fish are sent in this manner to *London* the latter end of *September*, when the weather grows cool, but then the fish are full of large roes, grow very thin bellied, and are not esteemed either palatable or wholesome.

Price.

The price of fresh fish in the month of *July*, when they are most plentiful, has been known to be as low as 8*d.* per stone, but last year never less than 16*d.* and from that to 2*s.* 6*d.*

Season.

The season for fishing in the *Tweed* begins *November* the 30th, but the fishermen work very little till after *Christmas*; it ends on *Michaelmas-Day*; yet the corporation of *Berwick* (who are conservators of the river) indulge the fishermen with a fortnight past that time, on account of the change of the style.

There are on the river forty-one considerable fisheries extending upwards, about fourteen miles from the mouth (the others above being of no great value) which are rented for near 5400*l.* per annum. The expences attending the servants wages, nets, boats, &c. amount to 5000*l.* more, which together makes up the sum 10400*l.* Now in consequence

* A stone of salmon weighs 18 lb. 10 oz. ½, or in other terms, four stones, or fifty-six pounds avoirdupoise, is only three stones, or forty-two pounds, fish weight at *Berwick*.

the

the produce muſt defray all, and no leſs than twenty times that ſum of fiſh will effect it, ſo that 208000 ſalmon muſt be caught there one year with another.

There is a misfortune attending the river *Tweed*, which is worthy a parlementary remedy; for there is no law for preſerving the fiſh in it during the fence months, as there is in the caſe of many other *Britiſh* rivers. This being the boundary between the two kingdoms, part of it belongs to the city of *Berwick*, and the whole north ſide (beginning about two miles from the town) is entirely *Scotch* property. From ſome diſagreement between the parties they will not unite for the preſervation of the fiſh, ſo that in ſome fiſheries on the north ſide they continue killing ſalmon the whole winter, when the death of one fiſh is the deſtruction of thouſands.

The legiſlature began very early to pay attention to this important article: by the 13th *Edward* Iſt. there is an act which prohibits the capture of the ſalmon from the Nativity of our Lady to St. *Martin*'s Day, in the waters of the *Humber*, *Owſe*, *Trent*, *Done*, *Arre*, *Derwent*, *Wharfe*, *Nid*, *Yore*, *Swale*, and *Tees*; and other monarchs in after-times, provided in like manner for the ſecurity of the fiſh in other rivers.

Scotland poſſeſſes great numbers of fine fiſheries on both ſides of that kingdom. The ſalmon are cured in the ſame manner as at *Berwick*, and a great quantity is ſent to *London* in the ſpring; but after that time the adventurers begin to barrel and export them to foreign countries: but we believe that commerce *Scotland.*

commerce is far less lucrative than it was in former times, partly owing to the great encrease of the *Newfoundland* fishery, and partly to the general relaxation of the discipline of abstinence in the *Romish* church.

Ireland. *Ireland* (particularly the north) abounds with this fish: the most considerable fishery is at *Cranna*, on the river *Ban*, about a mile and an half from *Coleraine*. When I made the tour of that hospitable kingdom in 1754, it was rented by a neighboring gentleman for 620*l.* a year, who assured me that the tenant, his predecessor, gave 1600*l.* per ann. and was a much greater gainer by the bargain for the reasons before-mentioned, and on account of the number of poachers who destroy the fish in the fence months.

The mouth of this river faces the north, and is finely situated to receive the fish that roam along the coast, in search of an inlet into some fresh water, as they do all along that end of the kingdom which opposes itself to the northern ocean. We have seen near *Ballicastle*, nets placed in the sea at the foot of the promontories that jut into it, which the salmon strike into as they are wandering close to shore, and numbers are taken by that method.

In the *Ban* they fish with nets eighteen score yards long, and are continually drawing night and day the whole season, which we think lasts about four months, two sets of sixteen men each alternately relieving one another. The best drawing is when the tide is coming in: we were told that at a single draught there were once eight hundred and forty fish taken.

A few

A few miles higher up the river is a ware, where a considerable number of fish that escape the nets are taken. We were lately informed, that in the year 1760 about 320 tons were taken in the *Cranna* fishery.

The salmon are cured in this manner: they are first split, and rubbed with fine salt; and after lying in pickle in great tubs, or reservoirs, for six weeks, are packed up with layers of coarse brown *Spanish* salt in casks, six of which make a ton. These are exported to *Leghorn* and *Venice* at the price of twelve or thirteen pounds per ton, but formerly from sixteen to twenty-four pounds each.

The salmon is a fish so generally known, that a very brief description will serve. The largest we ever heard of weighed seventy-four pounds. The color of the back and sides are grey, sometimes spotted with black, sometimes plain: the covers of the gills are subject to the same variety: the belly silvery: the nose sharp pointed: the end of the under jaw in the males often turns up in form of a hook; sometimes this curvature is very considerable: it is said that they lose this hook when they return to the sea. Descr.

The teeth are lodged in the jaws and on the tongue, and are slender, but very sharp.

The tail is a little forked.

II. The GREY.

The Grey, i. e. cinereus seu Griseus. *Wil. Icth.* 193. *Raii syn. pisc.* 63.
Salmo maculis cinereis, caudæ extremo æquali. *Arted. synon.* 23.
Salmo eriox. *Lin. syst.* 509.
Gralax. *Faun. suec. No.* 346.
Lachs-forellen mit Schwarzgrauen flecken oder punktchens. *Wulff. Borus. No.* 43.

WE are uncertain whether this is not a meer variety of the salmon; but on the authority of Mr. *Ray*, we describe them separate. He says it is a very strong fish, that it does not ascend the fresh waters till *August*, when it rushes up with great violence, that it is rarely taken, and not much known.

We saw one last summer caught near *Gloddaeth*, in *Caernarvonshire*, which weighed twenty-two pounds: the body was much deeper than that of the salmon; the head larger: the irides were silvery: the back, first dorsal fin, the sides above the lateral line, were of a deep grey, spotted with numbers of dark purplish spots: the belly silvery: the tail quite even at the end. The fishermen called it a she salmon.

Mr. *Ray* describes it among the fish of the trout kind, communicated to him by Mr. *Johnson*, who made his observations in the north of *England*: but it is not peculiar to that part, for we have heard of its being taken in the river *Wye*, where it is known by the name of *Sewin*, or *Shewin*.

III. The

III. The BULL TROUT.

Trutta taurina, apud nos in *Northumbria* a Bull-trout. *Charlton. ex. pifc.* 36.

Trutta Salmonata, the Salmon Trout, Bull-trout, or Scurf. *Raii fyn. pifc.* 63. *Wil. Icth.* 193. 198.

Salmo latus, maculis rubris nigrifque, cauda æquali. *Arted. fynon.* 24.

Salmo trutta. S. ocellis nigris, iridibus brunneis, pinna pectorali punctis fex. *Lin. fyft.* 509. *Gronov. Zooph. No.* 367.

Orlax, Borting. *Faun. fuec. No.* 347.

THIS fpecies is in fome places called the bull trout, from the thicknefs and fhortnefs of its head. Its flefh is white, and lefs delicate than that of others of this genus.

It feldom exceeds twenty inches in length: the back is afh-colored: the head and fides are marked with large black fpots, encircled with brown.

The firft dorfal fin is fpotted with black: the pectoral fin marked with oblong fpots: the belly white.

The tail is even at the end.

IV. The TROUT.

Salar. *Ausonius Mosel.* 88.
Salar et varius, Trotta. *Salvian.* 96.
La Truitte. *Belon.* 274.
Trutta fluviatilis. *Rondel. fluviat.* 169. *Gesner pisc.* 1002.
Foren, Forellen. *Schonevelde.* 77.
A Trout. *Wil. Ich.* 199. *Raii syn. pisc.* 65.
S. maculis rubris, maxilla inferiore longiore. *Arted. synon.* 23.
Salmo Fario. *Lin. syst.* 509.
Laxoring, Forell, Stenbit. *Faun. suec. No.* 348.

IT is matter of surprize that this common fish has escaped the notice of all the antients, except *Ausonius:* it is also singular, that so delicate a species should be neglected at a time when the folly of the table was at its height; and that the epicures should overlook a fish that is found in such quantities in the lakes of their neighborhood, when they ransacted the universe for dainties. The milts of *Murænæ* were brought from one place; the livers of *Scari* from another *; and *Oysters* even from so remote a spot as our *Sandwich* **: but there was, and is a fashion in the article of good living. The *Romans* seem to have despised the trout, the piper, and the doree; and we believe Mr. *Quin* himself would have resigned the rich paps of a pregnant sow†, the heels of camels ‡, and the tongues of *Flamingos* §, tho' dressed by *Heliogabalus*'s cooks, for a good jowl of salmon with lobster sauce.

* *Suetonius, vita* Vitellii. ** *Juvenal Sat.* iv. 141. † *Martial. lib.* xiii. *epig.* 44. ‡ *Lamprid. vit. Heliogab.* § *Martial. lib.* xii. *epig.* 71.

When

When *Auſonius* ſpeaks of this fiſh, he makes no euloge on its goodneſs, but celebrates it only for its beauty.

Purpureiſque SALAR *ſtellatus Tergore guttis.*

With purple ſpots the *Salar's* back is ſtained.

Theſe marks point out the ſpecies he intended: what he meant by his *Fario* is not ſo eaſy to determine: whether any ſpecies of trout, of a ſize between the *ſalar* and the ſalmon; or whether the ſalmon itſelf, at a certain age, is not very evident.

Teque inter geminos ſpecies, neutrumque et utrumque,
Qui nec dum SALMO, *nec* SALAR *ambiguuſque.*
Amborum medio Fario intercepter ſub ævo.

Salmon or *ſalar*, I'll pronounce thee neither;
A doubtful kind, that may be none, or either,
Fario, when ſtopt in middle growth.

In fact the colors of the trout, and its ſpots, vary greatly in different waters, and in different ſeaſons; yet each may be reduced to one ſpecies. In *Llyndivi*, a lake in *South Wales*, are trouts called *Coch y dail*, marked with red and black ſpots as big as ſixpences; others unſpotted, and of a reddiſh hue, that ſometimes weigh near ten pounds, but are bad taſted.

In *Lough Neagh* in *Ireland*, are trouts called there *Buddaghs*, which I was told ſometimes weighed thirty pounds, but it was not my fortune to ſee any during my ſtay in the neighbourhood of that vaſt water.

Trouts (probably of the same species) are also taken in *Hulsewater*, a lake in *Cumberland*, of a much superior size to those of *Lough Neagh*. These are supposed to be the same with the trout of the lake of of *Geneva*, a fish I have eaten more than once, and think but a very indifferent one.

Crooked trouts.

In the river *Eynion*, not far from *Machyntleth*, in *Merionethshire*, and in one of the *Snowdon* lakes, are found a variety of trout, which are naturally deformed, having a strange crookedness near the tail, resembling that of the perch before described. We dwell the less on these monstrous productions, as our friend the Hon. *Daines Barrington*, has already given an account of them in an ingenious dissertation on some of the *Cambrian* fish, published in the *Philosophical Transactions* of the year 1767.

Trouts are most voracious fish, and afford excellent diversion to the angler: the passion for the sport of angling is so strong in the neighborhood of *London*, that the liberty of fishing in some of the streams in the adjacent counties, is purchased at the rate of ten pounds per annum.

These fish shift their quarters to spawn, and, like salmon, make up towards the heads of rivers to deposit their roes. The under jaw of the trout is subject, at certain times, to the same curvature as that of the salmon.

Descr.

A trout taken in *Llynallet*, in *Denbighshire*, which is famous for an excellent kind, measured seventeen inches, its depth three and three quarters, its weight one pound ten ounces: the head thick, the nose rather sharp: the upper jaw a little longer than the lower;

lower; both jaws, as well as the head, were of a pale brown, blotched with black: the teeth ſharp and ſtrong, diſpoſed in the jaws, roof of the mouth and tongue, as is the caſe with the whole genus, except the *Gwyniad*, which is toothleſs, and the *Grayling*, which has none on its tongue.

The back was duſky; the ſides tinged with a purpliſh bloom, marked with deep purple ſpots, mixed with black, above and below the ſide line which was ſtrait: the belly white.

The firſt dorſal fin was ſpotted; the ſpurious fin brown, tipped with red; the pectoral, ventral, and anal fins, of a pale brown; the edges of the anal fin white: the tail very little forked when extended.

V. The S A M L E T.

Le Tacon? *Belon.* 275.
Salmulus, *Herefordiæ* Samlet dictus. *Wil. Icth.* 192.
Salmulus, the Samlet *Herefordienſibus*, Branlin et Fingerin *Eboracenſibus*. *Raii ſyn. piſc.* 63.
Salmoneta, a Branlin. *Ray's Letters*, 199.

THE ſamlet is the leſt of the trout kind, is frequent in the *Wye*, in the upper part of the *Severn*, and the rivers that run into it, in the north of *England*, and in *Wales*. It is by ſeveral imagined to be the fry of the ſalmon; but our reaſons for diſſenting from that opinion are theſe:

Firſt, It is well known that the ſalmon fry never

continue in the fresh waters the whole year; but as numerous as they appear on their first escape from the spawn, all vanish on the first vernal flood that happens, which sweeps them into the sea, and leaves scarce one behind.

Secondly, The growth of the salmon fry is so quick and so considerable, as suddenly to exceed the bulk of the largest samlet: for example, the fry that have quitted the fresh water in the spring, not larger than gudgeons, return into it again a foot or more in length.

Thirdly, The salmon attain a considerable bulk before they begin to breed: the samlets, on the contrary, are found male and female*, (distinguished by the milt and roe) of their common size.

Fourthly, They are found in the fresh waters in all times of the year, and even at seasons when the salmon fry have gained a considerable size. It is well known, that near *Shrewsbury* (where they are called *Samsons*) they are found in such quantities in the month of *September*, that a skilful angler, in a coracle, will take with a fly from twelve to sixteen dozen in a day.

They spawn in *November* and *December*, at which time those of the *Severn* push up towards the head of that fair river, quitting the lesser brooks, and return into them again when they have done.

They have a general resemblance to the trout, therefore must be described comparatively.

* It has been vulgarly imagined, that there were no other than males of this species.

First,

Firſt, The head is proportionably narrower, and the mouth leſs than that of the trout.

Secondly, Their body is deeper.

Thirdly, They ſeldom exceed ſix or ſeven inches in length.

Fourthly, The pectoral fins have generally but one large black ſpot, tho' ſometimes a ſingle ſmall one attends it; whereas the pectoral fins of the trout are more numerouſly marked.

Fifthly, The ſpurious or fat fin on the back is never tipped with red; nor is the edge of the anal fin white.

Sixthly, The ſpots on the body are fewer, and not ſo bright. It is alſo marked from the back to the ſides with ſix or ſeven large bluiſh bars; but this is not a certain character, as the ſame is ſometimes found in young trouts.

Seventhly, The tail of the ſamlet is much more forked than that of the trout.

VI. The CHARR.

L'Omble, ou Humble. *Belon.* 281.
Umbla seu Humble *Belonii. Gesner pisc.* 1005.
Umbla minor. *Gesner pisc.* 1013.
Torgoch *Wallis. Westmorlandis* Red Charre *Lacus Winandermere. Wil. Ichth.* 196. *Raii syn. pisc.* 65.
Salmo vix pedalis, pinnis ventralibus rubris, maxilla inferiore longiore. *Arted. syn.* 25.
Salmo Alpinus. *Lin. syst.* 510. *Gronov. Zooph. No.* 372.
Roding, *Lapponibus* Raud. *Faun. suec. No.* 124.
Charr-fish. *Phil. Trans.* 1755. 210.

THE charr is an inhabitant of the lakes of the north, and of those of the mountanous parts of *Europe*. It affects clear and pure waters, and is very rarely known to wander into running streams, except into such whose bottom is similar to the neighboring lake.

It is found in vast abundance in the cold lakes on the summits of the *Lapland Alps*, and is almost the only fish that is met with in any plenty in those regions; where it would be wonderful how they subsisted, had not Providence supplied them with innumerable *larvæ* of the *Gnat* kind*: these are food

* A pupil of *Linnæus* remarks in the fourth volume of the *Amæn. Acad. p.* 156, that the same insects which are such a pest to the rein deer, afford sustenance to the fish of the vast lakes and rivers of *Lapland*. But at the same time that we wonder at *Linnæus*'s inattention to the food of the birds and fish of that country, which abound even to a noxious degree, we must, in justice to that gentleman, acknowlege an oversight of our own in the second volume of the *British Zoology, p.* 522, where we give the *Lapland* waters only one species of water plant; for on a more careful review of that elaborate performance, the

to

G Wilkinson del. P Mazell Sculp.

to the fiſh, who in their turn are a ſupport to the migratory *Laplanders*

> Whilſt when the ſolar beams ſalute their ſight,
> Bold and ſecure in half a year of light,
> Uninterrupted voyages they take
> To the remoteſt woods, and fartheſt lake *.

In ſuch excurſions thoſe vacant people find a luxurious and ready repaſt in theſe fiſh, which they dreſs and eat without the addition** of ſauces; for exerciſe and temperance render uſeleſs the inventions of epicuriſm.

