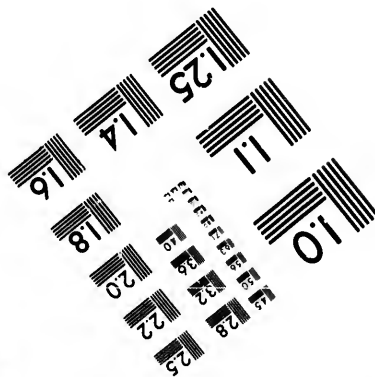
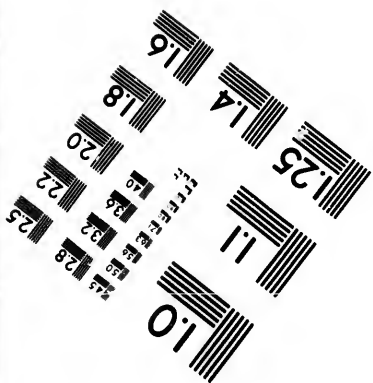
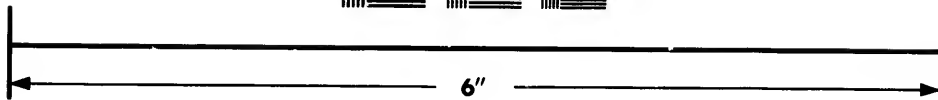
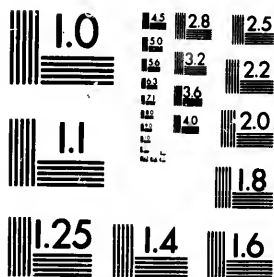


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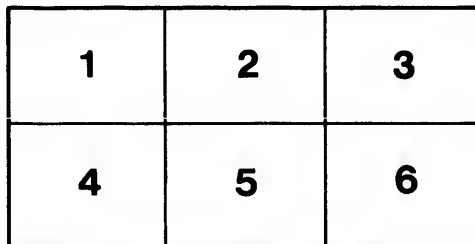
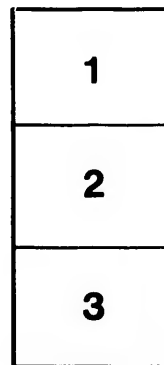
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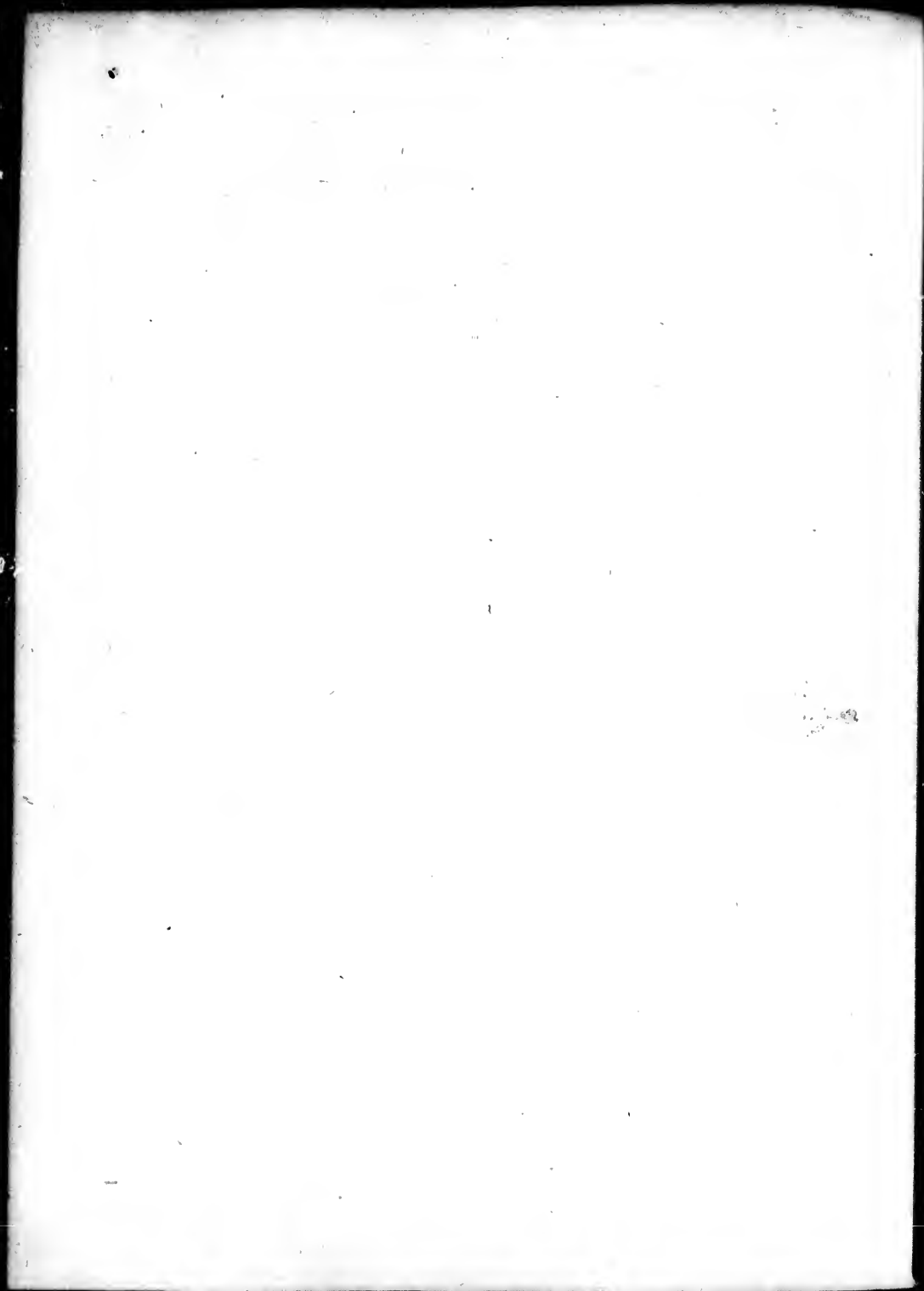
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S U P P L E M E N T

TO THE

ARCTIC ZOOLOGY.



L O N D O N :

PRINTED BY HENRY HUGHS.

M.DCC.LXXXVII.

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SINCE the publication of the *Arctic Zoology*, so much new matter has been pointed out to me by friends, or occurred from my own thoughts or reading, as to furnish me with materials for a Supplement. This I send into the world in order to render the work as perfect as possible; and, in case the public should call for a new edition, to take away cause of complaint from the purchasers of the first, of not being made partakers of any improvements such an edition might receive.

To enlarge the *American Zoology* as much as possible, I have flung the Reptiles and the Fishes of the northern part of that vast continent into a systematic form; and, by permission of Mr. *Benjamin White*, have added, from the labors of the learned *John Reinhold Forster*, the Catalogue of the animals of *North America* *. How small a part is this of the Zoology of our lost dominions! May what I have done be an inducement for some learned native to resume the subject! and I shall without envy see my trivial labors lost in the immensity of new discoveries. Vain thought! for ages must pass, ere the necessary perfection can be given, ere the animated nature which fills the space between the *Atlantic* and *Pacific* oceans can be investigated. Ages must pass, before new colonization can push its progress westward: and even then, civilization, ease, and luxury, must take place,

* Published by Mr. *White*, in 1771.

ADVERTISEMENT.

ere these studies, in which use and amusement are so intimately blended, can be carried into full effect.

But in the interim, let the *American* philosopher do what is in his power; let him search the ill-explored seas, lakes, rivers, and forests of his country; and his labors will be amply repayed. The tract between the *Allegany* or *Appalachian* chain and the ocean, will for the present be ample field for the most adventurous naturalist. Let me entreat him to be expeditions, that I may have some chance of receiving the pleasure of knowing that I could animate any one to these laudable pursuits. But my electrical fire is too weak to be felt at such a distance: I want the potent emanations of a LINNÆUS, which dart from pole to pole. My faculty has been various: in a few instances I may have been fortunate enough to have met with, at home and abroad, some excellent conductors, which have caught and carried on the impulsive stroke; which have at last roused natural history from the palsied state into which it was falling, on the loss of its illustrious support.

I must myself have been very negligent, in the moment I forgot an acknowledgement to the Reverend Mr. *William Coxe*, for the great services he rendered to me by his various communications respecting *Russia*, and other northern countries: I hope he will receive this late respect, with proper allowance for my forgetfulness.

Mr. *Samuel Oedman* of *Wermdon*, near *Stockholm*, with the utmost liberality, spontaneously sent to me a number of valuable remarks on the quadrupeds and birds of *Sweden*, which the reader will receive the benefit of in the course of this work.

I must thank the ingenious Mr. *Lenten*, late of *Goettingen*, and at present engaged as metallurgist in the vast copper-works in my neighborhood

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March 1, 1

A D V E R T I S E M E N T.

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borhood, for various services, in translating from the *German* several passages which appear in the following pages.

I have been often reproached for not giving a map with the *Arctic Zoology*. I have now complied with the desire: and given two, engraven by that excellent artist Mr. *William Palmer*, the engraver of those in Captain Cook's last voyage; and of an admirable map of the *American* and *Asiatic* part, formed by the much-lamented, the late Captain JAMES KING. These maps have been the foundation of mine; with certain additions from that which illustrates the voyage of Lord MULGRAVE towards the north pole. I have taken the liberty of making some slight alterations; and have made the addition of several names, peculiarly adapted to the work they are designed to explain. The coast from the *Icy Cape* to the mouth of the *Copper Mine River*, is layed down from imagination, and the same from thence to *Greenland*, except in a few places where it had been slightly seen by navigators. A little to the east of the *Copper Mine River*, the sea is made to advance somewhat more inland, on a conjecture of Mr. *Hearne's*, that a river which falls into the *Copper Mine River* from the east, is much nearer to the sea than the mouth of the *Copper River* itself. I have been obliged to go far lower than lat. 60, which I professedly designed to limit my northern enquiries: but had I, in my maps, rigidly adhered to that design, I must have omitted great part of *America*, the glorious field of the discoveries of our immortal *Cook*. Those of the *Russians* are attended to, and nothing neglected that could sling light on the attempts of this busy age.

T H O M A S P E N N A N T.

DOWNING,
March 1, 1787.

C O N-

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1. *SEA -*
Plants
7. *Fish, &c.*
Calcedon
8. *Of the gr*
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21. *The under*
Herrings
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C O N T E N T S.

I N T R O D U C T I O N.

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Plants.
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29. *Fishes of the Norwegian seas.*
30. *Heat in the summer of Spitzbergen.*
Number of plants in Holland.
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Coast of Finmark.—N. B. Printed by mistake, Finland.
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87.		SERPENTS.
99.	<i>FISH of North America.</i>	
151.	<i>INSECTS.</i>	
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SUPPLEMENT

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IN my land travels I have never failed pointing out the places of slaughter resulting from a strife for superiority between rival nations, or the lust of power in princes, or of gain in the mercantile world, or the want of due submission to lawful government in the people, or the madness of enthusiasm, or the pride of nations too often arising from an unfortunate series of successes over neighbors destined to flourish in their turn. Providence seldom fails punishing an abuse of its favors. *Britain* at this moment feels the scourge, the just chastisement of its want of moderation.

I must not overlook the great naval actions of our countrymen, which often stained our narrow seas with gore. Mention may be made in this page of the fierce contest between the fleet of *Philip de Valois*, consisting of four hundred ships, manned with forty thousand men, and that of Edward III. consisting of two hundred and sixty, commanded by the king in person. The action happened off *Sluys*, in *June* 1340. Victory declared for the *English*. The carnage of the enemy was prodigious, and chiefly owing to the number, skill, and courage of the *English* archers. Thirty thousand were killed or drowned, and above two hundred and thirty of their largest ships taken: the loss of the *English* very inconsiderable. This signal victory gave occasion to the noble of that monarch, by which he asserted the dominion of the sea, and sovereignty of *France*. He appears completely armed in the middle of a ship at sea; in his right hand is a sword, in the left a shield, with the arms of *England* and *France*; the royal standard displayed at the stern*.

LV.

* See *Faulk's Coins*, tab. 1. gold coins.

ENT

The obstinate contests on the coasts of *Holland*, during the time of the *English* commonwealth, and in the succeeding reign of *Charles II.* were attended with torrents of the bravest blood of both the contending nations. The *Dutch* fought not merely for glory, or the sweets of commerce, but latterly *pro aris et focis*. *Delenda est Carthago* was the maxim of one of *Charles's* ministers, which animated the *Dutch* to death or victory. Naval skill and desperate valour never were so strongly exhibited by any people. The combatants often fought with fleets of eighty or a hundred line of battle ships of a side, furnished with every infernal engine which the subtlety of an animated enemy could invent. The great *De Witte*, soldier and statesman, first introduced chain shot in the celebrated FIGHT OF FOUR DAYS, which ended in the defeat of the *Dutch*, on their own coast, on *June 4th*, 1666, notwithstanding we suffered so greatly by its ravages among our rigging. The *Dutch* commanders were *De Ruyter* and *Van Tromp*, of different factions on shore, and mortal enemies; at sea they thought only of their country. *De Ruyter* even saved his rival from the over-powering fire of the *English*; having a mind superior to the ruining of a party at home, at the expense of his country's welfare!!!

The elder *Van Tromp*, the glory of *Holland*, lost his life in a fierce engagement off the *Texel*, *July 29th*, 1653. Satiety of slaughter parted the combatants, and actual weariness. *Van Tromp* fell sword in hand, shot through the heart, in the very instant of encouraging his men to resist to the last moment of their lives. THIS WAS A FIGHT OF THREE DAYS! this was the true period of obstinate contest.

vi.

A dreadful battle commenced off *Leoffloss*, in *Suffolk*, on *June 3d*, 1665, between the *Dutch* under the command of *Opdam*, and the *English* led by the duke of *York*, before a crown had deprived him of his courage: he fought with the truest and most persevering bravery. The battle proved decisive. *Opdam's* ship was blown up: three *Dutch* admirals, besides him, were killed. It is said that the victory would have been more brilliant, but that during the night of pursuit, after the engagement, orders were pretended, in the duke's name, to slacken sail: they were unfortunately obeyed, and the total destruction of the *Dutch* fleet prevented. This affair was ill enquired into: but not the least imputation sullied the character of his highness. We might be content with the victory. The *Dutch* lost thirty ships: eight thousand men were taken. We lost but one ship, and had only eight hundred men killed or wounded. Many persons of rank were slain on board our fleet. The earl of *Falmouth*, a worthless favorite, Lord *Miskerry*, and Mr. *Boyle*, of the noble family of *Burlington*, were killed on the quarter deck

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deck by one shot; and the duke was covered with their gore, and even hurt by their splinters. *James Ley*, earl of *Marlborough*, and *Charles Weyton*, earl of *Portland*, fell in the action: the veteran admiral *Lawson* died soon after of his wounds.

On *May 28th. 1672*, a surprize of the duke of *York* by *De Ruyter*, in *Southwold*, alias *Solebay*, on the same coast, brought on a battle, sustained on both sides with unparalleled valour and obstinacy. The *Dutch* had the disadvantage, but nothing decisive followed; yet the death of the earl of *Sandwich*, second in command, would have cast a gloom over the greatest victory. This nobleman possessed the highest character of any of his time, for courage, abilities, munificence, and goodness. He fought in the *Royal James*, of a hundred guns; slew *Van Ghent*, a *Dutch* admiral, and beat off his ship; sunk another great ship; sent to the bottom two of the enemy's fire-ships. Five hundred men (half of his crew) lay on the decks weltering in blood. A third fire-ship succeeding, this illustrious hero was drowned in attempting to save himself; and his ship was blown up, with the remainder of his gallant companions. His body was found, and all due honors payed to it by his lamenting sovereign and grateful countrymen.

In the late fatal war, when *Britain* had all *Europe* to contend with, as secret or open enemies, aiding the defection of its own long-fostered children, the *Dutch* drew on themselves an indignation which perhaps it might have been prudent to suppress. The states exerted their reliques of naval life; which emitted its last sparks on *August 5th, 1781*, off the *Dogger Bank*. Our gallant veteran, vice-admiral *Hyde Parker*, commanded our little fleet of six ships of the line, opposed to eight two-deckers commanded by admiral *Zoutman*. The *Dutch*, disposed to arms for a long series of years, collected their antient valour: neither the *British* nor *Belgic* lion seemed to have degenerated: the *Dutch* lost one ship of the line, sent to the bottom. The rest fought the safety of the *Texel*, and never more vindicated the dominion of the sea.

In those seas off the coast of *Norfolk*, *James II.* when duke of *York*, had the ill fortune to escape shipwreck, to have closed a life of glory, and to have prevented the calamities which beset himself, his posterity, and kingdoms, which a conduct of which he had begun to give symptoms, brought upon them. In the sort of exile he was obliged to take to *Scotland*, on *May 5th, 1682*, his frigate struck on the *Lemon* and *Orc*. His Highness, with some few, were preserved: several people of quality perished. Malevolence says, that the duke called out to save his dogs, his priests, and his favorite, the lord, afterwards duke of, *Marlborough*. His Highness certainly had not the gift of prescience, or he would not have

SCENERY. AURORA BOREALIS:

classed, in his saving orders, his Grace with the most faithful of animals! The duke shewed on this occasion his usual intrepidity. A medal was struck of a sinking ship, with the motto, *impavidum feriant*. The heroism and loyalty of the common men who were left behind, had the fullest claim to every honor. On seeing their popular and beloved commander out of danger, they gave three loud cheers, and on the third sunk exulting to the bottom.

XX. I propose as examples of magnificent scenery on the coast of *Scotland*, *Boddam* castle, *Dunby* head, and *Finlater* castle, in the Reverend Mr. *Cordiner's* Views in *North Britain*: the *Bullers* of *Buchan*, and the arched rock near to them; the perforated pyramid near *Banff*, and the insulated column off *Gaithness*, in the same gentleman's Letters on the Scenery and Antiquities of the North of *Scotland*.

XXVIII. The great *Gassendus* observed the *aurora borealis*, in 1621, near to *Aix*, in *Provence**. But they had been long before seen in *Greenland*, and well described by the author of the *Speculum Regale*; of whom we know no more than that he was a person of distinction in the *Norwegian* court, about the latter end of the thirteenth, or beginning of the fourteenth century, and resided as far north as *Helgeland*.

X. In about *lat. 53*, I may draw a line from the *North Sea* to the opposite part of the kingdom, which will comprehend a small part of the north of *Norfolk*, the greater part of *Lincolnshire*, *Nottinghamshire*, *Derbyshire*, the moor-lands of *Staffordshire*, all *Cheshire*, *Denbighshire*, *Flintshire*, *Caernarvonshire*, and *Anglesey*. Beyond this line nature hath allotted to the northern part of these kingdoms certain plants, of which I am about to make an enumeration, which are rarely or never found to transgress that line to the south. Those which are nearest the south shall be first taken notice of.

Galeum boreale. *Fl. Angl.* i. 70. *Fl. Scot.* l. 116 †.

Pulmonaria maritima.

Ribes alpinum.

Athamanta meum.

Juncus triglumis.

Rumex Digynus.

* *Gassendus's* works. *Physicæ*. Sect. 3. lib. ii. c. 7.

† I refer the reader for the *English* names to Mr. *Hudson's Flora Anglica*, and Mr. *Lightfoot's Flora Scotica*.

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Vaccinium vitis Idæ.

Polygonum viviparum.

Saxifraga nivalis.

stellaris.

oppositifolia.

autumnalis.

Avenaria verna. *Tour in Wales.*

sericifolia.

Cerastium alpinum.

latifolium

Prunus Padus.

Rosa villosa.

Rubus chamæmorus.

Papaver cambricum.

Ajuga pyramidalis.

Draba muralis.

incana.

Thlaspi montanum.

Erassica momensis.

Cardamine petræa.

Serratula alpina.

Carduus helenoides.

Lobelia Dortmanna.

Vioia grandiflora.

Satyrium albidum.

Carex atrata.

Salix herbacea. Only on mountains; is found high on *Snowdon*.

reticulata.

Rhodiola rosea

Osmunda crispa.

Acrostichum septentrionale.

Ilvensc.

The following catalogue is of plants, which in our island seem to affect still more northern situations, or I may say are not found to the south of *Yorkshire*; and, respecting *Great Britain*, a few seem to be nearly local.

Cynosurus cæruleus.

Cornus herbacea.

Alchemilla alpina.

Primula

- Primula farinosa.
 Azalea procumbens. In *Scotland* only.
 Selinum palustre. Inclines to the southern part of this class.
 Ligusticum Scoticum. *Scotland* only.
 Sibbaldia procumbens. The same.
 Trientalis Europea.
 Vaccinium uliginosum.
 Pyrola secunda.
 Andromeda polyfolia.
 Arbutus uva ursi. Not farther south than the woods near *Hexham*; again not till we reach *Peebles*, *Rosfshire*, and the isle of *Skie*.
 alpina. In *Scotland* only.
 Saxifraga cæspitosa.
 Stellaria nemorum.
 Chelidonium majus. *Breadalbane* and *Bairkeval*, in the isle of *Rum*.
 Sedum villosum.
 Rubus saxatilis.
 Dryas octopetala. Found in *Scotland* and *Ireland* only.
 Actæa spicata.
 Gnaphalium supinum. Omitted in the *Flora Scotica*, having been discovered after the publication. In the north of *Scotland*.
 Satyrium repens. In the north of *Scotland*.
 Ophrys corallorhiza. The same.
 cordata. *Yorkshire*, *Lancashire*, isle of *Man*, and *Scottish* highlands.
 Cypripedium calceolus. Near *Ingleton* and *Clapham*, in *Yorkshire*.
 Ericauleon decangulare. In the isle of *Skie* only.
 Betula nana. From *Clydesdale* to *Rosfshire*.
 Pinus sylvestris. At present native only in the *Scottish* highlands.

It is to be remarked, that notwithstanding none of these plants are to be discovered in *Great Britain*, south of the line above drawn; yet most if not all of them are to be found in very southern latitudes on the continent. Numbers are inhabitants of *Provence*, and other warm provinces in *France* *. Is it owing to similitude of soil, or of exposure, in dissimilar climates, which should occasion in different places the production of the same plants? Or what should forbid the growth of similar plants in places nearly contiguous, and occasion their appear-

* See *Lamarck's Flore Françoiſe*.

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ance almost instantly on a neighboring spot? Without reminding one of the question put by the wisest of men on a like embarrassment:

WHY should one earth, one clime, one stream, one breath,
RAISE this to strength, and sicken that to death*?

Almost every one of these plants is again found in a climate very opposite to the mild provinces which border on the *Mediterranean* sea; for there is scarcely one which I have enumerated which is not met with in *Sweden*, or in *Lapland*, and some even in the distant *Iceland* †.

The *chimæra monstrofa* of *Linnæus* has been taken off the *Schetland* islands about two years ago. It is a most singular fish; and is common to these and the *Norwegian* seas, where the *Danes* call it *Silvebaen*, and *Hav-kat*. It is found from the *Sound* to *Drontheim*, perhaps *Iceland*, for the *Icelanders* have a name for it, *Geirnytt*. It grows to the length of two feet and a half. The reader will find it well figured in *Mr. Ascanius's Icones*, tab. xv. in the *æta nidrosiana*, 11 tab. 5, 6; and in *Clusius's Exotics*, 137. A drawing of that taken on our coasts, by my friend *Mr. George Paton*, of *Edinburgh*, was with his usual kindness communicated to me.