There are but few lakes in our iſland that produce this fiſh, and even thoſe not in any abundance. It is found in *Winander Mere* in *Weſtmorland*; in *Llyn Quellyn*, near the foot of *Snowdon*; and before the diſcovery of the copper-mines, in thoſe of *Llynberris*, but the mineral ſtreams have entirely deſtroyed the fiſh in the laſt lakes †. Whether the waters of *Ireland* afford the charr, we are uncertain, but imagine not, except it has been overlooked by their writers on the natural hiſtory of that kingdom. In *Scotland* it is found in *Loch Inch*, and other neighboring lakes, and is ſaid to go into the *Spey* to ſpawn.

Flora Lapponica, we diſcover three other ſpecies, viz. *Scirpus*, *No.* 18, *Alopecurus*, *No.* 38, *Ranunculus*, *No.* 234; but thoſe ſo thinly ſcattered over the *Lapland* lakes, as ſtill to vindicate our aſſertion, as to the ſcarceneſs of plants in the waters of alpine countries.

* *Prior's Solomon. Book* I.

** *Arted. Sp. piſc.* 52.

† They are alſo found in certain lakes in *Merionethſhire*.

The

The largeſt and moſt beautiful we ever received were taken in *Winander Mere*, and were communicated to us by the Rev. Mr. *Farriſh*, of *Carliſle*, with an account of their natural hiſtory. He favored me with five ſpecimens, two under the name of the *Caſe Charr*, male and female; another he called the *Gelt Charr*, i. e. a charr which had not ſpawned the preceding ſeaſon, and on that account is reckoned to be in the greateſt perfection. The two others were inſcribed, the *Red Charr*, *the Silver or Gilt Charr*, the *Carpio Lacus* BENACI, *Raii ſyn. piſc.* 66, which laſt are in *Weſtmorland* diſtinguiſhed by the epithet *red*, by reaſon of the fleſh aſſuming a higher color than the other when dreſſed.

Varieties.

On the cloſeſt examination, we could not diſcover any ſpecific differences in theſe ſpecimens, therefore muſt deſcribe them as the ſame fiſh, ſubject only to a ſlight variation in their form, hereafter to be noted. But there is in another reſpect an eſſential difference, we mean in their œconomy, which is in all beings invariable; the particulars we ſhall deliver in the very words of our obliging informant.

Spawning of the caſe charr.

The *Umbla minor*, or caſe charr, ſpawns about *Michaelmas*, and chiefly in the river *Brathy*, which uniting with another called the *Rowthay*, about a quarter of a mile above the lake, they both fall into it together. The *Brathy* has a black rocky bottom; the bottom of the *Rowthay* is a bright ſand, and into this the charr are never obſerved to enter. Some of them however ſpawn in the lake, but always in ſuch parts of it which are ſtony, and reſemble the channel

channel of the *Brathy*. They are fuppofed to be in the higheft perfection about *May*, and continue fo all the fummer, yet are rarely caught after *April*. When they are fpawning in the river they will take a bait, but at no other time, being commonly taken, as well as the other fpecies, in what they call *breaft nets*, which are in length about twenty-four fathoms, and about five, where broadeft.

The feafon which the other fpecies fpawns in is from the beginning of *January* to the end of *March*. They are never known to afcend the rivers, but always in thofe parts of the lake which are fpringy, where the bottom is fmooth and fandy, and the water warmeft. The fifhermen judge of this warmth, by obferving that the water feldom freezes in the places where they fpawn, except in intenfe frofts, and then the ice is thinner than in other parts of the lake. They are taken in greateft plenty from the end of *September* to the end of *November*: at other times they are hardly to be met with. This fpecies is much more efteemed for the table than the other, and is very delicate when potted. Gilt charr.

We muft obferve, that this account of the fpawning feafon of the *Weftmorland* charrs, agrees very nearly with that of thofe of *Wales*, the laft appearing about a month later, keep moving from fide to fide of the pool, and then retire into the deep water, where they are fometimes but rarely taken.

This remarkable circumftance of the different feafon of fpawning in fifh, apparently the fame (for the red charr of *Winander*, is certainly not the

Carpio

Carpio Lacus BENACI*) puzzles us greatly, and makes us wifh that the curious, who border on that lake, would pay farther attention to the natural hiftory of thefe fifh, and favor us with fome further lights on the fubject.

We fhall now defcribe the varieties by the names afcribed to them in the north.

Red charr.

The length of the red charr to the divifion in its tail, was twelve inches; its biggeft circumference almoft feven. The firft dorfal fin five inches and three quarters from the tip of its nofe, and confifted of twelve branched rays; the firft of which was fhort, the fifth the longeft: the fat fin was very fmall.

Each of the five fifh had double noftrils, and fmall teeth in the jaws, roof of the mouth, and on the tongue.

The head, back, dorfal fin, and tail of each, was of a dufky blue; the fides rather paler, marked with numbers of bright red fpots: the bellies of the *Red Charr* were of a full and rich red; thofe of the *Cafe Charr* rather paler; from this particular the *Welch* call thefe fifh *Torgoch*, or red belly.

The firft rays of the anal and ventral fins of each, were of a pure white; the reft of each fin on the lower part of the body, tinged with red.

The lateral line ftrait, dividing the fifh in two equal parts, or nearly fo.

The jaws in the *Cafe Charr* are perfectly even; on the contrary, thofe of the *Red Charr* were unequal,

* A fifh well defcribed by *Salvianus*, *p.* 99, which bears no kind of refemblance to our fifh, except the generical one.

the

the upper jaw being the broadeft, and the teeth hung over the lower, as might be perceived on paffing the finger over them.

The branchioftegous rays were, on different fides of the fame fifh, unequal in number, viz. 12,--11, 11,--10, 10--9, except in one, where they were 11,--11.

The *Gelt*, or *Barren Charr*, was rather more flender than the others, as being without fpawn. The back of a gloffy dufky blue: the fides filvery, mixed with blue, fpotted with pale red: the fides of the belly were of a pale red, the bottom white. Gelt charr.

The tails of each bifurcated.

The charrs we have feen, brought from the *Snowdon* lakes, were rather fmaller than thofe of *Weftmorland:* their colors paler. The fuppofed males very much refemble the *Gelt Charr*; but that is not a certain diftinction of fex, for the Rev. Mr. *Farrington**, has told me that the fifhermen do not make that diftinction.

* Who favored the Royal Society with a paper on the *Welch* charr. *Vide Phil. Tranf.* 1755.

VII. The

VII. The GRAYLING.

Θυμαλλος. *Ælian. de an. lib.* xiv. *c.* 22. Umbra *Ausonii Mosella.* 90.
Thymalus, Thymus. *Salvian.* 81. *Belon.* 276.
Thymus, Umbra fluviatilis. *Rondel. fluv.* 187, 172. *Gesner pisc.* 132.
A Grayling, or Umber. *Wil. Ich.* 187. *Raii syn. pisc.* 62, Coregonus maxilla superiore longiore, pinna dorsi officulorum viginti trium. *Arted. synon.* 20.
Salmo Thymallus. *Lin. syst.* 512. *Gronov. Zooph. No.* 375. Asch. *Kram.* 390.

THE grayling haunts clear and rapid streams, and particularly such that flow thro' mountanous countries. It is found in the rivers of *Derbyshire*; in some of those of the north; in the *Tame* near *Ludlow*; and in the *Lug*, and other streams near *Leominster*: it is also very common in *Lapland*; the inhabitants make use of the guts of this fish instead of rennet, to make the cheese which they get from the milk of the rein deer *.

It is a voracious fish, rises freely to the fly, and will very eagerly take a bait. It is a very swift swimmer, and disappears like the transient passage of a shadow, from whence we believe is derived the name of *Umbra*.

Effugiensque oculos celeri levis UMBRA *natatu* **.

The *Umbra* swift escapes the quickest eye.

Thymalus and *Thymus*, are names bestowed on it on account of the imaginary scent, compared by some

* *Flora Lap.* 109. ** *Æmæn. Acad.* iv. 159.

to

to that of thyme; but we never could perceive any particular smell.

It is a fish of an elegant form; less deep than that of a trout: the largest we ever heard of was taken near *Ludlow*, which was above half a yard long, and weighed four pounds six ounces, but this was a very rare instance. Descr.

The irides are silvery, tinged with yellow: the teeth very minute, seated in the jaws and the roof of the mouth, but none on the tongue: the head is dusky: the covers of the gills of a glossy green: the back and sides of a fine silvery grey, but when the fish is just taken, varied slightly with blue and gold: the side-line is strait.

The scales large, and the lower edges dusky, forming strait rows from head to tail.

The first dorsal fin has twenty-one rays; the three or four first are the shortest, the others almost of equal lengths; this fin is spotted, all the others are plain.

The tail is much forked.

VIII. The SMELT.

Epelan de mer. *Belon.* 282.
Eperlanus. *Rondel. fluviat.* 196. *Gesner pisc.* 362.
Spirincus et Stincus. *Gesner Paralip.* 29.
A Spyrling a Sprote. *Turner epist. ad. Gesn.*
Stindt, et Stinckfisch. *Schonevelde.* 70.
A Smelt. *Wil Icth.* 202. *Raii syn. pisc.* 66.
Osmerus radiis pinnæ ani septendecim. *Arted. synon.* 21.
Salmo eperlanus. S. capite diaphano, radiis pinnæ ani septendecim. *Lin. syst.* 511. *Gronov. Zooph. No.*
Nors, Slom. *Faun. suec. No.* 350.

THE smelt inhabits the seas of the northern parts of *Europe*, and we believe never is found as far south as the *Mediterranean*: the *Seine* is one of the *French* rivers which receive it, but whether it is found south of that, we have not at present authority to say. If we can depend on the observations of navigators, who generally have too much to think of to attend to the *minutiæ* of natural history, these fish are taken in the straits of *Magellan* *, and of a most surprising size, some measuring twenty inches in length, and eight in circumference.

They inhabit the seas that wash these islands the whole year, and never go very remote from shore, except when they ascend the rivers. It is remarked in certain rivers that they appear a long time before they spawn, being taken in great abundance in *November*, *December*, and *January*, in the *Thames* and *Dee*, but in others not till *February*, and in *March*

* *Narborough's Voy.* 123.

and

and *April* they spawn; after which* they all return to the salt water, and are not seen in the rivers till the next season. It has been observed, that they never come into the *Mersey* as long as there is any snow water in the river.

These fish vary greatly in size, but the largest we ever heard of was thirteen inches long, and weighed half a pound.

They have a very particular scent, from whence is derived one of their *English* names *Smelt*, i. e. smell it. That of *Sparling*, which is used in *Wales*, and the north of *England*, is taken from the *French Eperlan*. There is a wonderful disagreement in the opinion of people in respect to the scent of this fish; some assert it flavors of the violet; the *Germans*, for a very different reason, distinguish it by the elegant title of *Stinckfisch***.

It is a fish of a very beautiful form and color: the head is transparent, and the skin in general so thin, that with a good microscope the blood may be observed to circulate.

The irides are silvery: the pupil of a full black: the under jaw is the longest: in the front of the upper jaw are four large teeth; those in the sides of both are small; in the roof of the mouth are two Descr.

* In the river *Conway*, near *Llanrwst*, and in the *Mersey* they never continue above three or four weeks.

** And not without reason, if we may depend on *Linnæus*, who says there are in the *Baltic* two varieties, the one, which is called *Nors*, *fœtidissimus*, *stercoris instar*, which in the early spring, when the peasants come to buy it, fills all the streets of *Upsal* with the smell. He adds, that at this season agues reign there. *Faun. suec. p.* 125.

rows of teeth; on the tongue two others of large teeth.

The first dorsal fin has eleven rays; the pectoral fins the same number; the ventral eight; the anal fourteen.

The scales are small, and readily drop off: the tail consists of nineteen rays, and is forked.

The color of the back is whitish, with a cast of green, beneath which it is varied with blue, and then succeeds a beautiful gloss of a silvery hue.

Southampton smelt.

Besides this species is another, which was communicated to us by the Hon. *Daines Barrington*, who describes it in these words:

The *Southampton* smelt agrees with the common kind in having two back fins, but both of them are radiated; the first with eight radii, the second with twelve; the belly fins have only five or six radii: the upper jaw is longer than the lower, and has a few teeth, whereas the lower has none: in color, transparency of the back and head, silver stripes on the sides, forked tail, &c. it agrees nearly with the former, but has nothing of the violet smell or taste. It swarms in that sea, and is the common bait for whiting, mackrell, flat-fish, &c. It is eaten fried, is tender and sweet, and without any small bones, but must be gutted before it is dressed. It grows to three or four inches in length, but is commonly much less.

IX. The

IX. The GWINIAD.

Le Lavaret. *Belon.* 278.
Lavaretus; Piſcis *Lemani* lacus *Bezola* vulgo nuncupatus. Alius Piſcis proprius *Lemani* lacus. *Rondel. fluviat.* 162, 163, 164. *Geſner piſc.* 29, 30, 31.
Albula nobilis, Snepel, Helte? *Schonevelde* 12.
Vandeſius et Gevandeſius. *Sib. Scot.* 26.
Guiniad *Wallis* piſcis lacus *Balenſis*, *Ferræ* (uc puto) idem. *Wil Icth.* 183. *Raii ſyn. piſc.* 61.
Lavaretus *Allobrogum*, Schelley *Cumberlandis*. *Wil. Icth.* 183. *Raii ſyn. piſc.* 61.
Albula cærulea. *Scheuchzer it. Alp.* ii. 481.
Coregonus maxilla ſuperiore longiore plana, pinna dorſi oſſiculorum 14. *Arted. ſynon.* 19.
Salmo Lavaretus. *Lin. ſyſt.* 512.
Sijk, Stor-ſijk. *Faun. ſuec. No.* 352.
Gwiniad. *Phil. Tranſ.* 1767. 211.
Adelfiſch, Gangfiſch, Weiſsfiſch, Weiſſer Blauling, Schnapel. *Wulff Boruſs*, 37.
Reinankl. *Kram.* 389.

THIS fiſh is an inhabitant of ſeveral of the lakes of the *Alpine* parts of *Europe*. It is found in thoſe of *Suitzerland*, *Savoy*, and *Italy*; of *Norway*, *Sueden*, *Lapland**, and *Scotland*; in thoſe of *Ireland*, and of *Cumberland*; and in *Wales*, in that of *Llyntegid*, near *Bala*, in *Merionethſhire*.

* *Schæffer*, in his Hiſtory of *Lapland*, p. 140. ſays, that theſe fiſh are caught there of the weight of ten or twelve pounds. We wiſh *Linnæus* had executed his intention of favoring the world with his *Lacheſis Lapponica*, in which he promiſed a complete hiſtory of that country. I once reminded him of it, and it is with true regret, that I give his anſwer :——*Nunc nimis ſerò inciperem,*

Me quoque debilitat ſeries immenſa laborum,
Ante meum tempus cogor et eſſe ſenem :
Firma ſit illa licet ſolvetur in æquore navis,
Quæ nunquam liquidis ſicca carebit aquis.

It is the same with the *Ferra* of the lake of *Geneva*, the *Schelly* *, of *Hulse-water*, the *Pollen* of *Lough Neagh*, and the *Vangis* and *Juvangis* of *Loch Mabon*. The *Scotch* have a tradition that it was first introduced there by the beauteous queen, their unhappy *Mary Stuart*; and as in her time the *Scotch* court was much frenchified, it seems likely that the name was derived from the *French*, *vendoise*, a dace; to which a slight observer might be tempted to compare it from the whiteness of its scales. The *British* name *Gwiniad*, or whiting, was bestowed on it for the same reason.

It is a gregarious fish, and approaches the shores in vast shoals in spring and in summer, which prove in many places a blessed relief to the poor of inland countries, in the same degree as the annual return of the herring is to those who inhabit the coasts. The Rev. Mr. *Farrish*, of *Carlisle*, wrote me word, that he was assured by a *Hulse-water* fisherman, that last summer he took between seven and eight thousand at one draught. I must not pass by that gentleman without acknowleging my obligations to him for an account of the *Charrs* and the *Schelly*; he being one of the valuable embellishers of this work, for whom I am indebted to the friendship of his late worthy prelate.

The *Gwiniad* is a fish of an insipid taste, and must be eaten soon, for it will not keep long; those that choose to preserve them do it with salt. They die very soon after they are taken. Their spawning season in *Llyntegid* is in *December*.

* The inhabitants of *Cumberland* give this name also to the chub, from its being a scaly fish.

It

GWINIAD.

G Wilkinson del

P Mazell Sculp.

It has long ago been obſerved in *Cambden* *, that theſe fiſh never wander into the *Dee*, nor the ſalmon never ventures into the lake: this muſt be allowed to be generally the caſe; but by accident the firſt have been known to ſtray as far as *Llandrillo*, ſix miles down the river, and a ſalmon has now and then been found treſpaſſing in the lake **.

The largeſt *Gwiniad* we ever heard of weighed between three and four pounds: we have a *Ferra* we brought with us out of *Suitzerland*, that is fifteen inches long; but theſe are uncommon ſizes: the fiſh which we deſcribe was eleven inches long, its greateſt depth three.

The head ſmall, ſmooth, and of a duſky hue: the eyes very large: the pupil of a deep blue: the noſe blunt at the end: the jaws of equal length: the mouth ſmall and toothleſs: the branchioſtegous rays nine: the covers of the gills ſilvery, powdered with black.

The back is a little arched, and ſlightly carinated: the color, as far as the lateral line, gloſſed with deep blue and purple, but towards the lines aſſumes a ſilvery caſt, tinged with gold, beneath which thoſe colors entirely prevale.

The ſide line is quite ſtrait, and conſiſts of a ſeries of diſtinct ſpots of a duſky hue: the belly is a little prominent, and quite flat on the bottom.