A fine specimen of the *Asterias caput medusæ*, *Br. Zool.* iv. N^o 73, was taken *Oct.* 1785 off *Lunna*, one of the *Schetland* isles, and when fresh was of a most vivid orange color. *Mr. Paton*.

The *Asterias Equestris* of *LINNÆUS*, figured in *Linckius*, tab. xii. fig. 21, was lately discovered by the Reverend *Mr. Cordiner*, in the sea near *Banff*. It consisted of five short thick rays. Those, and the upper part of the center, covered with large obtuse papillæ, longest on the sides of the rays. The color deep brown. Its diameter, from the tip of one ray to that of another, nine inches.

Fyøe has many substances in common with *Iceland*, which evince its having been volcanic. The Honourable *Charles Grevil*, a gentleman not less distinguished by his knowledge than his urbanity, shewed me some very fine tuberosc calcedonies from thence, mixed with *lava* and *tufa*, and other calcedonies stratified. Likewise some very beautiful zeolites, both crystallized and sheafy.

I here introduce a very curious account of the eruption of fire in *Iceland*, mentioned in this page, translated from the *Danish* account of *Mr. Magnus Stephensen*, and communicated by the friendship of the ingenious *Mr. John Whiteburjt*.

* A question put by *Prior* in the mouth of *Solomon*, in his first book.

† See the catalogue of *Iceland* plants in vol. ii. of *Olaffen's* and *Fovelsen's* journey in *Iceland*.

XXIX.

XLI.

XLVI.

An Account of the Eruption of Fire in *Iceland*.

UPON the 1st of *June*, 1783, there was observed a trembling or shaking of the earth, in the western part of the province of *Shaptarfjall*, which increased more and more until the 11th. It was so great that the inhabitants were under the necessity of quitting their houses, and lying at night in tents upon the open ground. All this time there was observed a continual smoak or steam arising out of the earth, in the northern and uninhabited parts of the country. Three fire-spouts broke out, of which that in the north-west was the greatest: one of these spouts broke out in *Ulfarsdal*, a little to the east of the river *Skapta*; the other two were a little west of the river *Hwerfssfiôt*. These three fire spouts, after they had risen to a considerable height in the air, were collected into one stream, which rose so high as to be seen at the distance of 34 miles*, and upwards. The whole country, for double that distance all about, was continually covered with a thick smoak and steam not to be described.

The 8th of *June* gave sufficient notice of the above-mentioned fire spouts breaking out, for upon that day the fire became visible. It was mixed with prodigious quantities of brimstone, sand, pumice-stones, and ashes, which, being thrown up with great force, noise, and shaking of the earth, were scattered in the neighborhood of the spouts; and a part of them being blown about by the wind (which at that time was very high) all over the country, fell in the fields, villages, and towns, at a considerable distance. The whole atmosphere was filled with sand, dust, and brimstone, so thick as to occasion a continual darkness. The pumice which fell in the villages, being red hot, did considerable damage. Along with the pumice stones there fell a great quantity of a dirty substance like pitch, rolled up sometimes in the form of small balls, and sometimes like rings or garlands. The falling of these hot substances was attended with great mischief, as they totally destroyed all manner of vegetation that they came near.

Upon the third day of this dreadful shower, the fire became very visible, and came out sometimes in a continued stream, and sometimes in flashes or flames, which were seen at the distance of 30 or 40 miles, accompanied at the same time with a noise like thunder: this continued the whole summer. Upon the same day that the fire first broke out, there fell a very great quantity of rain in all that neighborhood, which did almost as much harm as the fire; inasmuch as

* The reader will observe, that the distances mentioned here are in the measure of *Danish* miles, twelve of which make one degree; so that each *Danish* mile is nearly five and three quarters of our statute miles.

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the great quantity of cold water, that ran in vast streams upon the hot ground, tore up the earth in large cakes, and carried it down into the lower situations: besides, the water of this rain was strongly impregnated with salts of different kinds, and sulphur, which it had acquired in falling through the immense cloud of smোক before described; and was so sharp and poisonous as to occasion a considerable smarting, if it fell either upon the hands or face. At a greater distance from the fire there was a great coldness in the atmosphere; and in some places there was a very heavy fall of snow, so that it lay upon level ground about three feet deep; in others so great a quantity of hail, as to do very considerable damage to the cattle, and every thing that was out. The grass, and all manner of vegetables, which were already scorched by the heat, sand, and pumice stones, were covered over with a thick crust of brimstone and sooty matter. The great heat of the streaming fire, meeting with so large a body of water, occasioned such a vapour and steam in the air, as to darken the sun, which appeared like blood*, and the whole face of nature seemed to be changed. This lasted several days, the sand and pumice stones destroying all the crops that were upon the ground, the moment that they fell burning up every thing that they touched: the whole country was laid waste, the cattle dying for want of food; and the surviving or escaping inhabitants flying from the horrid scene, betook themselves to other parts of the country, where they might hope for safety, and left all their stock and goods a prey to the outrages of these two turbulent elements.

When the fire first broke out, there was a very considerable increase of water in the river *Skapta*, upon the east side of which one of the fire spouts was situated, as was mentioned above: a similar overflow of water was observed, at the same time, in the great river *Piorsa*, which runs into the sea a little to the eastward of the town *Orebakke*, and into which the river *Tuna*, after having run through a large tract of barren and uninhabited land, empties itself.

Upon the 11th of *June* the river *Skapta* was totally dried up in less than twenty-four hours, and the day following a prodigious stream of liquid and red hot lava, which the fire spout had discharged, ran down the channel of it, which is very deep, having large rocks and high banks on each side, the whole length of its course. This stream of lava not only filled the deep channel above mentioned, but overflowing the banks of it, spread itself over the whole valley, covering all the low grounds in its neighborhood; and not having any sufficient outlet to empty itself by, it rose to a very great height, and over-ran all the neighboring country, insinuating itself between the hills, and covering some of the lower ones. The hills here are not continued in a long chain or series, but are sepa-

* In the same summer the sun had a similar appearance in *Great Britain*, and the same obscurity of air reigned in most parts of our island.

rated from one another, and detached; and between them run little rivulets or brooks: so that, besides filling up the whole of the valley in which the river *Skapta* ran, the fiery stream spread itself for a considerable distance on each side, getting vent between the above-mentioned hills, and laying all the neighboring country under fire. The fiery lake, getting fresh and greater supplies from the spouts, now ran up the course of the river, and overflowed all the lower grounds above; and, as it proceeded upwards, it dried the river, until the stream was stopped against the side of the hill from whence the river takes its rise. The lava now rose to a prodigious height, and the fiery lake overflowed all the village of *Buland*; the church, houses, and every thing in its way being consumed: those who knew the situation of this village, upon what high ground it stands, would be astonished to think that it could have been overflowed. Two other farm houses in the same parish of *Buland*, at about a mile and an half from the village, northward, were likewise destroyed, and three lives lost in both of them. The whole of this parish, which was highly cultivated land, is now totally demolished. The fiery lake still increasing, and spreading itself out in length and breadth, overflowed all the country for six miles in width. When all this tract of land was converted into a sea of fire, the lava stretched itself towards the south; and getting vent through the channel of the river *Skapta*, down which it rushed with great impetuosity (being confined within the narrow compass between the high banks before described, for about a mile) it came into a more open place, where it poured itself forth in prodigious torrents with amazing velocity and force; spreading itself now towards the south, tearing up the earth, and carrying along with it on its surface flaming woods, and whatsoever it met with: in its course it laid waste another large district of land. The ground wherever it came was broke and cracked, and emitted large quantities of smoak and steam long before the fire reached it; so great was the heat: and every thing near the edge of the fiery lake was either burnt up, or reduced to a fluid state. In this situation matters remained from the 12th of *June* till the 13th of *August*. The fiery lake now no longer spread itself, but remained burning nevertheless; and when any part of the surface by cooling was cruusted over, the fire from below broke the crust, which tumbling amongst the melted substance, was rolled and tossed about with a prodigious noise and crackling; and in many parts of its surface small spouts, or at least ebullitions, were formed, which continued for some length of time.

The river *Skapta*, that we have talked so much about, is situated on the north and north-west sides of the province of *Sidu*; it takes its rise in the north-east, and running first westward, it turns to the south, and falls into the sea in a south-east direction. The confined part of its channel, that we have before made mention of, is an uninterrupted stretch of about four miles in length; being in some places

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200 fathoms deep (as in the neighborhood of *Swartanup*, where the river cuts through a hill), in others 150 or 100; and in some parts 100, in others 50, 40, and 30 fathoms broad. Along the whole of this part of its course the river is very rapid, though there are no considerable cataracts or falls above two feet each. There are several other such confined channels as this in other parts of *Iceland*, but this is the greatest and most considerable in all its dimensions. This channel was filled to the brink, and from thence the lava spread itself over the village *Skuptardal*, consumed the houses and every thing in its way, and destroyed the woods and meadow lands: this place is situated on the east of the river, upon a rising ground. The stream then went forwards to the south, by the village marked A, which is at the south end of the narrowest part of the channel, and stretched itself between two hills to the east. The whole of this village, with all its meadow and wood lands, was also totally destroyed. Upon the 12th of *June*, the lava having run through the narrow part of the channel, and obtained an outlet, it stretched itself out in breadth towards the south-west, as far as the east side of the hills in the province *Skaptungu*; and also to the west side of *Sidu*, and the south-west of *Medalland* towards the east. Just as the lava began to overflow this flat country, and had got out of the channel of the river, the perpendicular height of its edge was 70 fathoms. Proceeding now southwards, the lava destroyed the church and town of *Skal*, and all the neighboring grounds: in this place a prodigious noise was heard when the lava overspread the low lands, and noises like thunder have continued ever since, till the 12th of *August*. It then came to the village of *Swindalur*, which lies in a south-west direction from *Skal*; and having with a corner destroyed that, it was stretched out farther to the west, and over-ran the village of *Hvammur*, which stands on a pretty high rising ground on the west side of the river; but before the fire had reached these two villages, they were both overflowed with the water that had been turned out of its course, by the lava damming up the river when it first came into the channel. Proceeding forward, the lava overflowed the village *Naz*, and all the grounds belonging to it: from thence it came to *Villungur*, and turning more southwardly, came near to the village *Lilkeilla*; a little to the north of which, after having destroyed a great quantity of grass land and wood, it entered into the channel of the great river *Kudafliot*; and kept a south course along the east side of it till it came down near to the village of *Hvaun*, where this branch stopped. A little above the place where this arm went into the channel of the river *Kudafliot*, a corner of the lava stretched itself out to the south-east, and came to a place called *Eystrivun*, east of *Hvaun*. From *Skal*, which we mentioned just now, the lava taking an eastward direction,

ran by the side of a hill called *Holtsfjáll*, and destroyed the village *Holts*, which stood upon a fine level ground, and was surrounded with very rich corn and pasture land. Proceeding eastward, it came to a village called *Heid*; and destroying a quantity of meadow land and wood belonging to that village, it went on down the river *Skapta*, between the two hills *Heilderstapa* and *Dalbærstapa*, which lie on each side of the river, and destroyed the villages *Hunkabakke*, *Holmur*, and *Dalbær*; and proceeded on eastward towards the village *Nyibær*, within a hundred yards of which it stopped. In this course there is a very great cataract of the river *Skapta*, about 14 fathoms high, where the lava falling down, was thrown about, together with the stones which it tore up, to a very considerable distance. From *Dalbær* the stream of lava went southward, over that large tract of land called *Hrauns-melar*, quite down to *Efrifsteins-myri*, the edge of it to the east passing by *Lutandabals*, *Lutandafit*, and *Rofa*. In passing over this broad tract of land the fire did considerable damage, for the whole was good and rich meadow and pasture land. The stream of lava went within 30 fathoms of *Efrifsteins-myri*, on the west; and falling into the channel of the river *Steins-myrfiôt*, which is among the larger ones, it filled the whole valley between *Efrifsteins-myri* and *Sydrifsteins-myri*, going on in an eastward direction: these two villages are totally destroyed, although the edge of fire only approached within 100 fathoms of them. The main body of the lava from this place went in a south-west direction, and came to the village *Hrauser*; which, although it was not destroyed by the fire, yet was overflowed by the water of the two rivers *Steins-myrfiôt* and *Fegdaqvíf* being dammed up. Here the lava stopped on the south; and its edge goes all the way from *Eyfiribrun* before mentioned, north of *Stadarholt*, to *Strandarholt*. In this neighborhood the lava destroyed five villages; namely, *Holmasfel*, with its church; *Botna*, *Holma*, *Efrifsiôta*, and *Sydrifsiôta*; besides a great quantity of corn and meadow lands, with woods and other property belonging to the villages southward.