The firſt dorſal fin is placed almoſt in the middle, and conſiſts of fourteen branched rays; the ſecond is thin, tranſparent, and not diſtant from the tail.

* *Vol.* ii. 790.

** *Hon. Mr.* D. Barrington's *Letter to Dr.* Watſon. Phil. Tranſ. 1767.

The

The pectoral fins had eighteen rays, the first the longest, the others gradually shortening; the ventral fins were composed of twelve, and the anal of fifteen, all branched at their ends; the ventral fins in some are of a fine sky blue, in others as if powdered with blue specks; the ends of the other lower fins are tinged with the same color.

The tail is very much forked: the scales large, and adhere close to the body.

Genus XXXV. Upper jaw shorter than the lower. Body long, slender, compressed sideways. One dorsal fin placed near the tail. PIKE.

I. The PIKE.

Lucius. *Ausonii Mosella*, 122.
Luccio. *Salvian.* 94.
Le Brochet. *Belon.* 292. *Itin.* 104.
Lucius. *Rondel. fluviat.* 188. *Gesner pisc.* 500.
Heket, Hecht. *Schonevelde.* 44.
Pike, or Pickerel. *Wil. Ich.* 236. *Raii syn. pisc.* 112.
Esox rostro plagioplateo. *Artedi. synon.* 26.
Esox Lucius. *Lin. syst.* 516. *Gronov. Zooph. No.* 361.
Gjadda. *Faun. suec. No.* 355.
Hecht. *Kram.* 388.

THE pike is common in most of the lakes of *Europe*, but the largest are those taken in *Lapland*, which, according to *Schæffer*, are sometimes eight feet long. They are taken there in great abundance, dried, and exported for sale. The largest fish of this kind which we ever heard of in *England*, weighed thirty-five pounds.

All

All writers who treat of this fpecies bring inftances of its vaft voraciousnefs. We have known one that was choaked by attempting to fwallow one of its own fpecies that proved too large a morfel. It does not confine itfelf to feed on fifh and frogs; it will devour the water rat, and draw down the young ducks as they are fwimming about. In a manufcript note which we found, p. 244, of our copy of *Plott*'s Hiftory of *Staffordfhire*, is the following extraordinary fact: "At Lord *Gower*'s canal at *Trentham*, a pike feized the head of a fwan as fhe was feeding under water, and gorged fo much of it as killed them both. The fervants perceiving the fwan with its head under water for a longer time than ufual, took the boat, and found both fwan and pike dead*."

But there are inftances of its fiercenefs ftill more furprizing, and which indeed border a little on the marvellous. *Gefner* ** relates, that a famifhed pike in the *Rhone* feized on the lips of a mule that was brought to water, and that the beaft drew the fifh out before it could difengage itfelf. That people have been bit by thefe voracious creatures while they were wafhing their legs, and that they will even contend with the otter for its prey, and endeavour to force it out of its mouth†.

Small fifh fhew the fame uneafinefs and deteftation at the prefence of this tyrant, as the little

* This note we afterwards difcovered was wrote by Mr. *Plott*, of *Oxford*, who affured me he inferted it on good authority.

** *Gefner pifc.* 503. † *Walton.* 157.

birds

birds do at the sight of the hawk or owl. When the pike lies dormant near the surface (as is frequently the case) the lesser fish are often observed to swim around it in vast numbers, and in great anxiety. Pike are often haltered in a noose, and taken while they lie thus asleep, as they are often found in the ditches near the *Thames* in the month of *May*.

In the shallow water of the *Lincolnshire* fens they are frequently taken in a manner peculiar, we believe, to that county, and the isle of *Ceylon* *. The fishermen makes use of what is called a crown-net, which is no more than a hemispherical basket, open at top and bottom. He stands at the end of one of the little fen-boats, and frequently puts his basket down to the bottom of the water, then poking a stick into it, discovers whether he has any booty by the striking of the fish; and vast numbers of pike are taken in this manner.

Longevity. The longevity of this fish is very remarkable, if we may credit the accounts given of it. *Rzaczynski*** tells us of one that was ninety years old; but *Gesner*† relates, that in the year 1497, a pike was taken near *Hailbrun*, in *Suabia*, with a brazen ring affixed to it, on which were those words in *Greek* characters: *I am the fish which was first of all put into this lake by the hands of the governor of the universe*, FREDERICK *the Second, the 5th of* October, 1230:" so that the former must have been an infant to this *Methusalem* of a fish.

* *Knox's Hist. Ceylon*, 28.
** *Hist. Nat. Poloniæ*, 152.
† *Icones piscium*, 316, where a print of the ring is given.

Pikes

Pikes fpawn in *March* or *April*, according to the coldnefs or warmth of the weather. When they are in high feafon their colors are very fine, being green, fpotted with bright yellow; and the gills are of a moft vivid and full red. When out of feafon, the green changes to grey, and the yellow fpots turn pale.

The head is very flat; the upper jaw broad, and is fhorter than the lower: the under jaw turns up a little at the end, and is marked with minute punctures. Defcr.

The teeth are very fharp, difpofed only in the front of the upper jaw, but in both fides of the lower, in the roof of the mouth, and often the tongue. The flit of the mouth, or the gape, is very wide; the eyes fmall.

The dorfal fin is placed very low on the back, and confifts of twenty-one rays; the pectoral of fifteen; the ventral of eleven; the anal of eighteen.

The tail is bifurcated.

II. The

II. The SEA PIKE.

Βελόνη. *Arist. Hist. an.* ii. *c.* 15. &c.
Βελόνη, Ραφις? *Athenæus. lib.* vii. 319.
Acus, sive Belone *Plinii lib.* ix. *c.* 51.
Acuchia. *Salvian.* 68.
L'Aguille, ou Orphie. *Belon.* 161.
Acus prima species. *Rondel.* 227. *Gesner pisc.* 9.
Horn-fisck. *Schonevelde.* 11.
Horn-fish, or Gar-fish. *Wil. Icth.* 231. *Raii syn. pisc.* 109.
Esox rostro cuspidato gracili subtereti, et spithamali, *Arted. synon.* 27.
Esox Belone. E. rostro utraque maxilla dentata. *Lin. syst.* 517. *Gronov. Zooph. No.* 362.
Nabbgjadda, Horngiall. *Faun. suec. No.* 156.
See-naadel, Sack-nadel. *Wulff Borus. No.* 70.

THIS fish which is known in many places, is known by the name of the *Sea Needle.* It comes in shoals on our coasts in the beginning of summer, and precedes the mackrel: it has a resemblance to it in taste, but the light green, which stains the back bone of this fish when boiled, gives many people a disgust to it.

Mr. *Ray* tells us, that when he was in *Cornwall*, the fishermen gave him the names of two species of this fish, one they called *Girrocks*, the other *Skippers*; these we may suppose to be the common kind, the other (according to Mr. *Jago*'s conjecture) is probably the same with the *Saurus* of *Rondeletius*, p. 232, which both those icthyologists agree has a shorter nose than the common species. We have no other description of this fish than what is left us by *Rondeletius*, who says, that it is shorter and thicker than the other; that the nose is shorter and turns up; that

Saurus.

the edges of the jaws are serrated; and that between the anal fin and the tail it has several spurious fins like the mackrel. We do not venture to make a distinct article of this fish, because Mr. *Jago* has not pointed out the specific difference; but we thought it necessary to give this brief description of it from *Rondeletius*, to supply that defect in case the *Saurus* should prove a *British* fish.

The common sea pike, or sea needle, sometimes grows to the length of three feet, or more. Defcr.

The jaws are very long, slender, and sharp pointed; the under extends much farther than the upper, and the edges of both are armed with numbers of short slender teeth: the inside of the mouth is purple: the tongue small: the eyes large: the irides silvery: the nostrils wide and round.

The body is slender: the belly quite flat, bounded on both sides by a rough line.

The pectoral fins consist of twelve rays; the ventral fins small, and placed very remote from the head, consists of six rays, the first spiny.

The dorsal fin lies on the very lower part of the back, consists of eighteen rays; the first are high, the others lower as they approach the tail; the anal fin is of the same form, and placed opposite the other: the tail is forked.

The colors are extremely beautiful when the fish is in the water: the back of a fine green, beneath that appears a rich changeable blue and purple: the sides and belly are of a fine silvery hue.

Genus

Genus XXXVI. Teeth in the jaws and tongue.
Eight branchiostegous rays.
Vent near the tail.
The ventral fins composed of many rays. ARGENTINE.

I. The ARGENTINE.

Sphyræna parva, sive sphyræna secunda species. *Rondel.* 227. *Gesner pisc.* 883.
Piscículus *Romæ*, Argentina dictus. *Wil. Ich.* 229. *Raii syn. pisc.* 108.
Argentina. *Arted. synon.* 17.
Argentina *Sphyræna. Lin. syst.* 518. *Gronov. Zooph.* No. 349.

THIS species was communicated to us by Mr. *Brunnich*, who saw it taken off the isle of *Sheppy*, and is, according to Doctor *Gronovius*, common in the mouth of the *Schelde* during autumn.

It is a small fish of a slender form: the nose is sharp pointed: the teeth very minute: the eyes large.

On the back is one small fin, consisting of ten soft rays; the pectoral of about fourteen; the ventral of eleven; the anal of nine: the tail is forked.

The back is green: the sides beneath the lateral line silvery.

Mr. *Willoughby*, from whom we borrow this description, says, that the outside of the air bladder of this fish consists of a foliaceous silvery skin, which was made use of in the manufacture of artificial pearl.

Genus

Genus XXXVII. The upper jaw a little flat.
Six branchioſtegous rays.
A ſilvery ſtripe along the ſide.
ATHERINE.

I. The ATHERINE.

Epſetus? *Belon.* 209.
Εψητος, Atherina. *Rondel.* 215, 216. *Boſſuet Epig.* 66. 67. *Geſner piſc.* 71, 72.
Piſciculus *Anguella Venetiis* dictus; forte Hepſetus *Rondeletii*, vel *Atherina* ejuſdem. *Wil. Icth.* 209. *Raii ſyn. piſc.* 79.
Atherina. *Arted. ſynon. App.* 116.
Atherina Hepſetus. A. pinna ani radiis fere duodecim. *Lin. ſyſt.* 519. *Gronov. Zooph. No.* 399.

IT is alſo to the ſame gentleman that we are indebted for our knowledge of this being a *Britiſh* fiſh, it having been ſeen by him at the ſame place with the former.

Mr. *Willoughby* deſcribes it as not exceeding three inches and a quarter in length: its form is ſlender: the body covered with ſcales, and entirely pellucid, except where the back bone and inteſtines lie: the back is ſpotted with black: the ſides are ſilvery: when the ſcales are taken off it appears that every four ſpots form a rhombic figure.

On the back are two fins; the firſt conſiſts of ſeven, the ſecond of eleven rays; the pectoral of fourteen; the ventral of ſix; the anal of fourteen.

The tail, according to Doctor *Gronovius*, bifurcated*.

* *Mus. Icthyol.* I. *No.* 66.

Genus

Genus XXXVIII. Body and covers of the gills clothed with large scales.
Six incurvated branchiostegous rays.
Teeth on the tongue and in the palate only. MULLET.

I. The MULLET.

Κεφαλος, Κεςρεύς. *Arist. Hist. an. lib.* v. *c.* 11, &c.
Κεςρεύς. *Oppian. Halieut.* iii. 98. *Athenæus lib.* vii. 306.
Mugil *Ovid Halieut.* 37. *Plinii lib.* ix. *c.* 8. 17.
Cephalo. *Salvian.* 75.
Le Mulet. *Belon.* 205.
Cephalus. *Rondel.* 260. *Gesner pisc.* 549.
Mullet. *Wil. Icth.* 274. *Raii syn. pisc.* 84.
Mugil. *Arted. synon.* 52.
Mugil cephalus. M. pinna dorsali anteriore quinque radiate. *Lin. syst.* 520. *Gronov. Zooph. No.* 397.

THE mullet is justly ranked by *Aristotle* among the *Pisces Littorales*, or those that prefer the shores to the full sea: they are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning, and when surrounded with a net, the whole shoal frequently escapes by leaping over it, for when one takes the lead, the others are sure to follow: this circumstance is taken notice of by *Oppian*; whether the latter part of his observation is true, is what we are uncertain.

Κεςρεύς

Κεςρευς μεν πλεκτῇσιν ἐν ἀγκόινησι λίνοιο,
Ελκόμενος δόλον ἔτι περιδρομον ἠγνοίησεν.
Υψι δ' ἀναθρώσκει λελιημένος ὕδατος ἄκρε,
Ορθὸς ἄνω σπεύδων ὅσσον σθένος ἅλματι κεφῳ
Ορμῆσαι· βελῆς δὲ σαόφρονος ἐκ ἐμάτησε·
Πολλάκι γὰρ ῥιπῆσι καὶ ὕσατα πείσματα φελλῶν
Ρηϊδίως ὑπεράλτο, καὶ ἐξήλυξε μόροιο.
Εἰ δ' ὅγ' ἀνορμηθεὶς πρῶτον ςόλον, αὖτις ὀλιθῇ
Ες βρόχον, ἐκ ἔτ' ἔπειτα βιάζεται, ἐδ' ἀνορέει,
Αχνύμενος· πείρη δὲ μαθὼν ἀποπαύεται ὁρμῆς.

The *Mullet* *, when encircling ſeines incloſe,
The fatal threads and treach'rous boſom knows.
Inſtant he rallies all his vig'rous powers,
And faithful aid of every nerve implores;
O'er battlements of cork up-darting flies,
And finds from air th' eſcape that ſea denies.
But ſhould the firſt attempt his hopes deceive,
And fatal ſpace th'impriſon'd fall receive,
Exhauſted ſtrength no ſecond leap ſupplies;
Self-doom'd to death the proſtrate victim lies,
Reſign'd with painful expectation waits,
'Till thinner elements compleat his fates. JONES.

Oppian had good opportunity of examining theſe fiſh, for they ſwarm during ſome ſeaſons on the coaſts of the *Mediterranean*. Near *Martegues*, in the ſouth of *France*, abundance of mullets are taken in weres made of reeds placed in the ſhallows. Of the milts of the males, which are there called *Alletants*, and of the roes of the females, which are called *Botar*, is made *Botargo*. The materials are taken out entire, covered with ſalt for four or five hours, then preſſed a little between two boards or ſtones, waſhed, and at laſt dried in the ſun for thirteen or fourteen days**.

* Mr. *Jones*, by miſtake, tranſlates it, the *Barbel*.
** Mr. *Willoughby*'s notes during his travels. *Vide Harris's Col. Voy.* II. 721.

This fish was sometimes made the instrument of a horrible punishment for unfortunate gallants. It was in use both at *Athens** and at *Rome*; but we doubt much whether it was a legal one: for we rather suspect it was inflicted instantaneously by the injured and enraged husband, at a season when

Furor arma ministrat.

Juvenal seems to speak of it in that light as well as *Horace:* the former, relating the revenge taken by the exasperated spouse, describes it as very various;

Necat hic ferro, secat ille cruentis
Verberibus, quosdam mæchos et MUGILIS *intrat***.

The passage in *Horace* seems not to have been attended to by the critics; but when he mentions the distresses that the invader of another's bed underwent, he most certainly alludes to this penalty:

Discinctâ tunicâ fugiendum est, ac pede nudo;
Ne nummi pereant, aut PYGA, *aut denique fama* †.

The mullet is an excellent fish for the table, but at present not a fashionable one.

Descr. The head is almost square, and is flat on the top: the nose blunt: lips thick. It has no teeth, only in the upper lip is a small roughness: between the eyes and the mouth is a hard callus.

* *Legibus* Athenienſium *adulteri* εν ἔργω *deprehenſi pœna fuit* ῥαφανόδωσις. *Raphani loco utebantur nonnunquam mugile piſce, interdum ſcorpione.* Cauſauboni *animadvers: in* Athenæum. *lib.* I. *c.* 5. *tom.* iii. *edit.* Lugd. 1621.

** *Satyr.* x. 316.

† *Satyr.* ii. *lib.* I. 132.

The

The pupil of the eye is black, encircled with a ſmall ſilvery line: the upper part of the iris is hazel; the lower ſilvery.

The form of the body is pretty thick, but the back not greatly elevated. The ſcales are large and deciduous.

The firſt dorſal fin is placed near the middle of the back, and conſiſts of four ſtrong ſpines; the ſecond of nine ſoft branching rays; the pectoral has ſixteen, the ventral ſix; the firſt a ſtrong ſpine, the others ſoft.

The tail is much forked.

The color of the back is duſky, varied with blue and green: the ſides ſilvery, marked with broad duſky parallel lines, reaching from head to tail: the belly is ſilvery.

Genus XXXIX. Head covered with scales. Pectoral fins almost as long as the body.

FLYING FISH.

I. The FLYING FISH.

Hirundo *Plinii lib.* ix. *c.* 26.
* Εξώκοιτος και Ἄδωνις? *Athenæus. lib.* viii. 332. *Oppian Halieut.* I. 157. χελιδών? *Oppian* ii. 459.
Rondine. *Salvian.* 186.
Hirondelle de mer. *Belon.* 189.
Mugil alatus. *Rondel.* 267. *Gesner pisc.* 553. *Wil. Icth.* 233.
Exocætus. *Arted. synon.* 18
Exocætus volitans. E. abdomine utrinque carinato. *Lin. syst.* 520. *Amæn. Acad.* I. 603. *Gronov. Zooph. No.* 359.

WE can produce but a single instance of this species** being taken on the *British* coasts. In *June* 1765, one was caught at a small distance below *Caermarthen*, in the river *Towy*, being brought up by the tide which flows as far as the town. It is a fish frequent enough in the *Mediterranean*, and also in the ocean, where it leads a most miserable life. In its own element it is perpetually harassed by the *Dorados*, and other fish of prey. If it endeavors to avoid them by having recourse to the air, it either meets its fate from the *Gulls*, or the *Albatross*, or is forced down again into the mouth of

* *Pliny* mentions it under the same name, *lib.* ix. *c.* 19.
** This fish was seen by *John Strange*, Esq; at *Caermarthen*, who was so obliging as to communicate to me the account of it.

the

the inhabitants of water, who below keep pace with its aerial excurfion. Neither is it unfrequent that whole fhoals of them fall on board of fhips that navigate the feas of warm climates: it is therefore apparent, that nature in this creature hath fupplied it with inftruments that frequently bring it into that deftruction it ftrives to avoid, by having recourfe to an element unnatural to it.

The antients were acquainted with this fpecies: *Pliny* mentions it under the name of *Hirundo*, and fpeaks of its flying faculty. It is probable that *Oppian* intended the fame by his Ωκειαι χελιδονες, or the *fwift fwallow* fifh. What *Athenæus* and the laft cited author mean by the Εξοκοιτος and Αδωνις, is not fo evident: they affert it quitted the water and flept on the rocks, from whence it tumbled with precipitation when difturbed by the unfriendly birds: on thefe accounts Icthyologifts feem to have made it fynonymous with the *flying fifh*.

It refembles the herring in form of the body, but the back is flat: the fcales large and filvery: the dorfal fin is fmall, and placed near the tail: the pectoral fins, the inftruments of flight, are almoft as long as the body: the tail is bifurcated. Defcr.

Genus XL. Eight branchiostegous rays.
The belly extremely sharp, and often serrated. HERRING.

I. The HERRING.

Aringha ex *cimbricis* littoribus. *Jovius*. 143.
Hareng, espece de Chalcis. *Belon*. 169.
Harengus. *Rondel*. 222. *Gesner pisc*. 410.
Heringk. *Schonevelde*. 37.
Herring. *Wil. Icth*. 219. *Raii syn. pisc*. 103.
Clupea maxilla inferiore longiore maculis carens. *Arted. synon*. 14. α. β.
Clupea Harengus. Cl. immaculata, maxilla inferiore longiore. *Lin. syst*. 522. *Gronov. Zooph. No*. 348.
Sill. *Faun. suec. No*. 357. α.
Stromming. *Faun. suec. No*. 357. β.
Stromling*. *Wulff. Borus. No*. 50.

Name. THE herring was unknown to the antients, notwithstanding the words χαλκις and μαινις, are by translators rendered *Halec* **. The characters given of those fish are common to such numbers of different species, as render it impossible to say which they intended.

Place. Herrings are found from the highest northern latitudes yet known, as low as the northern coasts of *France*; and excepting one instance brought by *Dod* †, of a few being once taken in the Bay of *Tangier*, are never found more southerly.

* The herring of the *Baltic*, in all respects is like ours, but smaller.

** Which word, in spite of all *lexicographers*, never signified any thing but the *garum* or pickle. *Vide p*. 221.

† *Natural Hist. of the Herring*, *p*. 27.

They

They are met with in vaft fhoals on the coaft of *America*, as low as *Carolina*. In *Chefapeak* Bay is an annual inundation of thofe fifh, which cover the fhores in fuch quantities as to become a nufance*. We find them again in the feas of *Kamtzchatka*, and poffibly they reach *Japan*; for *Kæmpfer* mentions, in his account of the fifh of that country, fome that are congenerous.

The great winter rendezvous of the herring is within the *Arctic* circle: there they continue for many months in order to recruit themfelves after the fatigue of fpawning, the feas within that fpace fwarming with infect food, in a degree far greater than in our warmer latitudes.

This mighty army begins to put itfelf in motion in the fpring; we diftinguifh this vaft body by that name, for the word herring is derived from the *German*, *Heer*, an army, to exprefs their numbers. Migrations.

They begin to appear off the *Shetland* ifles in *April* and *May*; thefe are only forerunners of the grand fhoal which comes in *June*, and their appearance is marked by certain figns by the numbers of birds, fuch as gannets, and others which follow to prey on them: but when the main body approaches, its breadth and its depth is fuch as to alter the appearance of the very ocean. It is divided into diftinct columns of five or fix miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: fometimes they fink for the fpace of ten or fifteen minutes, then rife

* *Catefby Carol.* ii. xxxiii.

again to the ſurface, and in bright weather reflect a variety of ſplendid colors, like a field of the moſt pretious gems, in which, or rather in a much more valuable light, ſhould this ſtupendous gift of Providence be conſidered by the inhabitants of the *Britiſh* iſles.

Separation.

The firſt check this army meets in its march ſouthward, is from the *Shetland* iſles, which divide it into two parts; one wing takes to the eaſt, the other to the weſtern ſhores of *Great-Britain*, and fill every bay and creek with their numbers; others paſs on towards *Yarmouth*, the great and antient mart of herrings; they then paſs thro' the *Britiſh* channel, and after that in a manner diſappear. Thoſe which take to the weſt, after offering themſelves to the *Hebrides*, where the great ſtationary fiſhery is, proceed towards the north of *Ireland*, where they meet with a ſecond interruption, and are obliged to make a ſecond diviſion; the one takes to the weſtern ſide, and is ſcarce perceived, being ſoon loſt in the immenſity of the *Atlantic*; but the other, which paſſes into the *Iriſh* ſea, rejoices and feeds the inhabitants of moſt of the coaſts that border on it.

Theſe brigades, as we may call them, which are thus ſeparated from the greater columns, are often capricious in their motions, and do not ſhew an invariable attachment to their haunts. We have had in our time inſtances of their entirely quitting the coaſts of *Cardiganſhire*, and viſiting thoſe of *Caernarvonſhire* and *Flintſhire*, where they continued for a few years, but in the preſent year have quite deſerted our ſea, and returned to their old ſeats. The

ſeaſon

season of their appearance among us was very late, never before the latter end of *November*: their continuance till *February*.

Providential instinct.

Were we inclined to consider this partial migration of the herring in a moral light, we might reflect with veneration and awe on the mighty Power which originally impressed on this most useful body of his creatures, the instinct that directs and points out the course, that blesses and enriches these islands, which causes them at certain and invariable times to quit the vast polar deeps, and offer themselves to our expecting fleets. That benevolent Being has never, from the earliest records, been once known to withdraw this blessing from the whole, tho' he often thinks proper to deny it to particulars; yet this partial failure (for which we see no natural reason) should fill us with the most exalted and grateful sense of his Providence, for impressing so invariable and general instinct on these fish towards a southward migration, when the whole is to be benefited, and to withdraw it only when a minute part is to suffer.

Spawning.

This instinct was given them, that they might remove for the sake of depositing their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frigid zone. It is not from defect of food that they set themselves in motion, for they come to us full and fat, and on their return are almost universally observed to be lean and miserable. What their food is near the pole, we are not yet informed; but in our seas they feed much on the *Oniscus Marinus*, a crustaceous insect, and sometimes on their own fry. They

Food.

They are in full roe the end of *June*, and continue in perfection till the beginning of winter, when they begin to depofit their fpawn. The young herrings begin to approach the fhores in *July* and *Augufl*, and are then from half an inch to two inches long: thofe in *Yorkfhire* are called *Herring Sile* *. Tho' we have no particular authority for it, yet as very few young herrings are found in our feas during winter, it feems moft certain that they muft return to their parental haunts beneath the ice, to repair the vaft deftruction of their race during fummer, by men, fowl and fifh. Some of the old herrings continue on our coafts the whole year: the *Scarborough* fifhermen never put down their nets but they catch a few; but the numbers that remain are not worth mention in comparifon to the numbers that return.

Return.

Defcr.

Herrings vary greatly in fize. Mr. *Travis* communicated to me the information of an experienced fifher, who informed him that there is fometimes taken near *Yarmouth*, a herring diftinguifhed by a black fpot above the nofe; and that he once faw one that was twenty-one inches and an half long. He infifted that it was a different fpecies, and varied as much from the common herring as that does from the pilchard. This we mention in order to incite fome curious perfon on that coaft to a farther enquiry.

The eye is very large: the edges of the upper jaw and the tongue are very rough, but the whole mouth

* The *Sueaes* and *Danes* call the old herring *Sill*; but the people of *Slefw* from whence the *Anglo-Saxons* came call the fry *Sylen*.

is

is void of teeth: the gill covers are very loofe, and open very wide; which occafions the almoft inftant death of the herring when taken out of the water, which is well known, even to a proverb.

The dorfal fin confifts of about feventeen rays, and is placed beyond the centre of gravity, fo that when the fifh is fufpended by it, the head immediately dips down: the two ventral fins have nine rays; the pectoral feventeen; the anal fourteen: the tail is much forked.

The lateral line is not apparent, unlefs the fcales are taken off: the fides are compreffed: the belly fharply carinated, but the ridge quite fmooth, and not in the left ferrated.

The fcales are large, thin, and fall off with a flight touch.

The color of the back and fides green, varied with blue: the belly filvery. **Color.**

The herring fifhery is of great antiquity: the induftrious *Dutch* firft engaged in it about the year 1164: they were in poffeffion of it for feveral centuries, but at length its value become fo juftly to be known, that it gave rife to moft obftinate and well-difputed wars between the *Englifh* and them; but ftill their diligence and fkill gives them a fuperiority over us in that branch of trade. **Fifhery.**

Our great ftations are off the *Shetland* and *Weftern Ifles*, and off the coaft of *Norfolk*, in which the *Dutch* alfo fhare. *Yarmouth* has long been famous for its herring fair *; that town is obliged, by its

* This fair was regulated by an act, commonly called the *Statute of Herrings*, in the 31ft year of *Edward* III.

charter

charter, to send to the sheriffs of *Norwich* one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of *East Carleton*, who is to convey them to the king*. The facetious Doctor *Fuller*** takes notice of the great repute the county of *Norfolk* was in for this fish, and, with his usual archness, calls a red herring a *Norfolk Capon.*

The *Dutch* are most extravagantly fond of this fish when it is pickled. A premium is given to the first buss that arrives in *Holland* with a lading of this their *ambrosia*, and a vast price given for each keg. We have been in the country at that happy minute, and observed as much joy among the inhabitants on its arrival, as the *Ægyptians* shew on the first overflowing of the *Nile*. *Flanders* had the honor of inventing the art of pickling herrings. One *William Beukelen*, of *Biervlet*, near *Sluys*, hit on this useful expedient: from him was derived the name *pickle*, which we borrow from the *Dutch* and *German*. It is very singular that most nations give the name of their favorite dish to the facetious attendant on every mountebank. Thus the *Dutch* call him PICKLE HERRING; the *Italians*, MACARONI; the *French*, JEAN POTTAGE; the *Germans*, HANS WURST†; and we dignify him with the title of JACK PUDDING.

* *Cambden Britan.* I. 458.
** *British Worthies.* 238.
† That is, *Jack Sausage.*

II. The

II. The PILCHARD.

Pilchard. *Fuller's Brit. Worthies.* 194.
Peltzer. *Schonevelde.* 40.
The Pilchard. *Wil. Icth.* 223. *Raii syn. pisc.* 104.
Clupea δ. *Arted. synon.* 16.
Pilchard. *Borlase Cornwall.* 272.

THE pilchard appears in vast shoals off the *Cornish* coasts about the middle of *July*, disappear the beginning of winter, yet sometimes a few return again after *Christmas*. Their winter retreat is the same with that of the herring, and their motives for migrating the same. They affect, during summer, a warmer latitude, for they are not found in any quantities on any of our coasts except those of *Cornwall*, that is to say, from *Fowey* harbor to the *Scilly* isles, between which places the shoals keep shifting for some weeks.

The approach of the pilchard is known by much the same signs as those that indicate the arrival of the herring. Persons, called in *Cornwall Huers*, are placed on the cliffs, to point to the boats stationed off the land the course of the fish. By the 1st of *James* I. c. 23, fishermen are empowered to go on the grounds of others to *hue*, without being liable to actions of trespass, which before occasioned frequent lawsuits.

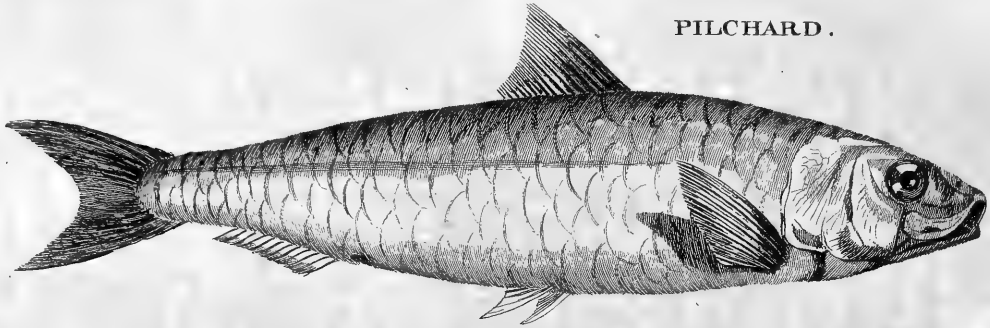
The emoluments that accrue to the inhabitants of that county are great, and are best expressed in the words of Doctor *W. Borlase*, in his account of the *Pilchard* fishery.

" It

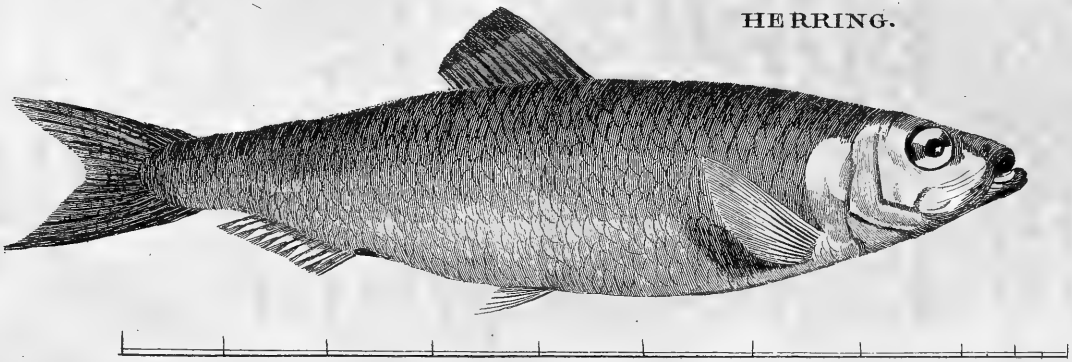
"It employs a great number of men on the sea, "training them thereby to naval affairs; employs "men, women, and children, at land, in salting, "pressing, washing, and cleaning, in making "boats, nets, ropes, casks, and all the trades de-"pending on their construction and sale. The "poor is fed with the offals of the captures, the "land with the refuse of the fish and salt, the mer-"chant finds the gains of commission and honest "commerce, the fisherman the gains of the fish. "Ships are often freighted hither with salt, and "into foreign countries with the fish, carrying off "at the same time part of our tin. The usual "produce of the number of hogsheads exported "each year, for ten years, from 1747 to 1756 in-"clusive, from the four ports of *Fawy*, *Falmouth*, "*Penzance*, and *St. Ives*, it appears that *Fawy* has "exported yearly 1732 hogsheads; *Falmouth*, "14631 hogsheads and two-thirds; *Penzance* and "*Mounts-Bay*, 12149 hogsheads and one-third; "*St. Ives*, 1282 hogsheads: in all amounting to "29795 hogsheads. Every hogshead for ten years "last past, together with the bounty allowed for "each hogshead exported, and the oil made out "of each hogshead, has amounted, one year with "another at an average, to the price of one pound "thirteen shillings and three-pence; so that the "cash paid for pilchards exported has, at a medium, "annually amounted to the sum of forty-nine thou-"sand five hundred and thirty-two pounds ten "shillings."

The

PILCHARD.



HERRING.



G Wilkinson del

P Mazell Sculp

The numbers that are taken at one fhooting out of the nets, is amazingly great. Doctor *Borlafe* affured me, that on the 5th of *October*, 1767, there were at one time inclofed in *St. Ives*'s *Bay* 7000 hogfheads, each hogfhead containing 35000 fifh, in all 245000000.

This fifh has a general likenefs to the herring, but differs in fome particulars very effentially; we therefore defcribe it comparatively with the other, having one of each fpecies before us, both of them of the fame length, *viz.* nine inches and an half. Defcr.

The body of the pilchard is lefs compreffed than that of the herring, being thicker and rounder: the nofe is fhorter in proportion, and turns up: the under jaw is fhorter.

The back is more elevated: the belly lefs fharp: the dorfal fin of the pilchard is placed exactly in the centre of gravity, fo that when taken up by it, the body preferves an equilibrium, whereas that of the herring dips at the head: the dorfal fin of the pilchard we examined, being placed only three inches eight tenths from the tip of the nofe; that of the herring four inches one tenth.

The fcales of the pilchard adhere very clofely, whereas thofe of the herring very eafily drop off.

The pilchard is in general lefs than the herring; the fpecimen we defcribe being a very large one.

The pilchard is fatter, or more full of oil.