The spouts still continuing to send forth immense quantities of fresh lava, and all the passage to the south or low lands being shut up, the lava spread itself to the north and north-east, over a tract of land eight miles long and six broad. All this place is barren and uninhabited, so that no observations were made how the fiery stream proceeded; all we know is, that it dried up the rivers *Tuna* and *Azafyrði*. The lava, on account of the high hills on the east of *Hverfisfiôt*, could proceed no farther in an eastward direction; for these hills form a continued chain for three miles in length, running in a direction north and south. There was then no other outlet for the lava than the channel of the river *Hverfisfiôt*: this branch broke out from the main body about a quarter of a mile north of *Yrídalur* and *Eyfrídalur*, two villages situated opposite to each other, on each side of the river:

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the lava running between these two villages, followed the course of the river, and passed between two others, *Thërna* and *Selialand*, about a mile lower down; coming then into an open and level ground, it spread itself out, and formed a small lake of fire, about two miles long and one broad; lying in a direction a little westwardly from the south. The only damage done by this branch was the destruction of the corn and grass land, and some wood; no villages having suffered. Upon the 16th of *August* this branch stopped.

It appears then, from the whole, that the utmost extent of the ground covered with lava, and making the appearance of a fiery lake, was fifteen miles long, and seven broad, in its utmost extent. The edge of it, reckoning all that part south of *Buland*, with all its inequalities on the south side, is upwards of thirty miles long; what it may be on the north is not known, as nobody chuses to venture himself near that part as yet. The perpendicular height of the edge is from 16 to 20 fathoms, so that wherever it came it covered every village it met with, as well as several hills; and those which, on account of their great height, it did not cover, were melted down by it, so that the whole surface was in a fluid state, and formed a lake of fire, in appearance like red hot melted metal.

The whole number of villages totally destroyed are 20 or 21, either by the fire or the water overflowing them. About 34 are very materially hurt, having their lands and woods burnt up; but most of them may be furnished with fresh ground being taken up in their respective neighborhoods. Besides villages, there are seven parish churches and two chapels destroyed. In the whole there were 220 lives lost by the fire, and 21 by water. The rivers that were dried up are twelve; namely, *Tuna*, *Axafardi*, *Hwerfisfiót*, *Skapta*, *Steins-myrisfiót*, *Landa*, *Melquist*, *Green-laekur*, *Tungu-laeker*, *Fedaquist*, *Kararvikarsh-uráur*, and *Hraunfá*.

Besides this immense fire, there happened two other circumstances that are equally wonderful. Two islands have been thrown up. One of these was thrown up in the month of *February* 1784, where there was before upwards of 100 fathoms deep water; it lies about sixteen miles from the land, south-west from *Reikianese* in *Iceland*, and about eight miles from the cluster of islands called *Gierfugla*. By the last accounts this island continued burning with great vehemence, and sent forth prodigious quantities of pumice, sand, and other matters, similar to other burning mountains. The island is somewhat above half a mile in circumference, and full as high as the mountain *Efsan* in *Iceland*. The other island which has been thrown up, is at a greater distance from *Iceland* to the north-west, lying between *Iceland* and *Greenland*: it has burnt without intermission, day and night, for a considerable time, like the other; is very high, and larger in circumference than the other.

We have also some very indubitable accounts, partly by the relation of sailors, and partly by letters from *Trondheim* in *Norway*, that before the fire broke out in *Iceland*, there was a very remarkable eruption in the uninhabited parts of *Greenland*; and that in the northern parts of *Norway*, opposite to *Greenland*, the fire was visible a vast while. These accounts were strengthened by a letter from *Iceland*, bearing date the 21st of *September*; which says, that when the wind was north there fell a great quantity of ashes, pumice, and brimstone, upon the north and west coasts of *Iceland*; and that this continued for the whole summer, whenever the wind was in that quarter; and that the air was always very strongly impregnated with a brimstone smell, and thick smoak.

But to return to *Iceland*. Ever since the first breaking out of the eruption, the whole atmosphere has been loaded with smoak, steam, and sulphureous vapours. The sun became at times wholly invisible, and, when it could be seen, was of a reddish or bloody colour. The fisheries are most of them destroyed; for the banks where the fish used to be, are so shifted and changed, as not to be known again by the fishermen; and the smoak so thick, as to prevent them from going far out to sea, for there is no seeing any object at above the distance of fifty fathom. The water of the rain falling through this smoak and steam, is so impregnated with salt and brimstone, as to destroy the hair, and even the skin, of the cattle; and all the grafs in the whole island is so covered with the footy and pitchy matter before described, that the most of it is destroyed, and what is left is sure poison for any cattle that eat of it; so that those which have escaped the fire are now dying for want of food, or poisoned by the unwholesome remains of the vegetables. Nor are the inhabitants, in many respects, more free from dangers than the cattle. Many have lost their lives by the poisonous quality of the smoak and steam of which the whole atmosphere consisted; particularly old people, and such as had any weakness or complaint of the breast and lungs.

During the fall of the sharp rain which we have before made mention of, there was observed at *Trondheim*, and at other places in *Norway*, and also at *Faroe*, an uncommon fall of sharp and salt rain, which was so penetrating that it totally destroyed the leaves of the trees, and every vegetable it fell upon, by scorching them, and causing them to wither. At *Faroe* there fell a considerable quantity of ashes, sand, pumice, and brimstone, which covered the whole surface of the ground whenever the wind blew from *Iceland*, and the distance between these two places is at least eighty miles. Ships that were sailing between *Copenhagen* and *Norway* were frequently covered with ashes and brimstone, which stuck to the sails, masts, and decks, befnearing them all over

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with a black and pitchy matter. Many parts of *Holland, Germany*, and other countries in the north, observed a brimstone vapour in the air, accompanied with a thick smea; and there fell in some places a light grey-colored substance upon the earth every night, which, by its yielding a blueish flame when thrown on the fire, evidently appeared to be sulphureous: upon those nights in which this substance fell in any quantity, there was observed to be little or no fall of dew. These appearances continued more or less all the months of *July, August*, and *September*.

A more particular account of these appearances, and the periods when they were observed, are published in the *Berlin Advertiser*, No. 96, 1783, and the following numbers, in some of which there is a very accurate account of the two kinds that were thrown up; but I have not seen them.

I shall conclude with giving you a catalogue of all the known eruptions in *Iceland*.

1. Date lost. *Ildborger braun.*
 2. 1000. *Thurrar braun.*
 3. 1004. *Heckla*, for the first time.
 4. 1029. Ditto, second time.
 5. 1105. Ditto.
 6. 1113. Ditto.
 7. 1151. *Trolledynger.*
 8. 1157. *Heckla.*
 9. 1188. *Trolledynger.*
 10. 1206. *Heckla.*
 11. 1210. *Reikenefe.*
 12. 1219. Ditto.
 13. 1222. *Heckla.*
 14. 1222. *Reikenefe.*
 15. 1223. Ditto.
 16. 1225. Ditto.
 17. 1226. Ditto.
 18. 1237. Ditto.
 19. 1240. Ditto.
 20. 1245. *Soelheim Fockul.*
 21. 1262. Ditto.
 22. 1294. *Heckla.*
 23. 1300. Ditto.
24. 1311.

24. 1311. *Roidekambe field.*
25. 1332. *Knappfelds Jockul.*
26. 1340. *Heckla.*
27. 1359. *Trolledynger.*
28. 1362. *Knappfelds Jockul.*
29. 1366. *Lillebered.*
30. 1374. *Heckla.*
31. 1390. *Ditto.*
32. 1416. *Hofde Jockul.*
33. 1422. *Reikenese.*
34. 1436. *Heckla.*
35. 1475. *In the north part of the island.*
36. 1510. *Heckla.*
37. 1554. *In the neighborhood of Heckla.*
38. 1587. *Thingvalla.*
39. 1619. *Heckla.*
40. 1625. *Myradalur.*
41. 1636. *Heckla.*
42. 1660. *Myrdals Jockul.*
43. 1693. *Heckla.*
44. 1721. *Kattlegiäa.*
45. 1725. *Leermicks, Hitboel, and Bjarnafleg.*
46. 1725. *Krafte.*
47. 1727. *Myrdal and Leermick, and Hrossedall.*
48. 1728. *Reiheklöder and Myrvatn.*
49. 1755. *Kattlegiäa.*
50. 1766. *April 15. Heckla, to Sept. 7.*
51. 1771. *June 13. Ditto, three weeks.*

By the great map of *Iceland*, made by the direction of the king of *Denmark*, and completed in 1734, by *Cnopf*, military surveyor, it appears that some of the jockuls, or mountains, cased with ice, have been swallowed up by the convulsions of the earth, in very distant periods. Those of *Breida-merkar* and *Skida*, in *Skastafeld Syffel*, are given as instances.

Probably the great *vatns*, or lakes, with which *Iceland* abounds, may have been once the site of such sinkings of mountains. The ingenious friend to whom I am indebted for the preceding translations, records several instances in other parts

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of the world*. In the island in question, that vast lake *Myvatn* may have been one; its bottom is entirely formed of *lava*, divided by deep cracks, which give shelter during winter to the abundance of trouts this lake is stocked with. It is only five fathoms deep, but originally was of a vast depth. In 1728 it was nearly filled by an eruption of the great mountain *Krafla*: the fiery stream took its course toward *Myvatn*, ran into it with a horrible crackling and hissing; and this phenomenon continued till 1730, when it ceased, being by that time exhausted.

The mountains of *Iceland* are of two kinds, primitive and posterior; the first consist of strata, usually regularly, but sometimes confused, laid on each other. They are formed of different sorts of stone, without the least symptom of fire. Some are composed of different sorts of *saxum arenarium*, or sand, or free stone; petrosilex, or chert, slaty or fissile stone, and various kinds of earths, and boles, and *sléatita*; different sorts of *breccia*, or conglomerated stones; jaspers of different kinds; refracting *spatum*, or what is usually called *Iceland* crystal; the common rhomboid *spatum*; chalcedonies stratified, and botryoid; zeolites of the most elegant kinds; crystals, and various other substances that have no relation to volcanoes. These primitive mountains are the jokkuls or ice mountains, and are of superior height to the others.

The highest is reckoned rather more than a thousand fathoms high. This is *Æfian*, or *Rios*, which consists of great and irregular rocks of a dark grey color, piled on each other.

The central height of the *Ennberg* is five hundred fathoms; of the *Snæfjald Jökul*, is about two thousand two hundred and eighty-seven yards; of the *Snæfjalds nes*, or promontory of *Snæfjald*, is from three to four hundred fathoms. *Thingman-heið*, and *Thorsteiforde-heið*, are rocks very unequal in height; those which have been measured are from two to three hundred fathoms, and others are full five hundred fathoms high; and the two *Eisberges* are to the eye much higher.

Hornstrand, or the coast by the north cape nord, is very high; from three to four hundred fathoms. The fine rocks of *Drango* are most picturesque stacks, seven in number, of a pyramidal shape, rising out of the sea at a small distance from the cliffs; four are of a vast height, and form a most magnificent scenery.