III. The

III. The SPRAT.

Spratti. *Wil. Ith.* 221. *Raii syn. pisc.* 105.
Clupea quadriuncialis, maxilla inferiore longiore, ventre acutissimo. *Arted. synon.* 17.
Clupea Sprattus. Cl. pinna dorsali radiis tredecim. *Lin. syst.* 523.
Hwufsbuk. *Faun. suec. No.* 358.

MR. *Willoughby* and Mr. *Ray* were of opinion, that these fish were the fry of the herring: we are induced to dissent from them, not only because on comparing a sprat and young herring of equal size, we discovered some specific differences, but likewise for another reason: the former visits our coasts, and continue with us in shoals innumerable, when the others in general have retired to the great northern deeps.

They come into the river *Thames*, below bridge, the beginning of *November*, and leave it in *March*, and are, during their season, a great relief to the poor of the capital.

At *Gravesend*, and at *Yarmouth*, they are cured like red herrings; they are sometimes pickled, and are little inferior in flavor to the *Anchovy*, but the bones will not dissolve like those of the latter. Mr. *Forster* tells me, that in the *Baltic* they preserve them in the same manner, and call them *Breitling*, i. e. the little deep fish, as being deeper than the *Stromling*, or *Baltic* herring.

The

The ſprat grows to about the length of five inches: the body is much deeper than that of a young herring of equal length: the back fin is placed more remote from the noſe than that of the herring, and we think had ſixteen rays. But the great diſtinction between this fiſh, the herring and pilchard, is the belly: that of the two firſt being quite ſmooth, that of the laſt moſt ſtrongly ſerrated. Deſcr.

IV. The ANCHOVY.

Ἐνκραυλος? *Ariſt. Hiſt. an. lib.* vi. *c.* 15.
Ενκρασίχολος? *Athenæus. lib.* vii. *c.* 285.
L'Anchoy? *Belon.* 165.
Encraſicholus? *Rondel.* 211. *Geſner piſc.* 68.
Lycoſtomus, ſehe mareneken? *Schonevelde.* 46. *tab.* 5.
Anchovy. *Wil. Icth.* 225. *Raii ſyn. piſc.* 107.
Clupea maxilla ſuperiore longiore. *Arted. ſynon.* 17.
Clupea encraſicolus. *Lin. ſyſt.* 523.

THE true anchovies are taken in vaſt quantities in the *Mediterranean*, and are brought over here pickled. The great fiſhery is at *Gorgona*, a ſmall iſle weſt of *Leghorn*.

Mr. *Ray* diſcovered what he ſuſpected to be the ſame fiſh in the ſea near *Cheſter* *, where he deſcribed them. Notwithſtanding I live near that city, and have been aſſured by my fiſherman that they are found in our æſtuary, it never has been my fortune to procure one.

* *Ray's Letters*, 47.

The *English* anchovy (according to Mr. *Ray*) is a palm in length, and thicker than a thumb: the body more slender, but less compressed than that of the herring, has no scales*, and is pellucid, except where the back bone runs.

It is almost of the color of a sprat: the nose is sharp: the upper mandible longer than the lower: the mouth very large for the size of the fish: the eyes large.

V. The SHAD.

Θρισσα? *Arist. Hist. an. lib.* ix. c. 37. *Strabo lib.* xv. 486. xvii. 566. *Athenæus. lib.* iv. 131. vii. 328. *Oppian Halieut.* I. 244.
Alausa? *Ausonii Mosella.* 128.
Laccia, chiepa. *Salvian.* 104.
L'Alose. *Belon.* 307.
Thrissa. *Rondel.* 220. *Gesner pisc.* 20.
Bayeke, Meyfisch. *Schonevelde.* 13.
Shad, or Mother of Herrings. *Wil. Icth.* 227. *Raii syn. pisc.* 105.
Clupea apice maxilla superiore bifido, maculis nigris utrinque. *Arted. synon.* 15.
Clupea alosa. Cl. lateribus nigro maculatis, rostro bifido. *Lin. syst.* 523. *Gronov. Zooph. No.* 347.

NEITHER *Aristotle*, *Athenæus*, nor *Oppian*, have described their Θρισσα with such precision, as to induce us to translate it the *Shad*, without affixing to it our sceptic mark. *Ausonius* has been

* *Schonevelde* says, the scales of his *Lycostomos* fall off very readily; perhaps Mr. *Ray* might see them after they had been carried some distance, when they had lost their scales.

equally

equally negligent in respect to his *Alausa*: all he tells us is, that it was a very bad fish:

> *Stridentesque focis obsonia plebis* ALAUSAS.
>
> *Alausæ* crackling on the embers are
> Of wretched poverty, th' insipid fare.

But commentators have agreed to render the Θρισσα of the first, and the *Alausa* of the last, by the word *Shad*. Perhaps they were directed by the authority of *Strabo*, who mentions the Θρισσα the supposed *Shad*, and the Κεφρευς, or *Mullet*, as fish that ascend the *Nile* at certain seasons, which, with the *Dolphin** of that river, he says, are the only kinds that venture up from the sea for fear of the crocodile. That the two first are fish of passage in the *Nile*, is confirmed to us by *Belonius***, and by *Hasselquist*†. The last says it is found in the *Mediterranean* near *Smyrna*, and on the coast of *Ægypt*, near *Rosetto*; and that in the months of *December* and *January* it ascends the *Nile*, as high as *Cairo*: that it is stuffed with pot marjoram, and when dressed in that manner will very nearly intoxicate the eater.

In *Great Britain* the *Severn* affords this fish in higher perfection than any other river. It makes its first appearance there in *May*, but in very warm seasons in *April*; for its arrival, sooner or later, depends much on the temper of the air. It continues

* This is the *Dolphin* of the *Nile*, a fish now unknown to us. *Pliny lib.* viii. *c.* 25. says, it had a sharp fin on its back, with which it destroyed the crocodile, by thrusting it into the belly of that animal, the only penetrable place.

** *Belon. Itin.* 98.

† *P.* 385. 388. *Suedish* edition.

in the river about two months, and then is succeeded by a variety which we shall have occasion to mention hereafter.

The *Severn* shad is esteemed a very delicate fish about the time of its first appearance, especially in that part of the river that flows by *Gloucester*, where they are taken in nets, and usually sell dearer than salmon: some are sent to *London*, where the fishmongers distinguish them from those of the *Thames*, by the *French* name of *Alose*.

Whether they spawn in this river and the *Wye* is not determined, for their fry has not yet been ascertained. The old fish come from the sea into the river in full roe. In the months of *July* and *August*, multitudes of bleak frequent the river near *Gloucester*; some of them are as big as a small herring, and these the fishermen erroneously suspect to be the fry of the shad. Numbers of these are taken near *Gloucester* in those months only, but none of the emaciated shad are ever caught in their return*.

Twaite. The *Thames* shad does not frequent that river till the month of *July*, and is esteemed a very insipid coarse fish. About the same time, and rather earlier, the variety called near *Gloucester* the *Twaite*, makes its appearance, and is taken in great numbers in the *Severn*, and is held in as great disrepute as the shad of the *Thames*. The differences between each variety are as follow:

The true *Shad* weighs sometimes eight pounds, but their general size is from four to five.

* *Belon* also observes, that none are taken in their return on *les prend en moutant contre les rivieres, et jamais en descendant.*

The

The *Twaite*, on the contrary, weighs from half a pound to two pounds, which it never exceeds.

The twaite differs from a fmall fhad only in having one or more round black fpots on the fides; if only one, it is always near the gill, but commonly there are three or four, placed one under the other*.

The other particulars agree in each fo exactly, that the fame defcription will ferve for both. Defcr.

The head flopes down confiderably from the back, which at the beginning is very convex, and rather fharp: the body from thence grows gradually lefs to the tail.

The under jaw is rather longer than the upper: the teeth very minute.

The dorfal fin is placed very near the centre, is fmall, and the middle rays are the longeft: the pectoral and ventral fins are fmall: the tail vaftly forked: the belly extremely fharp, and moft ftrongly ferrated.

The back is of a dufky blue: above the gills begins a line of dark fpots, which mark the upper part of the back on each fide; the number of thefe fpots is uncertain in different fifh, from four to ten. Color.

The fides and belly are filvery.

* I muft here acknowlege my obligations to Doctor *Lyfons*, of *Gloucefter*, for his communications relating to this fifh, as well as to feveral other articles relating to thofe of the *Severn*.

Genus XLI. The mouth without teeth.
Three branchiostegous rays.
One dorsal fin. CARP.

*

With bearded mouths.

I. The CARP.

Κυπρινος? *Arist. Hist. an. lib.* iv. 8. vi. 40. viii. 20. ii. 30. *Oppian Halieut.* I. 101. 592.
Raina Burbara. *Salvian.* 92.
La Carpe. *Belon.* 267.
Cyprinus. *Rondel. fluviat.* 150. *Gesner pisc.* 309.
Cyprinus nobilis, edle Karpe, Karpffe. *Schonevelde.* 32.
Carp. *Wil. Icth.* 162. *Raii syn. pisc.* 115.
Cyprinus cirris quatuor, osseculo tertio pinnarum dorsi, ac ani uncinulis armato. *Arted. synon.* 3.
Cyprinus Carpio. C. pinna ani radiis 9. cirris 4. pinna dorsalis radio secundo postice serrato. *Lin. syst.* 525. *Gronov. Zooph. No.* 330.
Karp. *Faun. suec. No.* 359.

THIS is one of the naturalized fish of our country, having been introduced here by *Leonard Mascal*, about the year 1514*, to whom we were also indebted for that excellent apple the *pepin*. The many good things that our island wanted before that period, are enumerated in this old distich:

Turkies, carps, hops, pickerel, and beer,
Came into *England* all in one year.

* *Fuller's British Worthies, Sussex.* 113.

As

As to the two laft articles we have fome doubts, the others we believe to be true. *Ruffia* wants thefe fifh at this day; *Sueden* has them only in the ponds of the people of fafhion; *Polifh Pruffia* is the chief feat of the carp; they abound in the rivers and lakes of that country, particularly in the *Frifch* and *Curifch-haff*, where they are taken of a vaft fize. They are there a great article of commerce, and fent in well-boats to *Sueden* and *Ruffia*. The merchants purchafe them out of the waters of the *nobleffe* of the country, who draw a good revenue from this article. Neither are there wanting among our gentry, inftances of fome who make good profit of their ponds.

The antients do not feparate the carp from the fea fifh. We are credibly informed that they are fometimes found in the harbor of *Dantzick*, between the town and a fmall place called *Hela*.

Carp are very long lived. *Gefner** brings an inftance of one that was an hundred years old. They alfo grow to a very great fize. On our own knowlege we can fpeak of none that exceeded twenty pounds in weight; but *Jovius*** fays, that they were fometimes taken in the *Lacus Larius* (the *Lago di Como)* of two hundred pounds weight; and *Rzaczynfki*†, mentions others taken in the *Dniefter* that were five feet in length.

They are alfo extremely tenacious of life, and will live for a moft remarkable time out of water.

* *Gefner pifc.* 312.
** *De pifcibus Romanis.* 131.
† *Hift. Nat. Poloniæ.* 142.

An experiment has been made by placing a carp in a net, well wrapped up in wet moss, the mouth only remaining out, and then hung up in a cellar, or some cool place: the fish is frequently fed with white bread and milk, and is besides often plunged into water. Carp thus managed have been known, not only to have lived above a fortnight, but to grow exceedingly fat, and far superior in taste to those that are immediately killed from the pond*.

Fœcundity.

The carp is a prodigious breeder: its quantity of roe has been sometimes found so great, that when taken out and weighed against the fish itself, the former has been found to preponderate. We have forbore in this work to enter into minute calculations of the numbers each fish may produce. It has already been most skilfully performed by Mr. *Harmer*, and printed in the *Philosophical Transactions* of the year 1767. We shall, in our Appendix, take the liberty of borrowing such part of his tables of the fœcundity of fish, as will demonstrate the kind attention of Providence, towards the preserving so useful a class of animals for the service of its other creatures.

These fish are extremely cunning, and on that account are by some styled the *river fox*. They will sometimes leap over the nets, and escape that way; at others, will immerse themselves so deep in the mud, as to let the net pass over them. They are

* This was told me by a gentleman of the utmost veracity, who had twice made the experiment. The same fact is related by that pious Philosopher Doctor *Derham*, in his *Physico-Theology*, edit. 9th. 1737. *ch.* 1. *p.* 7. *n. e.*

also

alfo very fhy of taking a bait; yet at the fpawning time they are fo fimple, as to fuffer themfelves to be tickled, handled, and caught by any body that will attempt it.

This fifh is apt to mix its milt with the roe of other fifh, from which is produced a fpurious breed: we have feen the offfpring of the carp and tench, which bore the greateft refemblance to the firft: we have alfo heard of the fame mixture between the carp and bream. Spurious breed.

The carp is of a thick fhape: the fcales very large, and when in beft feafon of a fine gilded hue. Defcr.

The jaws are of equal length; there are two teeth in the jaws, or on the tongue; but at the entrance of the gullet, above and below, are certain bones that act on each other, and comminute the food before it paffes down.

On each fide of the mouth is a fingle beard; above thofe on each fide another, but fhorter: the dorfal fin extends far towards the tail, which is a little bifurcated; the third ray of the dorfal fin is very ftrong, and armed with fharp teeth, pointing downwards; the third ray of the anal fin is conftructed in the fame manner.

II. The

II. The BARBEL.

Barbus. *Ausonius Mosella.* 94.
Barbeau. *Belon.* 299.
Barbus, Barbo. *Salvian.* 86.
Barbus. *Rondel. fluviat.* 194. *Gesner pisc.* 123.
Barbe, Barble. *Schonevelde.* 29.
Barbel. *Wil. Icth.* 259. *Raii syn. pisc.* 121.
Cyprinus oblongus, maxilla superiore longiore, cirris quatuor, pinna ani officulorum septem. *Arted. synon.* 8.
Cyprinus Barbus. C. pinna ani radiis 7. cirris 4. pinnæ dorsi radio secundo utrinque serrato. *Lin. syst.* 525. *Gronov. Zooph. No.* 331.
Barbe, Barble. *Wulff Borus. No.* 52.

THIS fish was so extremely coarse, as to be overlooked by the antients till the time of *Ausonius*, and what he says is no panegyric on it; for he lets us know it loves deep waters, and that when it is grown old it was not absolutely bad.

Laxos exerces BARBE *natatus,*
Tu melior pejore ævo, tibi contigit uni
Spirantum ex numero non inlaudata senectus.

It frequents the still and deep parts of rivers, and lives in society, rooting like swine with their noses in the soft banks. It is so tame as to suffer itself to be taken with the hand; and people have been known to take numbers by diving for them. In the summer they move about during night in search of food, but towards autumn, and during winter, confine themselves to the deepest holes.

They are the worst and coarsest of fresh water fish, and seldom eat but by the poorer sort of people, who

who fometime boil them with a bit of bacon to give them a relifh. The roe is very noxious, affecting thofe who unwarily eat of it with a naufea, vomiting, purging, and a flight fwelling.

It is fometimes found of the length of three feet, and eighteen pounds in weight: it is of a long and rounded form: the fcales not large. Defcr.

Its head is fmooth: the noftrils placed near the eyes: the mouth is placed below: on each corner is a fingle beard, and another on each fide the nofe.

The dorfal fin is armed with a remarkable ftrong fpine, fharply ferrated, with which it can inflict a very fevere wound on the incautious handler, and even do much damage to the nets.

The pectoral fins are of a pale brown color; the ventral and anal tipped with yellow: the tail a little bifurcated, and of a deep purple: the fide line is ftrait.

The fcales are of a pale gold color, edged with black: the belly is white.

III. The

III. The TENCH.

Tinca. *Ausonius Mosella.* 123.
Tinca. *Jovius.* 124.
Tinca, Tenca. *Salvian.* 90.
La Tanche. *Belon.* 325,
Tinca. *Rondel. fluviat.* 157. *Gesner pisc.* 984.
Schley, Slye. *Schonevelde.* 76.
Tench. *Wil. Icth.* 251. *Raii syn. pisc.* 117.
Cyprinus mucosus totus nigrescens, extremitate caudæ æquali. *Arted. synon.* 5.
Cyprinus pinna ani radiis 25, cauda integra, corpore mucoso, cirris 2. *Lin. syst.* 526. *Gronov. Zooph. No.* 328.
Suture, Linnare, Skomakare. *Faun. suec. No.* 363.
Schleihe, Schlegen. *Wulff Borus. No.* 55.

THE tench underwent the same fate with the barbel, in respect to the notice taken of it by the early writers; and even *Ausonius*, who first mentions it, treats it with such disrespect, as evinces the great capriciousness of taste; for that fish, which at present is held in such good repute, was in his days the repast only of the *Canaille.*

Quis non et virides vulgi solatia Tincas *norit?*

It has been by some called the *Physician* of the fish, and that the slime is so healing, that the wounded apply it as a styptic. The ingenious Mr. *Diaper*, in his *piscatory* ecloges, says, that even the voracious pike will spare the tench on account of its healing powers

The *Tench* he spares a medicinal kind:
For when by wounds distrest, or sore disease,
He courts the salutary fish for ease;
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides *.

* *Ecl.* ii.

Whatever

Whatever virtue its flime may have to the inhabitants of the water, we will not vouch for, but its flefh is a wholefome and delicious food to thofe of the earth.

It does not commonly exceed four or five pounds in weight, but we have heard of one that weighed ten pounds; *Salvianus* fpeaks of fome that arrived at twenty pounds.

They love ftill waters, and are rarely found in rivers: they are very foolifh, and eafily caught.

The tench is thick and fhort in proportion to its length: the fcales are very fmall, and covered with flime. Defcr.

The irides are red: there is fometimes, but not always, a fmall beard at each corner of the mouth.

The color of the back is dufky; the dorfal and ventral fins of the fame color: the head, fides, and belly, of a greenifh caft, moft beautifully mixed with gold, which is in its greateft fplendor when the fifh is in the higheft feafon.

The tail is quite even at the end, and very broad.

IV. The

IV. The GUDGEON.

Gobio. *Ausonius Mosella.* 132.
Gobio fluviatilis. *Salvian,* 214.
Goujon de riviere. *Belon.* 322.
Gobio fluviatilis. *Rondel. fluviat.* 206. *Gesner pisc.* 399
Gudgeon. *Wil. Icth.* 264. *Raii syn. pisc.* 123.
Cyprinus quincuncialis maculosus, maxilla superiore longiore cirris duobus ad os. *Arted. syncn.* 2.
Cyprinus pinna ani radiis 2. *Lin. syst. Nat.* 526. *Gronov. Zooph. No.* 329.

ARISTOTLE mentions the gudgeon in two places; once as a river fish, and again as a species that was gregarious: in a third place he describes it as a sea fish; we must therefore consider the Κωβιος he mentions, *lib.* ix. *c.* 2. and *lib.* viii. *c.* 19. as the same with our species *.

This fish is generally found in gentle streams, and is of a small size: those few, however, that are caught in the *Kennet*, and *Cole*, are three times the weight of those taken elsewhere. The largest we ever heard of was taken near *Uxbridge*, and weighed half a pound.

They bite eagerly, and are assembled by raking the bed of the river; to this spot they immediately crowd in shoals, expecting food from this disturbance.

Descr. The shape of the body is thick and round: the irides tinged with red: the gill covers with green and silver: the lower jaw is shorter than the upper: at each corner of the mouth is a single beard: the back

* The gudgeon is enumerated among the *Syrian* fish, by Dr. *Russel. p.* 75.

olive,

olive, fpotted with black: the fide line ftrait; the fides beneath that filvery: the belly white.

The tail is forked; that, as well as the dorfal fin, is fpotted with black.

V. The B R E A M.

La Bremme. *Belon.* 318.
Cyprinus latus five Brama. *Rondel. fluviat.* 154. *Gefner pifc.* 316, 317.
Braffem, Brachfem. *Schonevelde* 33.
Bream. *Wil. Icth.* 248. *Raii fyn. pifc.* 116.
Cyprinus pinnis omnibus nigrefcentibus, pinna ani officulorum viginti feptem. *Arted. fynon.* 4.
Cyprinus Brama. *Lin. fyft.* 531. *Gronov. Zooph. No,* 345.
Braxen. *Faun. fuec. No.* 360.
Gareikl. *Kram.* 391. Brekmen. *Wulff Borufs. No.* 66.

THE bream is an inhabitant of lakes, or the deep parts of ftill rivers. It is a fifh that is very little efteemed, being extremely infipid.

It is extremely deep, and thin in proportion to its length. The back rifes very much, and is very fharp at the top. The head and mouth are fmall: on fome we examined in the fpring, were abundance of minute whitifh tubercles; an accident which *Pliny* feems to have obferved befals the fifh of the *Lago Maggiore*, and *Lago di Como* *. The fcales are very large: the fides flat and thin.

The dorfal fin has eleven rays, the fecond of which is the longeft: that fin, as well as all

* *Duo Lacus* ITALIÆ *in radicibus Alpium*, LARIUS *et* VERBANUS *appellantur, in quibus pifces omnibus annis* VERGILIARUM *ortu exiftunt, fquamis confpicui crebris atque præacutis, clavorum caligarium effigie: nec amplius quam circa eum menfem, vifuntur.* lib. ix. c. 18.

the

the reft, are of a dufky color; the back of the fame hue: the fides yellowifh.

The tail is very large, and of the form of a crefcent.

**

Without beards.

VI. The R U D.

χαραξ? *Athenæus. lib.* viii. 355. *Oppian Halieut.* I. 174.
La Pleftia? *Belon.* 309. La Roffe, 319.
Finfcale. *Plot's Oxf.* 184.
Rutilus latior, feu Rubellio fluviatilis à Rud, Roud, or Finfcale. *Wil. Icth.* 252. *Raii fyn. pifc.* 118.
Cyprinus. *Arted. fynon.* 6. *No.* 8.
Cyprinus pinna ani radiis 15. pinnis rubris. *Lin. fyft. Nat.* 530.
Ruda, Caruffa. *Faun. fuec. No.* 364.

THIS fifh is found in the *Charwell*, near *Oxford*, and in the *Witham* in *Lincolnfhire*.

Its body is extremely deep, like that of the bream, but much thicker.

Defcr. The head is fmall: the irides yellow, varying in fome almoft to rednefs: the noftrils large: the back vaftly arched, and floping off fuddenly to the head and tail: the fcales very large: the fide line very flightly incurvated.

The dorfal fin confifts of twenty-one rays; the firft very fhort, the fecond very ftrong, and ferrated on each fide.

The tail a little forked.

The

The back is of an olive color: the fides and belly of a gold color, with certain marks of red: the ventral and anal fins, and the tail, generally of a deep red: the tail forked.

VII. The R O A C H.

La Gardon, Rofchie 2. en *Angleterre. Belon.* 316.
Leucifcus. *Rondel. fluviat.* 191.
Rutilus five Rubellus fluviatilis. *Gefner pifc.* 820.
Rottauge. *Schonevelde.* 63.
Roche. *Wil. Icth.* 262. Leucifcus prior. *Rondel.* 260. *Raii fyn. pifc.* 122, 121.
Cyprinus *fargus* dictus. Cyp. iride pinnis ventralibus ac ani plerumque rubentibus. *Arted. fynon.* 9, 10.
Cyprinus Rutilus Cyp. pinna ani radiis 12, rubicunda. *Lin. fyft.* 529. Mort. *Faun. fuec. No.* 372.
Zert. *Wulff Borufs. No.* 59.
Altl. *Kram.* 395.

SOUND *as a roach*, is a proverb that appears to be but indifferently founded, that fifh being not more diftinguifhed for its vivacity than many others; yet it is ufed by the *French* as well as us, who compare people of ftrong health to their *Gardon*, our rocah.

It is a common fifh, found in many of our deep ftill rivers, affecting, like the others of this genus, quiet waters. It is gregarious, keeping in large fhoals. We have never feen them very large. Old *Walton* fpeaks of fome that weighed two pounds. In a lift of fifh fold in the *London* markets, with the greateft weight of each, communicated to us by an

intelligent fishmonger, is mention of one whose weight was five pounds.

The roach is deep, but thin, and the back is much elevated, and sharply ridged: the scales large, and fall off very easily.

VIII. The D A C E.

Une vandoise, ou Dard. *Belon.* 313.
Leuciſci ſecunda ſpecies. *Rondel.* 192. *Geſner piſc.* 26.
Dace, or Dare. *Wil. Icth.* 260. *Raii ſyn. piſc.* 121.
Cyprinus decem digitorum, rutilo longior, et anguſtior, pinna ani radiorum decem. *Arted. ſynon.* 9.
Cyprinus leuciſcus. Cyp. pinna ani radiis 10. dorſali 9. *Lin. ſyſt.* 528.
Laugele. *Meyer's Ann.* ii. *tab.* 97.

THIS, like the roach, is gregarious, haunts the ſame places, is a great breeder, very lively, and during ſummer is very fond of frolicking near the ſurface of the water. This fiſh and the roche are coarſe and inſipid meat.

Its head is ſmall: the irides of a pale yellow: the body long and ſlender: its length ſeldom above ten inches, tho' in the abovementioned liſt is an account of one that weighed a pound and an half: the ſcales ſmaller than thoſe of the roach.

The back is varied with duſky and blue: the ſides and belly ſilvery: the dorſal fin duſky: the ventral, anal, and caudal fins red, but leſs ſo than thoſe of the former: the tail is very much forked.

IX. The

IX. The C H U B.

Capito. *Auſon. Moſella.* 85.
Squalus, Squaglio. *Salvian.* 84.
Le cheveſne, Teſtard, Vilain. *Belon.* 315.
Cephalus fluviatilis. *Rondel. fluviat.* 190.
Capito ſive Cephalus fluviatilis. *Geſner. piſc.* 182.
Chub, or Chevin. *Wil. Icth.* 255. *Raii ſyn. piſc.* 119.
Cyprinus oblongus macrolepidotus, pinna ani officulorum undecim, *Arted. ſynon.* 7.
Cyprinus cephalus. Cyp. pinna ani radiis undecim, cauda integra, corpore ſubcylindrico. *Lin. ſyſt.* 527. *Gronov. Zooph. No.* 339.
Alte. *Meyer's An.* ii. *tab.* 92.
Rapen. *Wulff. Boruſs. No.* 56.

SALVIANUS imagines this fiſh to have been the *Squalus* * of the antients, and grounds his opinion on a ſuppoſed error in a certain paſſage in *Columella* and *Varro*, where he would ſubſtitute the word *Squalus* inſtead of *Scarus*: *Columella* ſays no more than that the old *Romans* payed much attention to their ſtews, and kept even the ſea fiſh in freſh water, paying as much reſpect to the *Mullet* and *Scarus* as thoſe of his days did to the *Muræne* and *Baſs*.

That the *Scarus* was not our *Chub*, is very evident; not only becauſe the *Chub* is entirely an inhabitant of freſh waters, but likewiſe it ſeems improbable that the *Romans* would give themſelves any trouble about the worſt of river fiſh, when they neglected the moſt delicious kinds; all their attention was directed towards thoſe of the ſea: the difficulty of procuring them ſeems to have been the criterion of their value, as is ever the caſe with effete luxury.

* A cartilaginous fiſh, a ſhark. *Vide. Plin. lib.* ix. *c.* 24. *Ovid* alſo ranks his *Squalus* with the ſea fiſh.

Et SQUALUS, *et tenui ſuffuſus ſanguine* MULLUS. *Halieut.* 147.

The chub is a very coarſe fiſh and full of bones: it frequents the deep holes of rivers, and during ſummer commonly lies on the ſurface, beneath the ſhade of ſome tree or buſh. It is a very timid fiſh, ſinking to the bottom on the leſt alarm, even at the paſſing of a ſhadow, but they will ſoon reſume their ſituation. It feeds on worms, caterpillars, graſs-hoppers, beetles, and other coleopterous inſects that happen to fall into the water; and it will even feed on cray-fiſh. It is the only fiſh of this genus that will riſe to a fly.

This fiſh takes its name from its head, not only in our own, but in other languages; we call it *Chub*, according to *Skinner*, from the old *Engliſh*, *Cop*, a head; the *French*, *Teſtard*; the *Italians*, *Capitone*.

It does not grow to a large ſize; we have known ſome that weighed above five pounds, but *Salvianus* ſpeaks of others that were eight or nine pounds in weight.

The body is oblong, rather round, and of a pretty equal thickneſs the greateſt part of the way: the ſcales are large.

The irides ſilvery; the cheeks of the ſame color: the head and back of a deep duſky green: the ſides ſilvery, but in the ſummer yellow: the belly white: the pectoral fins of a pale yellow: the ventral and anal fins red: the tail a little forked, of a browniſh hue, but tinged with blue at the end.

X. The

X. The B L E A K.

Alburnus. *Aufon. Mofella.* 126.
Able ou Ablette. *Belon.* 319.
Alburnus. *Rondel. fluviat.* 208. *Gefner. pifc.* 23.
Albula minor. Witinck, Witek and Blike. *Schonevelde.* ii. *tab.* 1.
Bleak. *Wil. Ith.* 263. *Raii fyn. pifc.* 123.
Cyprinus quincuncialis, pinna ani officulorum viginti. *Arted. fynon.* 10.
Cyprinus alburnus. *Lin. fyft.* 531. *Gronov. Zooph. No.* 336.
Loja. *Faun. fuec. No.* 373.
Spitflauben, fchneiderfifchl. *Kram.* 395.
Ukeleyen. *Wulff. Borufs. No.* 64.

THE taking of thefe, *Aufonius* lets us know, was the fport of children,

ALBURNOS *prædam puerilibus hamis.*

They are very common in many of our rivers, and keep together in large fhoals. Thefe fifh feem at certain feafons to be affected with the vertigo; they tumble about near the furface of the water, and are incapable of fwimming far from the place, but in about two hours recover, and difappear. Fifh thus affected the *Thames* fifhermen call *mad bleaks.*

Artificial pearls are made with the fcales of this fifh, and we think of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glafs bubble, which is afterwards filled with wax. The *French* were the inventors of this art. Doctor *Lifter** tells us, that when he was at *Paris*, a certain artift ufed in one winter thirty hampers full of fifh in this manufacture. Artificial pearls.

* Journey to *Paris*, 142.

Descr. The bleak seldom exceeds five or six inches in length: their body is slender, greatly compressed sideways, not unlike that of the sprat.

The eyes are large: the irides of a pale yellow: the under jaw the longest: the lateral line crooked: the gills silvery: the back green: the sides and belly silvery: the fins pellucid: the scales fall off very easily: the tail much forked.

White bait. During the month of *July* those appear in the *Thames*, near *Blackwall* and *Greenwich*, innumerable multitudes of small fish, which are known to the *Londoners* by the name of *White Bait*. They are esteemed very delicious when fried with fine flour, and occasion, during the season, a vast resort of the lower order of epicures to the taverns contiguous to the places they are taken at.

There are various conjectures about this species, but all terminate in a supposition that they are the fry of some fish, but few agree to which kind they owe their origin. Some attribute it to the shad, others to the sprat, the smelt, and the bleak. That they neither belong to the shad, nor the sprat, is evident from the number of branchiostegous rays, which in those are eight, in this only three. That they are not the young of smelts is as clear, because they want the *pinna adiposa*, or raylefs fin; and that they are not the offspring of the bleak is extremely probable, since we never heard of the white bait being found in any other river, notwithstanding the bleak is very common in several of the *British* streams: but as the white bait bears a greater similarity to this fish than to any other we have mentioned

tioned, we give it a place here as an appendage to the bleak, rather than form a diftinct article of a fifh which it is impoffible to clafs with certainty.

It is evident that it is of the carp or *Cyprinus* genus: it has only three branchioftegous rays, and only one dorfal fin; and in refpect to the form of the body is compreffed like that of the bleak.

Its ufual length is two inches: the under jaw is the longeft: the irides filvery, the pupil black: the dorfal fin is placed nearer to the head than to the tail, and confifts of about fourteen rays: the fide line is ftrait: the tail forked, the tips black.

The head, fides, and belly are filvery; the back tinged with green.

XI. The

XI. The MINOW.

Φοξινος? *Arist. Hist. an.* vi. *c.* 13.
Le Veron. *Belon.* 324.
Piſciculus varius. *Rondel. fluviat.* 205.
Phoſcium qui vulgo *veronus* (quari varius) dicitur, *Bellonius. Geſner piſc.* 715.
Elritze, Elderitze. *Schonevelde.* 57.
Pink, minim, or minow. *Wil. Icth.* 268. *Raii ſyn. piſc.* 125.
Cyprinus tridactylus varius oblongus teretiuſculus, pinna ani oſſiculorum octo. *Arted. ſynon.* 12.
Cyprinus Phoxinus. Cyp. pinna ani radiis 8. macula fuſca ad caudam, corpore pellucido. *Lin. ſyſt.* 528.

THIS beautiful fiſh is frequent in many of our ſmall gravelly ſtreams, where they keep in ſhoals.

The body is ſlender and ſmooth, the ſcales being extremely ſmall. It ſeldom exceeds three inches in length.

The lateral line is of a golden color: the back flat, and of a deep olive: the ſides and belly vary greatly in different fiſh; in a few are of a rich crimſon, in others bluiſh, in others white. The tail is forked, and marked near the baſe with a duſky ſpot.

Deſcr.

XII. The

XII. The GOLD FISH.

Kingo, the Gold Fifh. *Kæmpfer Hift. Japan.* I. 137.
Kin-yu. *Du Halde Hift. China.* I. 19. 315.
Cyprinus auratus. Cyp. pinna ani gemina, cauda tranfverfa bifurca. *Lin. fyft.* 527. *Faun. fuec. tab.* 2. *Gronov. Zooph. No.* 342.
Gold Fifh. *Edw.* 209.
Kin-yu, five carpio auratus. *Bafter. fubfec.* II. 78.

THESE fifh are now quite naturalized in this country, and breed as freely in the open waters as the common carp.

They were firft introduced into *England* about the year 1691, but were not generally known till 1728, when a great number were brought over, and prefented firft to Sir *Mathew Dekker*, and by him circulated round the neighborhood of *London*, from whence they have been diftributed to moft parts of the country.

In *China* the moft beautiful kinds are taken in a fmall lake in the province of *Che-Kyang*. Every perfon of fafhion keeps them for amufement, either in porcellane veffels, or in the fmall bafons that decorate the courts of the *Chinefe* houfes. The beauty of their colors, and their lively motions, give great entertainment, efpecially to the ladies, whofe pleafures, by reafon of the cruel policy of that country, are extremely limited.

In form of the body they bear a great refemblance to a carp. They have been known in this ifland to arrive at the length of eight inches; in their Defcr.

their native place they are said* to grow to the size of our largest herring.