The *Snæfjald* is a mountain of great height; its outskirts consist of enormous rocks piled upon others. Eastward begins the *Eisberge*, soaring to a vast and lofty point. Many parts of this mountain have felt the effects of fire: in some of the melted rocks are large cavities. *Buda-klettur*, a rock at one end of this mountain, is also volcanic, and has in it a great cavern hung with *stalactite*.

* *Wörterbuch* on the Earth, second edit. 71, 72.

Selvalamar is a tremendous range of volcanic rocks, composed entirely of flags, and covered in the season with sea fowl. It is endless to name all the places which bear the marks of fire, in various forms, either by being vitrified, changed to a fiery color, ragged, and black; or bear the marks of having run in a smooth sloping course for miles to the sea, and hardened into memorials of the horrible phenomenon.

The island produces most sorts of the lava which other volcanic places have thrown up; the dark grey perforated kind, similar to the toadstone of *Derbyshire*; the *Iceland* agate, or *pumex vitreus*, both the *niger* and *viridis*: some have conjectured this to have been the *lapis obsidianus* of the ancients, which they formed into statues*. The finest I ever saw was brought from *Vulcano*, off the coast of *Sicily*, but it seems very ill calculated for sculpture. The *pumex vulcani* is also found here, the *cinerarius*, and the *arenaceus*. Besides the *futurbrand*, jet is found here in quantity.

Certain iron ores are found in different parts; and that elegant copper ore, the *malachites*, with a naturally polished green surface rising into tubera, is not unfrequent. *Horrebow* speaks of native silver; but the mineral wealth of the island will probably be long latent. The slavery under which the poor natives labor, will ever discourage from effecting a discovery, of which others are to reap the advantage.

A stratum of sulphur is found near *Myvatn*, from nine inches to two feet in thickness; it is partly of a lemon colour, and partly of a deep orange. Immediately over the sulphur is a blue earth; above that a vitriolic and aluminous earth; and beneath the sulphur a stratum of reddish bole. This sulphur has been worked and refined by the commercial company of *Copenhagen*. Semipellucid, and I think genuine native sulphurs, are unknown in *Iceland*.

BASALTES, in variety of forms or degrees of crystallization, are found in many parts of *Iceland*, from a cracked surface, to a completion of the columnar shape.

Hueravalle is spoken of by *Ollaffen* as the most surprising collection of boiling water, or *jet d'eau*, in the island. The mountain grass grows in plenty near them; and not far from the burning *hugel*, or tumulus, formed round one of these jets, is a lake in which swans were swimming; and in a small spring were several trouts: so near to each other is the cold and the boiling water. Eastward and southward are great tracts of *Kiol-braun*, or tracts covered with vast masses of lava. *Hueravalle* takes its name from *huerfwa*, to whirl round; *wadirbwirfel*

* Plinii Hist. Nat. lib. xxxvi. c. xxvi.

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signifies a whirlwind, and *wattanwirfel* a whirlpool *. Among the many springs near *Skallbolt*, which are called *quallen*, two are very particular: one is on the west side, the other on the east side: the *Icelanders* boil their milk, and dress their meat, by their assistance; and they use them also for washing and fulling. They even calcine with them the dry bones of oxen or sheep.

The burning fountains have been taken notice of (p. 146.) by the author of the *Speculum Regale*.

The same author contends strongly, that *Hecla* ought to have the honor of being the seat of the damned, in opposition to *Ætna*; which he clearly proves by these arguments: ‘*De flammis Ætnæis famâ percepi quod admodum furent; hæ vero et lignum comburunt et terram. Jam in Dialogo sancti GREGORII perhibetur in SICILIA, igneque ibidem ardente, pœnarum locum esse; in igne vero, qui in ISLANDIA flagrat, multo majore verisimilitudine concludi posse reor certum pœnarum locum esse. Ignis enim SICILIÆ, cum terram et ligna consumat, vivas res sibi in alimentum convertit: lignum quippe vitam habet, utpote quod crescat, virentiaque folia emittat; ac tandem mori incipiens, flaccescat et arefcet: quamdiu autem viret, vivum dici meretur; et ubi flaccescit, in extremis agere. Vitam autem terræ non de nihilo tribues, cum insignem fructuum copiam proferat, quibus decidentibus et putrefactis, novos iterum fructus producit; neque minus eapropter vivere dicenda est, quod ex ipsa factæ sint omnes creaturæ corporeæ. Horum utrumque, lignum nempe et terram, ignis SICILIÆ comburit, iisque alitur. Ignis autem ISLANDIÆ ligna terramve, quamvis in eum conjiciantur, non comburit; lapides autem et durissima saxa, ut suum alimentum, consumit, iisque nutritur non secus ac ignis communis aridis lignis. Nec tam dura cautes aut lapis invenitur, quin ceræ ad instar liquefcant, ac deinde, pinguis olei more, flammam concipiant; ligna vero injecta dictus ignis exterius tantum adurit, penitus nunquam consumit. Idcirco quoniam hic ignis inanimatis solum creaturis, cujusmodi lapides et saxa esse novimus, amat accendi, et rebus, quæ a communi igne solent consumi, nutriri recusat, mortuus jure dici meretur; ideoque de ipso, potius quam aliis, verisimiliter concluditur, quod sit ignis infernalis, cum mortuæ sint omnes res quas infernus habet.*

There is at present a revival of the cod fishery on the coast of *Iceland*, from our kingdom. About a dozen vessels have of late sailed from the isle of *Thanet*, and a few from other parts of *Great Britain*. They are either sloops or brigs, from fifty to eighty tons burden. A lug-sail boat, such as is used in the herring fishery, sailed last season from *Yarmouth*, thus equipped: The crew consisted of five men from the town, and five more were taken in at the *Orkneys*. They had

* *Ihre Gloss. Suegoth.* 395.

twelve lines, of a hundred and twenty fathoms each, and two or three hundred hooks, six heading knives, twelve gutting, and twelve splitting knives. They take in eighteen tons of salt at *Leith*, at the rate of three tons to every thousand fish, of which six or seven thousand is a load for a vessel of this kind. They go to sea about the middle of *April*, return by the *Orkneys*, to land the men; and get into their port in the latter end of *August*, or beginning of *September*.

PYRIGAS says, that *Iceland* lay six days sailing from *Great Britain*. A vessel from *Larvick* was, in the last year, exactly that time in its voyage from the *Orkneys* to *Iceland*. With a fair wind, it might be performed in far less time; but the winds about the *Feroe* idles are generally changeable.

LXXI.

The coast of *Unklea* is noted for the place on which commences the great turbot fishery, which supplies the market of our capital. It begins very early in *April*. The fish come to the ground from the north, and move progressively southward. Towards the latter end of *April* the fishermen lay their long lines on the coast of *Holland*; and towards the latter end of *May* they go on the *Flemish* coasts, and continue till the latter end of *August*; about which time the turbots spread, and are caught almost half channel over. They extend even to our northern coasts, but not in numbers sufficient to encourage a stationary fishery. The *Dutch* draw from us large sums, honourably indeed; but the produce of their fisheries is in the hands of a few of our factors, who by help of what are called *stoveboats*, which lie in the salt water off *Graveyard*, bring up to the *London* market just the quantity of the fish which they judge will be wanted; and by those means keep up the price, to the great injury of both rich and poor: the rest is suffered to be spoiled; and what might fill the hungry is hung over-board by the cruel monopolizers. Most of the plate sold in the metropolis are also bought from the *Dutch*. It is customary for our people to purchase these fish at sea; but the *Dutch* themselves bring the turbots to *Graveyard*. It is computed that they annually import about eighty thousand in the season, which continues from *April* to *August*. The fish with which the market is supplied from *November* to *March*, is conveyed by land from *Bath* and *Bristol*. This may be hereafter treated of. The *Dutch* employ in their fishery about fifty vessels, at an average burden of sixty tons. Had the act for taxing the tonnage of these vessels pass, it would have amounted to an exclusion. There is great reason to believe that our own coasts would not have furnished turbots sufficient to answer the demands of the luxury of the times; the markets would have been worse supplied; and the power of monopolizing increased manyfold, by lessening the number of fishermen. Those of *Great Britain* have every sea, in which they may by the law of nations fish, open to them.

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them. The proper bait may be purchased at home; and provided we have sufficient quantity of fish on our coasts, and exert ourselves with the œconomy and industry of the *Dutch*, we need never fear being rivalled by them.

The bait for these fish is the lesser lamprey of the *Br. Zool.* vol. iii. No. 2; the *petromyzon flaviventris* of *LINNÆUS*. This is a small fish, yet of great importance; it is taken in amazing quantities between *Battersea Reach* and *Taplow* mills, a space of about sixty miles, and sold to the *Dutch* for the cod and other fisheries: 400,000 have been sold in one season for the purpose. The price has been forty shillings the thousand: this year the *Dutch* have given three pounds, and the English from five to eight pounds; the former having prudently contracted for three years at a certain price. Formerly the *Thames* has furnished from a million to twelve hundred thousand annually*. An attempt was lately made in parliament to stop the turbot fishery entirely into *British* hands, by laying ten shillings a ton duty on every foreign vessel importing turbot into *Great Britain*: but the plan was found to be derived from selfish motives, and even on a national injustice; the far greater quantity of turbots being discovered to be taken on the coasts of *Holland* and *Flanders*, from whence the *Dutch* are supposed to import annually to the *London* markets about 80,000 fish.

In the present century it has been proved by experiments, that the *Baltic* has an under-current like the freights of *Gibraltar*. An able seaman, belonging to one of our frigates, went in a pinnace to the middle of the channel, and was violently hurried away by the current: soon after he sunk a bucket, with a large ball in it, to a certain depth, which gave a check to the boat's motion; and sinking it still lower and lower, was driven a-head to windward against the upper stream, which had been forced through the sound by some strong gale. The current aloft was not above four or five feet deep; and the lower the bucket was sunk, he found the under stream the stronger †.

The herrings frequented the *Livonian* and *Couland* shores in equal multitudes, till the year 1313, when they drew near those of *Denmark* ‡. They deserted the *Baltic* for some centuries, but in 1753 began again to make their appearance on the *Swedish* coast, and are caught among the rocks and isles (none at sea) from *Gottenburg* to *Stromblad*, a space of thirty-five leagues; and none farther north or south. In the beginning of the fishery they appeared about the end of *July*,

* See these, and many other curious particulars, in the Reports of the Committees for our Fisheries, 1786.

† *James's Hid, Gibraltar*, l. 233.

‡ *Andersen's Diœ. Comm.* l. 102. 157.

or the beginning of *August*, but have gradually altered their season, and of late are seldom seen before the beginning of *November*; neither are they so fat as when they appeared early. In 1781, 136,649 barrels of salted herrings were exported to different parts of the *Baltic* and east sea, the *Madeira*, and *West Indias*, and *France*, and the *Mediterranean*; besides 14,542 barrels of herring oil: but the oil is of very inferior quality to that of whale or liver oil. Formerly the *Swedes* sent great quantities of herrings to *Cork*, from whence they were reshipped to the *West Indias**. This part of the trade has entirely ceased. Possibly these new fisheries may have operated with other causes, to lessen those of *Great Britain*; but I am informed that these capricious fish begin already to appear in the *Baltic* in far less quantities than usual.

LXI.