The nostrils are tubular, and form sort of appendages above the nose: the dorsal fin and the tail vary greatly in shape: the tail is naturally bifid, but in many is trifid, and in some even quadrifid: the anal fins are the strongest characters of this species, being placed not behind one another like those of other fish, but opposite each other like the ventral fins.

The colors vary greatly; some are marked with a fine blue, with brown, with bright silver; but the general and predominant color is gold of a most amazing splendor; but their colors and form need not be dwelt on, since those who want opportunity of seeing the living fish, may survey them expressed in the most animated manner, in the works of our ingenious and honest friend Mr. *George Edwards*.

* *Du Halde*, 316.

APPENDIX.

APPENDIX.

Tortoiſe, page 1. The late Biſhop of *Carliſle* informed me that a tortoiſe was taken off the coaſt of *Scarborough* in 1748 or 1749. It was purchaſed by a family at that time there, and a good deal of company invited to partake of it. A gentleman, who was one of the gueſts, told them it was a *Mediterranean* turtle, and not wholeſome: only one of the company eat of it, and it almoſt killed him, being ſeized with a dreadful vomiting and purging.

Toad, 7. Since the printing of that article I have been favored with ſome very curious accounts of this reptile, which will give greater light into its natural hiſtory than I am capable of, from a moſt unphiloſophical but invincible averſion to the whole genus. The facts that will appear in the following lines ſerve to confirm my opinion of its being an innoxious animal, and, I hope, will ſerve to free numbers from a panic that is carried to a degree of infelicity,

city, and alſo to redeem it from a perſecution which the unmerited ill-opinion the world has conceived, perpetually expoſes it to.

The gentlemen I am principally indebted to for my informations are *J. Arſcott*, Eſq; of *Tehott*, in *Devonſhire*, and Mr. *Pitfield*, of *Exeter*. Some of theſe accounts were addreſſed to Doctor *Milles*, Dean of *Exeter*; others to the worthy Prelate abovementioned, to whom I owe theſe and many other agreeable correſpondencies; others again to myſelf.

Mr. *Arſcott*'s letters give a very ample hiſtory of the nature of the toad: they were both addreſſed to Doctor *Milles*, and both were the reſult of certain queries I propoſed, which the former was ſo obliging as to give himſelf the trouble of anſwering in a moſt ſatisfactory manner.

I ſhall firſt take the liberty of citing Mr. *Arſcott*'s letter of *September* the 23d, 1768, which mentions ſome very curious particulars of this innocent reptile, which, for ſuch a number of years found an aſylum, from the good ſenſe of a family

family which ſoared above all vulgar prejudices.

"It would give me the greateſt "pleaſure to be able to inform you "of any particulars worthy Mr. "*Pennant*'s notice, concerning the "toad who lived ſo many years "with us, and was ſo great a favo-"rite. The greateſt curioſity in "it was its becoming ſo remark-"ably tame. It had frequented "ſome ſteps before the hall-door "ſome years before my acquaint-"ance commenced with it, and "had been admired by my father "for its ſize (which was of the "largeſt I ever met with) who "conſtantly payed it a viſit every "evening. I knew it myſelf "above thirty years, and by con-"ſtantly feeding it, brought it to "be ſo tame that it always came "to the candle, and looked up as "if expecting to be taken up and "brought upon the table, where I "always fed it with inſects of all "ſorts: it was fondeſt of fleſh "maggots, which I kept in bran; "it would follow them, and when "within a proper diſtance, would "fix its eye, and remain motion-"leſs for near a quarter of a mi-

"nute,

" nute, as if preparing for the
" ſtroke, which was an inſtanta-
" neous throwing its tongue at a
" great diſtance upon the inſect,
" which ſtuck to the tip by a gluti-
" nous matter: the motion is quick-
" er than the eye can follow*.

" I always imagined that the root
" of its tongue was placed in the
" fore part of its under jaw, and
" the tip towards its throat, by
" which the motion muſt be a half
" circle; by which, when its tongue
" recovered its ſituation, the inſect
" at the tip would be brought to
" the place of deglutition. I was
" confirmed in this by never ob-
" ſerving any internal motion in its
" mouth, excepting one ſwallow the
" inſtant its tongue returned. Poſ-
" ſibly I might be miſtaken, for I
" never diſſected one, but contented
" myſelf with opening its mouth,
" and ſlightly inſpecting it.

" You may imagine that a toad
" generally deteſted (altho' one of
" the moſt inoffenſive of all ani-
" mals) ſo much taken notice of
" and befriended, excited the cu-

* This rapid capture of its prey might give occaſion to the report of its faſcinating powers. *Linnæus* ſays, *Inſecta in fauces faſcino revocat.*

" rioſity

" riosity of all comers to the house,
" who all desired to see it fed, so
" that even ladies so far conquered
" the horrors instilled into them by
" nurses, as to desire to see it.
" This produced innumerable and
" improbable reports, making it
" as large as the crown of a hat,
" &c. &c. This I hope will ac-
" count for my not giving you par-
" ticulars more worth your notice.
" When I first read the account in
" the papers of toads sucking can-
" cerous breasts, I did not believe
" a word of it, not thinking it pos-
" sible for them to suck, having
" no lips to embrace the part, and
" a tongue so oddly formed; but as
" the fact is thoroughly verified, I
" most impatiently long to be fully
" informed of all particulars re-
" lating to it."

Notwithstanding these accounts will serve to point out some errors I had adopted, in respect to this reptile in my first sheet, yet it is with much pleasure I lay before the public a more authentic history, collected from Mr. *Arscott*'s second favor; the answer points out my queries, which it is needless to repeat.

Tebott,

Tehott, Nov. 1, 1768.

" In respect to the queries I shall
" here give the most satisfactory
" answers I am capable of.

" First, I cannot say how long
" my father had been acquainted
" with the toad before I knew it;
" but when I first was acquainted
" with it, he used to mention it as
" the old toad I've known so many
" years; I can answer for thirty-
" six years.

" Secondly, No toads that I ever
" saw appeared in the winter sea-
" son. The old toad made its ap-
" pearance as soon as the warm wea-
" ther came, and I always concluded
" it retired to some dry bank to
" repose till the spring. When we
" new-lay'd the steps I had two
" holes made in the third step on
" each, with a hollow of more than
" a yard long for it, in which I
" imagine it slept, as it came from
" thence at its first appearance.

" Thirdly, It was seldom pro-
" voked: neither that toad (nor the
" multitudes I have seen tormented
" with great cruelty) ever shewed
" the left desire of revenge, by
" spitting or emitting any juice
" from their pimples. Sometimes

" upon

" upon taking it up it would let out
" a great quantity of clear water,
" which, as I have often ſeen it do the
" ſame upon the ſteps when quite
" quiet, was certainly its urine, and
" no more than a natural evacuation.

" Fourthly, A toad has no particu-
" lar enmity for the ſpider; he uſed
" to eat five or ſix with his millepides
" (which I take to be its chief food)
" that I generally provided for it, be-
" fore I found out that fleſh maggots,
" by their continual motion, was the
" moſt tempting bait; but when of-
" fered it eat blowing flies and hum-
" ble bees that come from the rat-
" tailed maggot in gutters, or in ſhort
" any inſect that moved. I imagine if
" a bee was to be put before a toad,
" it would certainly eat it to its coſt;
" but as bees are ſeldom ſtirring at
" the ſame time that toads are, they
" can ſeldom come in their way, as
" they ſeldom appear after ſun-riſing,
" or before ſun-ſet. In the heat of the
" day they will come to the mouth of
" their hole, I believe, for air. I once
" from my parlour window obſerved
" a large toad I had in the bank of
" a bowling-green, about twelve at
" noon, a very hot day, very buſy and
" active upon the graſs; ſo uncom-

" mon an appearance made me go out
" to ſee what it was, when I found an
" innumerable ſwarm of winged ants
" had dropped round his hole, which
" temptation was as irreſiſtible as a
" turtle would be to a luxurious al-
" derman.

" Fifthly, Whether our toad ever
" propagated its ſpecies I know not,
" rather think not, as it always ap-
" peared well, and not leſſened in
" bulk, which it muſt have done, I
" ſhould think, if it had diſcharged
" ſo large a quantity of ſpawn as toads
" generally do. The females that are to
" propagate in the ſpring, I imagine,
" inſtead of retiring to dry holes, go
" into the bottom of ponds, and lay
" torpid amongſt the weeds; for to
" my great ſurprize in the middle of
" the winter, having for amuſement
" put a long pole into my pond, and
" twiſted it till it had gathered a large
" volume of weed, on taking it off I
" found many toads, and having cut
" ſome aſunder with my knife, by ac-
" cident, to get off the weed, found
" them full of ſpawn not thoroughly
" formed. I am not poſitive, but
" think there were a few males in
" *March:* I know there are thirty
" males

" males* to one female, twelve or
" fourteen of whom I have ſeen cling-
" ing round a female: I have often
" diſengaged her, and put her into a
" ſolitary male, to ſee with what eager-
" neſs he would ſeize her. They im-
" pregnate the ſpawn as it is drawn
" **out in long ſtrings, like a neck-
" lace,

* Mr. *John Hunter* has aſſured me that during his reſidence at *Belleiſle*, he diſſected ſome hundreds of toads, yet never met with a ſingle female among them.

** I was incredulous as to the *obſtetrical* offices of the male toad, but ſince the end is ſo well accounted for, and the fact eſtabliſhed by ſuch good authority, belief muſt take place.

Mr. *Demours*, in the Memoirs of the *French* Academy, as tranſlated by Dr. *Templeman*, *vol.* I. 371. has been very particular in reſpect to the male toad, as acting the part of an *Accoucheur*; his account is curious, and clames a place here:

" In the evening of one of the long days in ſummer, Mr. " *Demours* being in the king's garden perceived two toads *cou-* " *pled together* at the edge of an hole, which was formed in part " by a great ſtone at the top.

" Curioſity drew him to ſee what was the occaſion of the mo- " tions he obſerved, when two facts equally new ſurprized him; " the *firſt* was the extreme difficulty the female had in laying " her eggs, inſomuch that ſhe did not ſeem capable of being " delivered of them without ſome aſſiſtance. The *ſecond* was, " that the male was mounted on the back of the female, and " exerted all his ſtrength with his hinder feet in pulling out the " eggs, whilſt his fore-feet embraced her breaſt.

" In order to apprehend the manner of his working in the " delivery of the female, the reader muſt obſerve that the paws " of theſe animals, as well thoſe of the fore-feet as of the hin- " der, are divided into ſeveral toes, which can perform the " office of fingers.

" It muſt be remarked likewiſe, that the eggs of this ſpecies " of toads are included each in a membranous coat that is very " firm, in which is contained the embryo; and that theſe eggs, " which are oblong and about two lines in length, being faſten- " ed one to another by a ſhort but very ſtrong cord form a kind " of chaplet, the beads of which are diſtant from each other

" lace, many yards long, not in a large
" quantity of jelly, like frogs ſpawn.
" *N. B.* After having held a female
" ſome time in my hand, I have, to
" try if there was any ſmell, put my
" finger a foot under water to a male,
" who has immediately ſeized it, and
" ſtuck to as firmly as if it was a fe-
" male. *Quere*, Would they ſeize a
" finger or rag that had touched a
" cancerous ulcer?

" Sixthly, Inſects being their food,
" I never ſaw any toad ſhew any lik-
" ing or diſlike to any plant*.

" Seventhly, I hardly remember
" any perſons taking it up except

" about the half of their length. It is by drawing this cord
" with his paw that the male performs the function of a mid-
" wife, and acquits himſelf in it with a dexterity that one would
" not expect from ſo lumpiſh an animal.

" The preſence of the obſerver did not a little diſcompoſe
" the male; for ſome time he ſtopped ſhort, and threw on the
" *curious impertinent* a fixed look that marked his diſquietneſs and
" fear; but he ſoon returned to his work with more precipita-
" tion than before, and a moment *after* he appeared undetermi-
" ned whether he ſhould continue it or not. The female like-
" wiſe diſcovered her uneaſineſs at the ſight of the ſtranger, by
" motions that interrupted ſometimes the male in his operation.
" At length, whether the ſilence and ſteady poſture of the ſpec-
" tator had diſſipated their fear, or that the *caſe* was urgent, the
" male reſumed his work with the ſame vigour, and ſucceſs-
" fully performed his function."

* This queſtion aroſe from an aſſertion of *Linnæus*, that the toad delighted in filthy herbs. *Delectatur Cotula, Actæa, Stachyde fœtidis.* The unhappy deformity of the animal ſeems to be the only ground of this as well as another miſrepreſentation, of its conveying a poiſon from its pimples, its touch, and even its breath. *Verrucæ lactejcentes venenatæ infuſæ tactu, anhelitu.*

" my

" my father and myſelf: I do not
" know whether it had any particular
" attachment to us.

" Eighhtly, In reſpect to its end, I
" anſwer this laſt quere. Had it not
" been for a tame raven, I make no
" doubt but it would have been now
" living; who one day ſeeing it at
" the mouth of its hole, pulled it out,
" and although I reſcued it, pulled
" out one eye, and hurt it ſo, that
" notwithſtanding its living a twelve-
" month it never enjoyed itſelf, and
" had a difficulty of taking its food,
" miſſing the mark for want of its
" eye: before that accident had all
" the appearance of perfect health."

What Mr. *Pitfield* communicated to me ſerves farther to evince the patient and pacific diſpoſition of this poor animal. If I am thought to dwell too long on the ſubject, let it be conſidered, that thoſe who have moſt unprovoked enemies, and feweſt friends, claime the greateſt pity, and warmeſt vindication. This reptile has undergone all ſorts of ſcandal; one author makes it the companion of an atheiſt *; and *Milton* ** makes the devil itſelf

* A great toad was ſaid to have been found in the lodgings of *Vanini*, at *Toulouſe*. *Vide*. *Johnſon*'s Shakeſpear.

** *Paradiſe loſt*.

its inmate; in a word, all kind of evil paſſions have been beſtowed on it: It is but juſtice therefore to ſay ſomething in behalf of an animal that has of late had ſo many tryals of its temper, from experiments occaſioned by the new diſcovery of its cancer-ſucking qualities. It has born all the handling, teizing, bagging, &c. &c. without the leſt ſign of a vindictive diſpoſition; but has even made itſelf a ſacrifice to the diſcharge of its office: this I know from the reſult of much enquiry; would I could contradict what is aſſerted, p. 10, of the inefficacy of the tryals made of them in the moſt horrible of diſeaſes; for at this time I myſelf cannot bring one proof of the ſucceſs. But I would not have any one diſcouraged from the purſuit of the remedy. Heaven opens to us gradually its favors: the *loadſtone* was for ages a meer matter of ignorant amaze at its attractive qualities: *mercury* was a ſuppoſed poiſon, and the terror of phyſicians: we now wonder at the powers of electricity, and are ſtill but partially acquainted with its uſes: the toad, the object of horror even in the moſt enlightened times, is found to be perfectly innocent; it has certainly contributed to the eaſe (and as has been ſaid to the

cure)

cure) of the unhappy cancered; let the following facts ſpeak for themſelves; they come from perſons of undoubted veracity, and will ſufficiently eſtabliſh the truth of the beneficent qualities of this animal.

The firſt paper relating to it is very ingeniouſly drawn up by Mr. *Pitfield*, for the information of Doctor *Littleton*, Biſhop of *Carliſle*, (now happy) who immediately honored me with the copy.

Exon, *Aug*. 29, 1768.

" Your lordſhip muſt have taken " notice of a paragraph in the papers, " with regard to the application of " toads to a cancered breaſt. A pa- " tient of mine has ſent to the neigh- " borhood of *Hungerford*, and brought " down the very woman on whom the " cure was done. I have, with all " the attention I am capable of, at- " tended the operation for eighteen or " twenty days, and am ſurprized at " the phænomenon. I am in no ex- " pectation of any great ſervice from " the application: the age, conſtitu- " tion, and thoroughly cancerous con- " dition of the perſon, being uncon- " querable barriers to it. How an " ail of that kind, abſolutely local, in " an otherwiſe ſound habit, and of a

" likely age, might be relieved, I can-
" not ſay. But as to the operation,
" thus much I can aſſert, that there is
" neither pain nor nauſeouſneſs in it.
" The animal is put into a linen bag,
" all but its head, and that is held to
" the part. It has generally inſtantly
" laid hold of the fouleſt part of the
" ſore, and ſucked with greedineſs
" until it dropped off dead. It has
" frequently happened that the crea-
" ture has ſwolen immenſely, and
" from its agonies appeared to be in
" great pain. I have weighed them
" for ſeveral days together, before and
" after the application, and found
" their increaſe of weight, in the dif-
" ferent degrees, from a drachm to
" near an ounce. They frequently
" ſweat exceedingly, and turn quite
" pale: ſometimes they diſgorge, reco-
" ver, and become lively again. I think
" the whole ſcene is ſurpriſing, and a
" very remarkable piece of natural
" hiſtory. From the conſtant inof-
" fenſiveneſs which I have obſerved in
" them, I almoſt queſtion the truth of
" their poiſonous ſpitting. Many peo-
" ple here expect no great good from
" the application of toads to cancers;
" and where the diſorder is not abſo-
" lutely local, none is to be expected;
" where

" where it is, and ſeated in any part,
" not to be well come at for extirpa-
" tion, I think it is hardly to be ima-
" gined, but that the having it ſucked
" clean as often as you pleaſe, muſt
" give great relief. Every body
" knows, that dogs licking of ſores
" cures them, which is, I ſuppoſe,
" chiefly by keeping them clean. If
" there is any credit to be given to
" hiſtory, poiſons have been ſucked
" out,

------ *Pallentia Vulnera lambit*
Ore Venera trahens.