But *Sweden* exceeds us in the number of fresh water fishes. Besides the *lesser*, and *pride lampries*, the *eel*, the *barbot*, *bullhead*, *perch*, *ruffe*, three-spined and ten-spined *stickleback*, the *loche*, or *cobitis tænia*, lately discovered in the *Trent*; the *trout*, *char*, *grayling*, *gwiniaid*, *pike*, *carp*, *tench*, *bream*, *crucian*, *rud*, *roach*, *graining*, *cyprinus dobula* (*Lin.* 528), and *bleak*, which the reader may find in the *British Zoology*; it has the *sterlet*, or *acipenser rutbenus*, transported from the *Volga* by *Frederic I.* *blennius raninus*, or *ablkussa*, *perca lucioperca* or *gioes*, *cobitis fossilis*, *silurus glanis* or *mahl*, the greatest of fresh water fishes. *Salmo wimba*, *S. albula* or *sückloeja*, *cyprinus aspius*, or *asp.* *C. idus*, or *id.* *C. ballerus*, or *blicka*, *C. grislagine*, or *staem*, *C. wimba*, *C. idbarus*, *C. farenus*, or *faren*, *C. cultratus*, or *skierknif*, *C. biorkna*, or *bicorka*, and the *C. aphyæ*, or *mud*, are all inhabitants of the *Swedish* lakes and rivers, and described in the *Fauna Suecica*, and many of them figured in the beautiful history of fishes by *Mr. Bloch*. *Sweden* wants our *samlet*, *barbel*, *gudgeon*, *chub*, *graining*, and *minnow*. The *carp* is a naturalized fish, and is besides frequently brought there alive out of *Germany*.

LXII.

Since the beginning of the present century, about an hundred and fifty or two hundred *Indian* merchants, from the province of *Multan*, reside at *Astracan*, and carry on a great trade in pretious stones; they live in a large stone *caravan-ferni*. As they die away, or incline to return home, a supply is sent from *India* by their chief, selected from among their relations. As they have no females from their country, they keep, during their residence at *Astracan*, *Fartarian* women, but the contract is only during that time. They are a fine race of men, and are highly esteemed for the integrity of their dealings.

* Third Report of the Committee on the *British Fisheries*.

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The whirlpool called the *Maelstrom* is only quiescent one quarter of an hour, at high and low water; and then alone the fishermen venture to pass: on the return or retreat of the tide, such is the fury of its vertiginous motion, that whatsoever comes within a considerable distance of it, is drawn in and forced to the bottom, where it remains for some hours, after which the shivered fragments appear on the surface. Boats, and even ships, have been swallowed up by it: whales have been known to be caught within the vortex; their struggles to free themselves from the danger, and their piteous bellowings, are said to surpass all description. The solution of this phenomenon is now rendered very easy. It lies in the midst of the isles of *Loeffort*, in a narrow channel, between the isle of *Moskoe* and that of *Ver*; the depth of water is between thirty-six and forty fathoms, but on the side next to *Ver* so shallow, as not to give passage to a vessel without danger of splitting on the rocks. All the bottom is vastly craggy, shooting into stony spires, which appear at low water above the surface; over them the flood and ebb roll with amazing rapidity, and whirl round with a noise equal to that of the greatest cataracts, so that the roaring may be heard several miles distant*. So simply may be explained that wonder which philosophers have styled the navel of the sea; supposing it to have been an abyss which sunk here, and rose again in the gulph of *Bothnia*.

LXVIII.

The lakes *Sig*, *Onda*, and *Wigo* form successive links from the lake *Onega* to the *White Sea*. The lake *Saima* almost cuts *Finland* through from north to south; its northern end is not remote from lake *Onda*, and the southern extends very near to the gulph of *Finland*; a space of near forty *Swedish*, or two hundred and sixty *English* miles. These probably were part of the bed of the ancient freights which joined the *White* and the *Baltic* seas.

LXV.

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LXIX.

The extent of the gulph stream is supposed to be as far as *Nantucket* shoals, which are not less than a thousand miles from the gulph of *Florida*.

LXX.

Let me remark, from Dr. *Blagden* †, the singular difference of warmth in the gulph stream, from that of the sea which limits its edges. In the month of *April*, in north latitude 33, and west longitude from *Greenwich* 76, somewhat to the north of *Charlestown*, the heat of the stream was found to be at least six degrees greater than the water of the sea through which it ran. From observations

* *Torfaus*, Hist. Norveg. 1. 94. Ph. Transf. LX. 42. † Phil. Transf. LXXI. 334.

made

made on the heat, it should seem that the breadth of the stream was about twenty degrees; and that it retains, for so great a part of its course, the heat it had acquired in the torrid zone: which proves the amazing velocity with which it runs. A pursuit of these remarks may be of no small utility to navigators who may have occasion to pass this singular current.

LXXII.

Let me not conceal that *Lapland* enjoys every native fruit of *Great Britain*; the currant, the strawberry, the bilberry, the cranberry, and the cloudberry: which put it on an equality with our own climate, before the introduction of foreign fruits among us. If we can clame the puckering sloe, and crab, we have not much to be proud of; while the *Laplanders* may boast their *aekermurie* (*rubus arcticus*) which with its nectareous juice, and vinous flavour, so often supported the great *Linnaeus* in his arduous journies through the deserts of the country. They may also exult in having given to our gardens the grateful *angelica archangelica*; the imputed gift of angels to men, and in *Lapland* the common inhabitant of the banks of every rill; the *panacea* and delight of the natives, and (preserved) a frequent luxury even in our most sumptuous deserts.

LXXIV.

In a philosophical circuit of the globe, it is easy to observe the exact proportion of necessaries, animal or vegetable, which are allotted by the all-wise Providence to the demands of the inhabitants of the respective climates. To such part of the *Europeans* who were destined to active and exploring life; to the subjection and civilization of distant people, nearly unreclaimed from a state of nature; the means of conveyance, for attaining so desirable an end, were supplied and pointed out. In distant ages, most part of the world was on an equality: the canoe served the navigation of the then unpolished *Briton* and *Gaul*, as it does at present the *Americans* of the recent discoveries. As the light of improvement spread over the western world, the application and (in the case of pride-excited wars) the misapplication of many of the works of nature, became the attention of mankind. The supple willow covered with hides, or the rude tree hollowed into a floating trough, no longer contented the laudable ambition of mankind; we no longer suffered our wants to be supplied by the ships of remote nations. We aspired to be our own carriers; we applied to our forests for the means; and for that purpose the oak first felt the edge of the ax. Commerce and war, the consequence of wealth, increased the demand, and stimulated to the utmost improvement in naval affairs. These arts spread as far as *Europe* was inhabited by an enlightened race; but there is a line which separates the rational from a less rational part of the human creation. The brave, the intelli-

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gent *Swedes* and *Norwegians*, born to conquer, if not destined to explore, are divided by a very narrow space from a race of men, the link the partition between the intellectual and animal creation. The *Laplander*, with few wants, and those to be supplied only from the next forest or lake, has no demands farther than for birch for his canoes, or materials for his sledges. Accordingly we find that every species of tree, except the few I have mentioned, cease before they reach his torpid country. The *oak*, *quercus robur*, is not found even in *Sweden* further than lat. 61. 30. It is met with farther north in *Norway*, in places near the milder air of the sea; but abounds in both kingdoms in their southern provinces. The forests of *Scania* are full of excellent timber, oaks as well as other trees, pines and firs excepted; which give that province quite the appearance of *England*. It has few masses of granite, few iron forges, which, with groves of pines, form the characteristic face of *Sweden*. In *Scania* are placed the royal docks of *Carlescroon*, the seat of the navy of the kingdom, in the neighborhood of the forests, its great support.

The *ASH*, *fraxinus excelsior*, is not found higher than *Gestrícia*, or lat. 61; but in *Norway* is cultivated only as high as *Drontheim*.

The *ELM*, *ulmus campestris*, is scarcely found beyond *Gestrícia*.

The *LIME*, *tilia Europea*, is frequent in all the south of *Sweden*, but grows scarce towards the north. This is supposed not to have been an indigenous tree of *Great Britain*.

The *BEECH*, *fagus sylvatica*. There are vast forests of this tree in *Scania* and *Smoland*; every where in *Babus*, but seldom found north of that province, or lat. 59. This is the tree which *Cæsar*, from misinformation, denies to our island; but vast native woods are found in *Buckinghamshire*, and some adjacent counties. Not indigenous of our northern counties.

The *HORNBEAM*, *carpinus betulus*, is found in forests; in *Scania* commonly, but more rare in *Smoland*, especially beyond *Wexio*, or about lat. 57.

The *ASPEN*, *populus tremula*, is found from the highest alps of *Lapland*, to the lowest places of *Scania*; the *Laplanders* call it *supp*. *Linnaeus*, in his *Flora Suecica*, refers to it in his *Flora Lapponica*, yet omits it in that admirable work. The rein-deer are very fond of the fresh leaves, which are often gathered for winter food for cattle: the bark is made into meal for cattle, and the leaves and bark into a tea for calves, in *Norway*.*

* *Gunner's Fl. Norveg.* No cxxxvii.

The WHITE POPLAR, *populus alba*, is scattered over *Scania*, but is not a native, having been introduced there with the BLACK POPLAR, *populus nigra*, of late years, and bears the winter very well in *Upland*. It is doubtful whether these are natives of *Scotland*.

The MAPLE or SYCAMORE, *acer pseudoplatanus*, is found in the southern parts of *Sweden*, and rarely on the mountain *Hyka* in *Dalecarlia*, one of its northern provinces. It grows in *Romidale* and southern *Norway* more frequently; is cultivated in *Drontheim*. Mr. Ray suspects it not to be a native of *England*.

The LITTLE or COMMON MAPLE, *acer campestre*, is rarely found above two *Swedish* miles from *Lund*; possibly not a native *Swedish* tree: the largest I ever saw was at the duke of *Argyle's*, at *Inverary*.

All the above are found in some part or other of *Great Britain*, more auspiciously favored by nature for the growth of trees and plants than northern *Sweden*. No blame can rest on any nation, to whom the sun has denied its fuller influence: let such exult in vigor of body and acuteness of intellects, perhaps superior to those on whom it darts its enervating beams, and bestows every species of enfeebling luxury.

I request leave to make, by the following catalogue, a comparison between the climate of *Sweden* and that of *England*. These plants bear the utmost severity of our cold; yet are obliged in *Sweden* to be sheltered, during winter, under the protection of a green-house. A few specimens, out of a number, will suffice.

White jasmine,	<i>Jasminum officinale</i> .
Yellow jasmine,	<i>J. minus fruticans</i> .
Phyllereca,	<i>Phyllereca media</i> .
Common sage,	<i>Salvia officinalis</i> .
Rosemary,	<i>Rosmarinus officinalis</i> .
Scarlet monarda,	<i>Monarda fistulosa</i> .
Male dogwood,	<i>Cornus mas</i> .
Common holly, A.	<i>Ilex aquifolium</i> .
Prickly buck-thorn,	<i>Rhamnus paliurus</i> .
<i>Virginian</i> sumach,	<i>Rhus glabrum</i> .
<i>Laurus tinus</i> ,	<i>Viburnum tinus</i> .
Pinnated bladder-nut,	<i>Staphylæa pinnata</i> .
Scarlet flowering maple,	<i>Acer rubrum</i> .
Spurge laurel,	<i>Daphne laureola</i> .
Bay-tree,	<i>Laurus nobilis</i> .

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Arbor judæ,	Cercis siliquastrum.
Garden rue,	Ruta graveolens.
Pomegranate,	Punica granatum.
Common almond-tree,	Amygdalus communis.
Portugal laurel,	Prunus lusitana.
Cockspur thorn,	Cratægus coccinea.
Common medlar,	Mespilus germanica.
Flowering raspberry,	Rubus odoratus.
Tulip-tree,	Liriodendron tulipifera.
Spanish tree germander,	Teucrium latifolium.
Garden thyme,	Thymus vulgaris.
Broad-leaved lavender,	Lavendula spica.
Yellow Jerusalem sage,	Phlomis fruticosa.
Trumpet honeysuckle,	Bignonia radicans.
Common laburnum,	{ Cytissus laburnum; sometimes in open air.
Bastard acacia,	Robinia pseud-acacia.
Climbing milk-vetch,	Glycine apios.
Common box, A.	Buxus sempervirens.
Mulberry,	Morus nigra; sometimes in open air.
Walnut, the nuts of which will not ripen,	{ Juglans regia
Chestnut,	Fagus castanea.
Western plane,	Platanus occidentalis.
Common cypress,	Cypressus sempervirens.
Western arbor vitæ,	Thuja occidentalis.
Male myrtle-leaved sumach,	Coriaria multifolia.
Butchers broom, A.	Ruscus aculeatus.

One other shrub, which resists the severest of the *English* winters, is preserved in *Sweden*, during that season, in the *tepedarium* or dry stove, without tan: this is the common laurel, or *prunus lauro-cerasus*. I may add the *cistus ladaniferus*, which grows with great vigor on the rocks of the beautiful inclosure called *Arcadia*, near the town of *Conwy*, belonging to my friend *Owen Holland*, Esq.

Pine-apple, the *bromelia ananas*, has been introduced into *Sweden*, and fruit cut at the seat of *Baron de Geer*, at *Leusflad*. Peaches, nectarines, and apricots, are sheltered during winter; but, notwithstanding art is used, travellers do not commend them. Apples, pears, plums, and cherries, are cultivated only in the southern parts; but (the cherries excepted) afford a very indifferent fruit. In *Scot-*

land they succeed very ill: nonpareils and golden rennets will not ripen even at *Edinburgh* without the help of a wall. Yet in the middle of *August* 1769, I have seen, at *Castle Braun*, in *Rosshire*, in about *lat. 57. 42*, *Turkey* apricots, orange nectarines, and a soft small peach, against a common wall, ripe: but at the same time other peaches, nectarines, and green-gages, far from maturity.

Notwithstanding *England* is so noted for its vast produce of apples, yet such is its demand for them, that it imports great quantities from *Normandy*, and even *North America*. In 1785 the duty at the custom-house amounted to 565*l.* 16*s.* at the duty of about 2*s.* per bushel; that was in a year of scarcity: but in the preceding year, which was remarkable for its plenty, it amounted to 278*l.* 11*s.*

Wood-strawberries are the most delicious fruit in *Sweden*, and abound in most amazing quantities. The great *LINNÆUS* kept himself free from a fit of the gout for several years by the liberal eating of this fruit.

In respect to the production of *Ceres*, it may be said, that the goddess extends her bounty in form of wheat with a sparing hand, and that only in the southern provinces. Barley is the general food of the common people; and in the sub-alpine parts of the country, oats alone will attain maturity*.

WINTER begins in *Sweden* with what are called the *Jarnnatter* or *iron nights*, which seldom exceed three or four, and happen between the 19th and 31st of *August*, in the latitude of *Upsal*. After these, barley ceases to grow, and the plants which require a green-house are no longer suffered to be abroad. Water-fowls almost of every denomination disappear in autumn. In *October*, the bear, badger, hedgehog, and mole, retire to their winter quarters. In the same month is the first appearance of ice. In *November* is alternate snow and ice, an unpleasant thaw, and rain. The ditches are filled with water, till the snow takes firm possession of the ground, and winter reigns uninterrupted for many months. Between the 20th and 28th of *February* are the *days of steel*; the ice on the lakes cracks longitudinally, the timbers of the houses snap with a great noise, and horse-dung spurts out icy particles a foot high. In *March* begins the unpleasant spring: the snow begins to melt against the walls, the ice is loosened from the stones, and the hills begin to appear of their own color. Inundations of snow-water, in *April*, cover the ground; the rivers are unbound, and the ice floats down. Birds of various kinds return; the sight of the *wheat-ear* confirms the flight of any more severe frost, except the few *leaden nights* in *May*; after which summer is confirmed, and the return of birds is completed. In *June* are the *brazen nights*, which, with the *leaden*, reach *Sweden* eight days after they are felt in *Lapland*, on the thaw of its snow. These are the revolutions of a *Swedish* year.

* *Amer. Acad.* III. 77.

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Among the *Lithophytes* is that elegant madrepora or coral, called the madrepora pertusa, *Afl. Nidr.* iv. tab. 11. fig. 1. The isis hippuris—tab. iv. fig. 8. The gorgonia lepadifera—11. tab. ix. fig. 2. Gorgonia placomus—111. tab. i. fig. 1. which grows to a vast size. Another species of gorgonia, with slender cylindrical branches, figured in the *Afl. Nidr.* 11. tab. ix. fig. 1. The vast alcyonium arboreum—iv. tab. xi. fig. 1; and some other species sent to me by the late bishop *Pontoppidan*, from the *Norwegian* seas; among which shelter infinite numbers of marine animals. On one, I first discovered a *concha anomia* in the recent state, which LINNÆUS named the *anomia retusa*, Vol. I. p. 1151. No. 225.

Among the animals which LINNÆUS calls *vermes*, is found the *pennatulus mirabilis*, *Faun. Suec.* No. 2261; and a very singular long-spined *echinus* with a small body, engraven by the above-cited worthy but credulous prelate. As a member of the royal society at *Drontheim*, in *Norway*, I wish my brethren would be stimulated to a due attention to the wonders that surround them, and form a local museum, confined to the subjects of that extensive kingdom.

Exotic fruits flung on the coasts of *Norway*, which I have not described in my voyage to the *Hæbrides*, are the following:

Pods of the *castia fistulosa*.

The kidney-shaped nut of the *anacardium occidentale*.

Fruit of the *cucurbita lagenaria*, *pisidia erythrina*, and the *cocos nucifera*.

The account of the fishes of the *Norwegian* sea may be thus improved.

Among the fishes which have hitherto shunned our shores, are the *raia clavata*, Muller, No. 209. *Squalus spinax*, No. 312; length from twenty inches to three feet: the back is purple, the belly flat and black: it is found in the muddy valleys of the sea, of one or two hundred fathoms deep, off *Christianfand*. *Sq. centrina*, 313, which extends to the *Mediterranean*, the *Pesce Porco* of the *Italians*. The *chimæra monstrosa*, 320, a most singular fish. *Syngnathus typhle*, and *æquorcus*, 324, 325. The *regalecus glesæ*, *sild kong*, or king of the herrings, 335; *African*. *Icn.* tab. xi; found about *Glesæ*, near *Bergen*, a most uncommon eel-shaped fish, from ten to eleven feet in length, with a dorsal fin extending the length of the back, and uniting with that of the tail; its pectoral fins filiform, ovated at their ends, and one third the length of the body. *Gadus brome*, 341, is from two to three feet long: an article of commerce frequent on all the coast. *G. dipterygius*, or *lyrke lang*, 346. *Blennius raninus*, et *fuscus*, 359, 360. *Echinis ranra*, 361, which extends to the *East* and *West Indies*. *Coryphæna novacula*, 362, common to the *Mediterranean*. *Coryph. rupestris*, 363, which has also been taken

LXXVI.

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taken near *Gibraltar*. *Gobius jazo*, 365. *Pleuronectes cynoglossus, limanda*, et *linguatula*, 372, 375, 377. *Sparus erythrinus*, 380. *Labrus fuillus*, 381. *Percanorvegica*, 390, *Afcan. Icon.* tab. xvi. a red species, very fat and nourishing, which grows to the length of two feet and a half, peculiar to the *Norden fields*. *P. luciperca*, 391, a fish of the lakes. *Scamber pelagicus*, 398; *Lin.* 495. which possibly is found even at *Jamaica*. *Silurus azotus*, 404, the *sockat* of the *Norwegians*, *Pontoppidan* 11. tab. iv. p. 150; *Catesby*, 11. p. 23: and *salmo arcticus*, or *capelan*, a species so abundant about *Newfoundland*.

The *salmo filus* or *fil*, 418; *Afcan. Icon.* tab. xxiv. is the only species of salmon which never quits the sea: is excellent food, but full of bones: a scarce species, and grows to the length of two feet; of a pale brown color on the back, with silvery belly and sides. The *salmo kulmund*, *Afcan. Icon.* xxiii. is taken only in the river *Randsford*: grows to the length of two feet; of a purple color, spotted with silver, and minute black spots: unlike other trouts, it never quits its station.

LXXVII. The cod-fish in these seas grow to the weight of fifty pounds, and from two to four feet in length: a single ovary of these fish has been known to weigh fourteen pounds, and to contain nine millions of eggs: we need therefore never fear exhausting the species. Ship-loads of the spawn are annually sent to *France*.

LXXX. The coast of *Finmark* is attended, for a considerable way, with a chain of isles like that of *Norway*.

LXXXVIII. In respect to the temperature of the summer air in *Spitzbergen*, Lord *Mulgrave* makes these remarks:—At the noon of *July* 20th, in lat. 80. 30. long. 3. 26. the mercury stood at 37; at midnight at 33 $\frac{1}{2}$; and in lat. 80. 37. at noon at 48. In lat. 80. 4. long. 2. 12. on *July* 16th, at noon at 49, at midnight at 48. This was the greatest degree of warmth felt in this arctic region during the voyage.

Coals are also found in *Spitzbergen*; by means of which, seven people, left there accidentally, were enabled to bear the severity of the winter.

LXXXIX. In the enumeration, add, beneath *Orknies*;

	Perfect.	Imperfect.	Total.
Holland has	809.	275.	1084.

XCII. Before I quit *Spitzbergen*, let me add, that to the south of *Statz* island, and about ten leagues distant, is *Hope* island; of a singular form, nine leagues long, and only half a mile broad; divided into five very high mountains, gradually decreasing

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creasing in height from the north-east*. On the north is good anchorage in twenty fathom water. The south side has a rocky bottom, and for some way to the east and west the sea is shallow. At the north-east end is a hollow, the haunt of walruskies, and of myriads of gulls and other sea-fowls, which darken the air with their numbers.

The *Dwina* is navigable to a great distance, even to *Wologda*, a thousand versts, or about six hundred and sixty-six miles by water. The isles of *Podefemskoe* form the *Delta* of this great river. The city of *Archangel* is approachable by two channels, an eastern and a western, each above thirty miles in length; their depth is from three to eight fathoms. The city stands on the banks of the eastern channel. The isles are separated from each other by a narrow strait, which divides them midway, parallel to the greater channels, and is passable by *Russian* *lodies*, the Northern Pilot says by larger vessels.

As late as the year 1784, a hundred and twenty ships sailed out of the port of *Archangel*.

From the *North Cape* the coast of *Finland* runs easterly: *North-kyn* or north-point is a distinguished promontory; between them are the *three sisters*, conic rocks of a grotesque appearance. From thence to *Tana bay* is high and craggy land, and a bold shore. The river *Tana* falls with a prodigious noise into the end of the bay, forming a noble cataract; like the *Aden*, it rises far in *Lapland*, and, after a long course through *alps* and *morasses*, here has its discharge. Among the lesser rivers which feed it, some were famous for beavers and pearls. The *Laplanders* had therefore, in 1652, this river committed to their special care. The *Tana* is the most celebrated of any in the north for its salmon; they are distinguished by their depth, shortness, and superior excellency. The fishery begins early in the spring, and, by the laws of *Norway*, must end in fourteen days after the feast of St. *John* the Baptist.

To the east of this is *Wardoe*, an island remarkable for having on it the most northern fortrefs in the world, and of unknown antiquity, built at the extremity of *Norwegian Finmark*. It commands a fine harbour, and probably was built to protect the fishing trade, the only object it could have in this remote place. It has caused an assemblage of about three hundred *Norwegian* cottages, the habitations of fishermen. Beyond the adjacent promontory, *Domesness*, the sea runs westward, and forms a deep bay. The river *Pæis* is the boundary between the

* Northern Pilot, page 59.