" are the words of *Lucan* on the oc-
" caſion; if the people to whom theſe
" words are applied, did their cure by
" immediately following the injection
" of the poiſon, the local confinement
" of another poiſon brings the caſe to
" a great degree of ſimilarity.

" I hope I have not tired your lord-
" ſhip with my long tale, as it is a true
" one, and in my apprehenſion a curi-
" ous piece of natural hiſtory, I could
" not forbear communicating it to you.
" I own I thought the ſtory in the pa-
" pers to be an invention, and when I
" conſidered

" conſidered the inſtinctive principle
" in all animals of ſelf preſervation,
" I was confirmed in my diſbelief; but
" what I have related I ſaw, and all
" theory muſt yield to fact. It is only
" the *Rubeta*, the land toad, which
" has the property of ſucking; I can-
" not find any the leſt mention of
" the property in any one of the old
" naturaliſts. My patient can bear to
" have but one applied in twenty-four
" hours: the woman who was cured
" had them on day and night, with-
" out intermiſſion, for five weeks.
" Their time of hanging at the breaſt
" has been from one to ſix hours."

The other account is of a woman now under the experiment, which I give, as delivered to me from undoubted authority. If the event is proſperous, an early opportunity ſhall be taken of informing the public of it in ſome of the news-papers, with all circumſtances of place, name, &c. which at preſent it is needleſs to mention.

About ſix years ago a poor woman received a cruſh on her breaſt by the fall of a pail; a cancerous complaint was the reſult.

Laſt

Laſt year her diſorder increaſed to an alarming degree; ſhe had five wounds on her breaſts, one exceeding large, from which fragments of bone worked out, giving her vaſt pain; and at the ſame time there was a great diſcharge of thin yellow matter: ſhe was likewiſe reduced to a meer ſkeleton.

All her left ſide and ſtomach was much ſwelled; her fingers doughy and diſcolored.

On the 25th of *September*, 1768, the firſt toad was applied; between that and the 29th ſhe uſed ſeven, and had that night better reſt. She ſwallowed with greater eaſe, for before that time there was ſome appearance of humor in her neck, and a difficulty of getting any thing down.

October 16th, the patient better. It was thought proper as winter was coming on, and of courſe it would be very difficult to procure a number of toads, to apply more at a time, ſo three were put on at once. The ſwelling in the arm abated, and the woman's reſt was good.

During theſe tryals ſhe took an infuſion of *Water Parſnep* with *Pulvis Cornacchini.*

December

December 18th, continued to look ill, but finds herſelf better: two of the wounds were now healed.

She was always moſt eaſy when the toads were ſucking, of which ſhe killed vaſt numbers in the operation.

January 1769. The laſt account that was received, informing that the patient was better.

The remarks made on the animals, are theſe:

Some toads died very ſoon after they had ſucked; others lived about a quarter of an hour, but ſome lived much longer: for example, one that was applied about ſeven o'clock ſucked till ten, and died as ſoon as it was taken from the breaſt; another that immediately ſucceeded continued till three o'clock, but dropped dead from the wound, each ſwelled exceedingly, and turned of a pale color.

Theſe toads did not ſeem to ſuck greedily, and would often turn their heads away; but during the time of ſucking were heard to ſmack their lips like a young child.

As thoſe reptiles are apt by their ſtruggles to get out of the bag, the open end ought to be made with an open hem, that the ſtring may run the more

more readily, and faſten tightly about the neck.

It would be improper to quit the ſubject without mentioning the origin of this ſtrange diſcovery, which was owing to a woman near *Hungerford*, who labored under a cancerous complaint in her breaſt, which had long baffled all applications.

The account ſhe gives of the manner in which ſhe came by her knowlege is very ſingular, and I may ſay apocryphal. She ſays of herſelf, that in the height of her diſorder ſhe went to ſome church where there was a vaſt crowd: on going into a pew, ſhe was accoſted by a ſtrange clergyman, who, after expreſſing compaſſion for her ſituation, told her that if ſhe would make ſuch an application of living toads* as abovementioned, ſhe would be well.

This dark ſtory is all we can collect relating to the affair. It is our opinion that ſhe ſtumbled upon the diſcovery by accident, and that having ſet up for a cancer doctreſs, ſhe thought it neceſſary to amuſe the world with

* I have been told that ſhe not only made uſe of living toads, but permitted the dead ones to remain at her breaſt, by way of cataplaſms, for ſome weeks.

this

this myſterious relation *. For it ſeems very unaccountable, that this unknown gentleman ſhould expreſs ſo much tenderneſs for this ſingle ſufferer, and not feel any for the many thouſands that daily languiſh under this terrible diſorder: would he not have made uſe of this invaluable noſtrum for his own emolument, or at leſt, by ſome other means have found a method of making it public for the good of mankind.

Here I take leave of the ſubject, which I could not do without expreſſing my doubts, as to the method of the woman's obtaining her information; but in reſpect to the authenticity of this new-diſcovered property of the toad, facts eſtabliſh it beyond diſpute. Let the humane wiſh for ſpeedy proofs of the efficacy; and for the ſatisfaction of the world, let thoſe who are capable of giving indiſputable proofs of the ſucceſs, take the earlieſt opportunity of making the public acquainted with ſo intereſting an affair.

* Mr. *Valentine Greatraks*, who about the year 1664, perſuaded himſelf that he could cure diſeaſes, by ſtroking them out of the parts affected with his hand; and the famous *Bridget Boſtock*, of *Cheſhire*, who worked cures by virtue of her faſting ſpittle, both came by their art in a manner ſupernatural, but by *faith many were made whole*.

Viper, 21. *Keyſler*, *vol.* III. 237, relates, that Sir *Kenelm Digby* uſed to feed his wife, who was a moſt beautiful woman, with capons fattened with the fleſh of vipers.

The traveller does not quote his authority; but the lady did not long ſurvive this ſtrange regimen.

Blind worm, 26. In *Sueden* is a ſmall reddiſh ſerpent, called there the *Aſping*, the *Coluber Cherſea*, of *Linnæus*: it is ſmall, and of a reddiſh color, and its bite is ſaid to be mortal.

May it not have been from a ſerpent of this ſpecies, that the man in *Oxfordſhire* received his death?

Glain Neidr, 23. This reminds me of another *Welch* word that is explanatory of the cuſtoms of the antients, ſhewing their intent in the uſe of the plant *Vervaine* in their luſtrations; and why it was called by *Dioſcorides Hierobotane*, or the ſacred plant, and eſteemed proper to be hung up in their rooms.

The *Britiſh* name *Cas gan Cythrawl*, or the Devil's averſion, may be a modern appellation, but is likewiſe called *Y Dderwen fendigaid*, the holy oak, which evidently refers to the *Druids* groves.

Pliny

Pliny informs us, that the *Gauls* uſed it in their incantations, as the *Romans* and *Greeks* did in their luſtrations. *Terence*, in his *Andria*, ſhews us the *Verbena* was placed on altars before the doors of private houſes in *Athens*; and from the ſame paſſage in *Pliny* *, we find the *Magi* were guilty of the moſt extravagant ſuperſtition about this herb. Strange it is that ſuch a veneration ſhould ariſe for a plant endued with no perceptible qualities; and ſtranger ſtill it ſhould ſpread from the fartheſt north to the boundaries of *India*. So general a conſent, however, proves the cuſtom aroſe before the different nations had loſt all communication with each other.

Baſking Shark, 78. This ſpecies, on comparing a rude ſketch of one taken in the *Caernarvonſhire* ſeas, with an engraving of the *Squalus Maximus* in Biſhop *Gunner*'s *Acta Nidroſiana*, we find them to be the ſame, and that it has a ſmall anal fin, which probably was overlooked by the *Welch* fiſhermen.

Sturgeon, 96. The mouth of the ſturgeon when dead is always open; when alive it can

* *Lib.* xxv. *cap.* 9.

cloſe

close or open it at pleasure, by means of certain muscles, which also assist it in protruding or drawing it in. *Pliny* speaking of his *Acipenser*, makes it synonymous with the *Elops*, *Quidam eum* ELOPEM *vocant*.

Ballan. This is a kind of *Wrasse**, sent from *Scarborough* by Mr. *Travis*, differing from the other species. They appear during summer in great shoals off *Filey-Bridge*: the largest weigh about five pounds.

It was of the form of the common *wrasse*, only between the dorsal fin and the 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 had only four branchiostegous rays.

The dorsal fin had thirty-one rays, twenty spiny, eleven soft; the last branched, and much longer than the spiny rays.

The pectoral fins had fourteen; the ventral six; the first of which was short and spiny: the anal twelve; the three first spiny, the nine others branched and soft.

* *Vide p.* 203.

The tail was rounded at the end; at the bottom, for about a third part of the way, between each ray was a row of ſcales.

The color in general was yellow, ſpotted with orange.

The plate of this fiſh is placed at p. 204.

Fœcundity of fiſh, p. 302.

Fiſh.	Weight. oz.	Weight. dr.	Weight of ſpawn. grains.	Fœcundity.	Time.
Carp	25	5	2571	203109	*April* 4.
Codfiſh			12540	3686760	*Dec.* 23.
Flounder	24	4	2200	1357400	*March* 14.
Herring	5	10	480	36960	*Oct.* 25.
Mackrel	18	0	1223½	546681	*June* 18.
Perch	8	9	765½	28323	*April* 5.
Pike	56	4	5100½	49304	*April* 25.
Roach	10	6½	361	81586	*May* 2.
Smelt	2	0	149½	38278	*March* 21.
Sole	14	8	542½	100362	*June* 13.
Tench	40	0		383252*	*May* 28.

* Some part of the ſpawn of this fiſh was by accident loſt, ſo that the account here is below the reality. *Vide Phil. Tranſ.* 1767.

CATA-

CATALOGUE

OF THE

Animals deſcribed in this Volume.

With their BRITISH Names.

REPTILES.

1	SPINOUS Tortoiſe,	Melwioges.
2	Common Frog,	Llyffant melyn.
3	Gibbous Frog,	Llyffant melyn cefn grwm.
4	Toad,	Llyffant du, Llyffant dafadenog.
5	Natter Jack,	
6	Scaly Lizard,	
7	Warty Lizard,	Genau goeg ddafadenog.
8	Brown Lizard,	frech.
9	Little Brown Lizard,	leiaf.
10	Snake-ſhaped Lizard,	naredig.
11	Viper,	Neidr, Neidr du, Gwiber
12	Snake,	Neidr fraith, Neidr y tomenyd.
13	Blindworm, or Slow-worm,	Pwl dall.

It is to *Richard Morris*, Eſq; that the public is indebted for the *Britiſh* names.

F I S H.

14	Common Whale,	Morfil Cyffredin.
15	Pike-headed Whale,	Penhwyad.
16	Fin-fish,	Barfog.
17	Round-lipped Whale,	Trwngrwn.
18	Beaked Whale,	
19	Blunt-headed Cachalot	
20	Great-headed	Penfawr.
21	Round-headed	Pengrwn.
22	High-finned	Uchel aden.
23	Dolphin,	Dolffyn.
24	Grampus,	Morhwch, Morfochyn.
25	Porpesse,	Llamhydydd.
26	Lamprey,	Llysowen bendol, Llamprai.
27	Lesser Lamprey,	Lleprog.
28	Pride,	
29	Skate,	Cath fôr, morçath, Rhaien.
30	Sharp-nosed Ray,	Morcath drwynfain.
31	Rough Ray,	
32	Cramp Ray,	Swithbysg.
33	Thornback,	Morcath bigog.
34	Sting Ray,	Morcath cefn.
35	Angel-fish,	Maelgi.
36	Picked Dog-fish,	Ci Pegod, Picewd.
37	Basking Shark,	
38	White Shark,	Morgi gwin.
39	Blue Shark,	Morgi glas, y Sierc.

40 Sea

40	Sea Fox,	Llwynog mor.
41	Tope,	Ci glas.
42	Greater Dog-fiſh,	Ci yſgarmes, morgi mawr
43	Leſſer Dog-fiſh,	
44	Smooth Hound,	Ci Llyfn.
45	Porbeagle,	
46	Common Fiſhing Frog,	Morlyffant, Llyffanbyſg.
47	Long Fiſhing Frog,	Morlyffant hir.
48	Sturgeon,	Iſtwrſion.
49	Oblong Sun-fiſh,	Heulbyſg.
50	Short Sun-fiſh,	
51	Lump-fiſh,	Jar-fôr.
52	Sea Snail,	Môr falwen.
53	Longer Pipe-fiſh,	
54	Shorter	
55	Little or Sea Adder,	Mor Neidr.
56	Eel,	Llyſowen.
57	Conger,	Mor Llyſowen, Cyngyren
58	Sea Wolf,	Morflaidd.
59	Sand Eel,	Llamrhiaid, Pyſgod bychain.
60	Morris,	Morys.
61	Sword-fiſh,	Cleddytbyſg.
62	Dragonet,	
63	Leſſer Dragonet,	
64	Weever,	Mor wiber, Pigyn aſtrus.
65	Leſſer Weever,	
66	Common Codfiſh,	Codſyn.
67	Torſk,	
68	Hadock,	Hadoc.

69	Whiting Pout,	Cod lwyd.
70	Bib,	Deillion.
71	Poor,	Cwdyn ebrill.
72	Coal-fiſh,	Chwetlyn glas.
73	Pollack,	Morlas.
74	Whiting,	Chwitlyn gwyn.
75	Hake,	Cegddu.
76	Leſſer Hake,	
77	Leſt Hake,	
78	Ling,	Honos.
79	Burbot,	Llefen, Llefenan.
80	Spotted Whiſtle-fiſh,	
81	Brown Whiſtle-fiſh,	
82	Creſted Blenny,	
83	Gattorugine,	
84	Smooth Blenny,	
85	Spotted Blenny,	
86	Viviparous Blenny,	
87	Black Goby,	
88	Spotted Goby,	
89	Bull Head,	Pentarw, Bawd y melinydd.
90	Pogge,	Penbwl.
91	Father Laſher,	
92	Doree,	Sion dori.
93	Holibut,	Lleden ffreinig.
94	Whiff,	
95	Plaiſe,	Lleden frech.
96	Flounder,	Lleden 'ddu.
97	Dab,	Lleden gennog, Lleden dwfr croyw.
98	Smear Dab,	

99 Sole,

99	Sole,	Tafod yr hydd, Tafod yr ych.
100	Smooth Sole,	
101	Turbot,	Lleden chwith, Torbwt.
102	Pearl,	Perl.
103	Gilt Head,	Peneuryn, Eurben.
104	Sea Bream,	Brôm y môr.
105	Leſſer Sea Bream,	
106	Opah,	
107	Wraſſe,	Gwrach.
108	Bimaculated	
109	Trimaculated	
110	Striped	
111	Gibbous	
112	Goldſinny,	
113	Comber.	
114	Cook,	
115	Ballan,	
116	Perch,	Perc.
117	Baſſe,	Draenog, Gannog.
118	Ruffe,	
119	Black Ruffe,	
120	Three ſpined Stickle-back,	Sil y dom, Pyſgod y gath.
121	Ten ſpined	Pigowgbyſg.
122	Fifteen ſpined	Silod y môr.
123	Mackrel,	Macrell.
124	Tunny,	Macrell Sopaen.
125	Scad,	
126	Red Surmullet,	Hyrddyn coch.
127	Striped	

128 Grey

128	Grey Gurnard,	Penhaiarn llwyd, Penhaiernyn.
129	Red Gurnard,	Penhaiarn coch.
130	Piper,	Pibyd.
131	Tub Fiſh,	Yſgyfarnog y môr.
132	Streaked Gurnard,	
133	Loche,	Crothell yr afon.
134	Salmon,	Gleiſiedyn, Eog, Maran *Taliesin.*
135	Grey,	Penllwyd, Adfwlch.
136	Bull Trout,	
137	Trout,	Brithyll.
138	Samlet,	Brith y gro, Silod brithion.
139	Charr,	Torgoch.
140	Grayling,	Brithyll rheſtrog, Glaſgangen.
141	Smelt,	Brwyniaid.
142	Gwiniad,	Gwiniedyn.
143	Pike,	Penhwyad.
144	Sea Pike,	Môr nodwydd, Corn big.
145	Argentine,	
146	Atherine,	
147	Mullet,	Hyrddyn, Mingrwn.
148	Flying Fiſh.	
149	Herring,	Pennog yſgaden.
150	Pilchard,	Pennog mair.
151	Sprat,	Coeg Bennog, Sil penwaig.
152	Anchovy,	
153	Shad,	Herlyn, Herling.

154 Carp,

154	Carp,	Carp, Cerpyn.
155	Barbel,	Barfbyſg, y Barfog.
156	Tench,	Gwrachen, Iſgretten.
157	Gudgeon,	Crothel,
158	Bream,	Brêm.
159	Rud,	Rhuddgoch.
160	Roach,	Rhyfell.
161	Dace,	Darſen, Golenbyſg.
162	Chub,	Penci, Cochgangen.
163	Bleak,	Gorwynbyſg.
164	Minow,	Crothel y dom, Bychan byſg.
165	Gold Fiſh,	

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