SIR HUGH WILLOUGHBY'S EXPEDITION:

Muscovitch and Norwegian dominions. *Kegor*, or fishers island, stretches along the shore a little to the east of the mouth of the *Pæz*. A vast hollow sea is observed off this island, arising from the N. W. and N. E. winds. Let it be remarked, that the land takes a southern trend from the north cape to the extreme of the *White Sea*; and the hills gradually decline in height, and the isles diminish in number. *Kola*, a vast river, opens a little to the east of *Kegor*, and is about a mile broad near the town of *Kola*, above seven leagues from its mouth. This, above two centuries ago, was the great resort of *English* and *Dutch*, who carried on a great trade in salmon and fish-oil*. The oil is extracted from the livers of the sharks, such as the *brugde*, *baa-mer* or basking shark, *Br. Zool.* III. No. 41; the *baa-skiærdin* or white shark, *Br. Zool.* III. No. 42; and the *baa-brand* or blue shark, No. 43. All these species having for a long time been taken for this purpose †, chiefly in the winter, and by the natives. Cod-fish, hollibuts, and most of the valuable fish of the *German* sea, abound as far as this high latitude. Even the tunny is found to pursue the mackarel into these cold seas ‡. The small isle of *Kilduyn* lies a little to the east of the *Kola*; and farther on the *Sem-gjilrowow*, or seven islands; not far from which is the river *Arzina*, memorable for the fate of our illustrious countryman, Sir *Hugh Willoughby*, who, in *May* 1553, sailed from *Ratcliff*, on the first voyage for the discovery by sea of *Muscovia* by the north-east, a country at that time scarcely known to the rest of *Europe*. In *August* he was separated from his consorts in this high latitude, and driven by tempests into this part, where he was found, the spring following, by some *Russian* fishermen, with all his crew, frozen to death. His more fortunate consort *Richard Chancellor*, captain and pilot major, pursued his voyage, and renewed the discovery of the *White Sea*, or bay of *St. Nicholas*, a place totally forgotten since the days of *OETHER*. The circumstances attending his arrival exactly resemble those of the first discoverers of *America*. He was struck with astonishment at the barbarity of the *Russian* inhabitants. They, in return, stood amazed at the size of his ship; they fell down and would have kissed his feet: and when they left him, spread abroad the arrival of "a strange nation of singular gentleness and courtesie." He visited in sledges the court of *Basilovitz* II. then at *Moscow*, and layed the foundation of immense commerce with this country, for a series of years, even to the distant and unthought-of *Persia*.

It is singular, that so very little has been preserved concerning that very illustrious character, Sir *Hugh Willoughby*. It appears that he was son of Sir *Henry Willoughby*, knight and banneret, by his third wife *Elen*, daughter of *John Eger-*

* Hackluyt, I. 416. † *Torfai, Hist. Norveg.* I. 99. *Muller, Zool. Dan.* N^o. 315, 316, 318. ‡ *Leems Latjn.* 326. *Poutopp.* II. 153.

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son of *Wrine Hall*, in *Cheeshire*, Esq. Sir *Hugh* married *Jane*, daughter of Sir *Nicholas Strelley*, of *Strelley*, in the county of *Nottingham*, Knt.; by her he had a son named *Henry*, of whom I do not find any account. They were originally of *Riseley*, in *Derbyshire*; Sir *Hugh* is filied by *Cambden*, of *Riseley*. *Thoroton* adds the same title to an ancestor of the same christian name, who died in 1491. They changed their residence to *Wollaton*, in *Nottinghamshire*, the princely and venerable seat of Lord *Middleton*, who acquired it by the marriage of his ancestor, Sir *Perceval Willoughby*, with *Brigitta*, daughter and sole heiress of Sir *Francis Willoughby*, founder of that noble pile. The portrait of the celebrated Sir *Hugh* is to be seen there; a whole length, in very large breeches, according to the fashion of the times, in a room hung with velvet, with a table covered with velvet, and a rich carpet. From his meagre appearance, the servant tells you, that it represents the attitude, &c. in which he was found starved. This trivial account is all that is left of so great a name.

The river *Ob* rises from the *Altine*, or, as the *Russians* call it, the *Telefkoe*, a large lake; it swarms with fish. In lat. 61. it receives the river *Irtische*: at this junction the *Ob* divides into two channels, and runs separated for a long tract; unites again, and near *Beresow*, its stream is broken by numbers of small isles. Near *Obdorskoe Ostrog* it takes an eastern course, and discharges itself into the great bay of its own name.

xcvi.

The *Irtische* has also a most extensive course: it rises in lat. 47. runs through the great lake *Saisan*, takes a north-westerly direction, and in lat. 58. 12. receives another great river, the *Tobol*: and on the forks of these rivers, on the northern side of the *Irtische*, stands *Tobolski*, the present capital of *Siberia*.

In the gulph of *Kara* are taken the *salmo kundsha*, *Pallas Itin.* III. No. 46; the *nawagu*, a sort of whiting; *salmo autumnalis* or *emul*, *pleuronectes glacialis*; and the *ottus scorpius*, *rumsha*, or father lasher, *Br. Zool.* III. No. 99.

xcvi.

The *Mollusca* and *Vermes*, which extend to the gulph of *Kara*, the beginning of the *Icy sea*, are, the *aphrodita squammata*, *nercis cylindraria*, *aetinia equina* et *senillis*, *ascidia globularis*, *Pallas Itin.* III. App. No. 57; *buccinum glaciale* et *undatum*, *murex antiquus* et *canaliculatus*, and the *tellina atra*.

xcvi.

The *monoculus arcticus*, *PALLAS ITIN.* III. App. No. 58. swarms in the lakes near the *Icy sea*, and is the great support of the multitudes of water-fowl which make them their summer retreat. Among the *Zoophytes* of the *Frozen ocean* are the *schbara foliacea*, *fertularia dichotoma* et *cupressina*, *alcyonium digitatum* et *gelati-*

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nosum, and the *spongia oculata*, and *infundibulum*. And of the *Fucus* tribe, the *saccharinus*, *edulis*, *quercus*, *ceranoides*, *aculeatus*, *glacialis*, and *truncatus*, PALLAS ITIN. III. N^os 135 and 136; and the *ulva intestinalis*.

xcvi. Besides the ARGALI and the MUSK, the OGOTONA HARE, *Hist. Quad.* No. 249; the CARACO RAT—No. 299; the GARLIC—No. 315; and perhaps the ECONOMIC—313, first appear to the east of the *Jensei*; and the IBEX or WILD-GOAT again begins to shew itself, after the long interval of the vast tract between this country and the *Carpathian* mountains.

xcvii. When the ice breaks in lake *Baikal*, the *salmo oxyrhynchus*, and the *lenki*, lay their spawn in the sandy shores, but in summer retire into the deep water.

The *callionymus baikalensis* is a fish peculiar to the lake; is about nine inches long, of a most soft and tender texture, and flowing with oil: it is never caught in nets, or any way alive. It inhabits the vast subaqueous caverns of the lakes, at great depths, particularly near the northern shores, in places three or four hundred fathoms deep. They are never seen but when they have been disturbed by the violent summer storms, when they are seen floating on the surface, or flung in vast heaps on the shore, particularly on the *Pofolskijs*, and the mouth of the *Selinga*. The people extract oil from them, which they sell to the *Chinese*.

The *salmo autumnalis* or *omul*, is taken in the lake in *June* and *July*, in its passage still farther south.

Vast quantities of the skins of the *oniscus trachurus* are seen floating on the surface of lake *Baikal*; a species of insect which abounds on the rocky shores, and is the food of the *salmo lenok* and *sig*. PALLAS ITIN. III. 293. and App. No. 54.

ci. The BEAR ISLANDS were farther explored in 1763, by the two land surveyors, *Andrejesf Leontief*, and *Lyssof*. They began their journey on *March* 4th, from *Nische Kowimskei*, in sledges drawn by dogs: on *April* 22d they reached the shore of the *Icy sea*, and opposite to the mouth of the river *Krestowa*, went on the ice in a strait direction to the first island; on landing they found it to consist of small yellowish gravel, overspread with rocks of granite of immense bigness, but productive of nothing but moss and short grass like the *tundra*, or the great northern tract on the continent. They found there the remainder of a jurt or tent, made of the floating timber which abounds in this part of the sea. It did not seem of *Russian* construction, therefore must have been built by some of the natives of the continent, who came here for the sake of the chase of sea animals.

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In one part of the isle is a lofty hill of a most rugged form ; having to the east a dreadful precipice. This island seemed fifty versts long and forty broad.

They afterwards visited four other isles ; near to the third was a rock separated about eleven fathoms from the shore, connected by the shore, at low water, to the island. It consisted of brittle granite, and was about ten yards high. About six yards from the bottom was a declivity, on which were placed ten fir trees with their roots upwards ; over the roots were placed planks covered with gravel, along the sides were boards six spans high, and over the whole had been a roof, now fallen down, formed of small pieces of floating timber, fastened with leathern straps, and covered with gravel : it had one entrance from land, another from sea ; and was about five fathoms and a half long, and four broad, and of most coarse workmanship. On the same isle were traces of a hut, and two cellars. —No animals were seen on them but *polar bears* and *arctic foxes*.

By the accounts of these adventurers, the farthest isle must extend far to the east, for they assert, that it lay opposite to the bay of *Tschaoún*. On this island the provisions for their dogs began to fail. They were obliged to set out on their return on the 12th of *April*. Their whole journey, and their return to the continent, was comprehended in five or six days. *Neue Nordische Beytrage*, I. 231.

I shall endeavour to make some addition to the accounts of the *Tschutschis* given by Captain *Cook*, from two relations preserved in the *Neue Nordische Beytrage* ; as any thing relative to so remote a people cannot but be acceptable.

The first is from the journal of the *Cossack Nicolai Daurkin* ; who, by private direction from his commander, feigned a desertion from the *Russian* post on the *Anadyr*, to the nearest post of the *Tschutschis*, was well received by them, and continued with them from *July* 20th, 1763, to the winter of the same year. This journal relates chiefly to the isles intermediate between *Asia* and *America*, in *Bering's* streight. In *October*, when the sea between the *Asiatic* and *American* land was frozen, he procured a sledge and a couple of rein-deer, and, attended by one of the *Tschutschis*, who had adopted him as a kinsman, passed over to the first island, and arrived there in five or six hours. The inhabitants received them very kindly ; but instantly asked for some tobacco leaves ; which being presented to them, they in return presented the travellers with some of their cloathing made of furs. The natives wore dresses made of the skins of rein-deer ; and lived on the flesh of whales, walruses, and seals. For want of wood, they dressed their food by means of lamps, made of a stone hollowed on the top, into which they poured train-oil, and into that they put a wick made of a soft mois, a sort of *sphagnum* or bogmoss, tied with strings, made of the bowels of animals : with these lamps they not

CXII.

only dressed their meat, but also warmed themselves. The natives of this isle are called by the *Tschutshi*, *Achilaet*.

On the second isle live the same kind of people, who call it *Pejerkely*. The chief of them bore each side of the lips of their children, and introduce into them pieces of the teeth of the walrus: in other respects, they are clothed like the natives of the first isle. These were the two islands seen in the streights by Captain COOK, but were neither named or visited by him. These people had intercourse with the *Tschutshi*; for in one of the engagements which Colonel *Panlutski* had with them in 1731, he found one of the islanders among the slain*, with his lips bored as before described.

DAURKIN mentions two ranks of *Tschutshi*; one who have herds of rein-deer, and others which have none; the last live in holes below ground, and subsist on the flesh of sea animals entirely: but the others, in certain seasons, apply themselves to the chase of sea bears, walruses, whales, and *belugas*, or the white dolphin.

The second journal was made by *Iwan Robeles*, a *Kasak Stonik*, or a *Cossack*, who commanded a hundred men. In 1779 he was dispatched, like the former, as a spy into the country of *Tschutshi*; on the 20th of May he reached the *Serdze kamon*, in the bay of *Nofiban*. He observed there, that the natives possessed rein-deer treated those who had none as the *Russians* do their vassals, and obliged them to fish for them, and to furnish them with train-oil, and the flesh of sea-horses; for which they supplied them with that of the rein-deer.

On July 17th, *Robeles* reached the village *Jagaagein*, and from thence crossed a bay, eight versts broad, to the village *Nernegin*: here the *Tschutshi* mentioned to him the arrival of Captain COOK, in 1778, and the intercourse, as related by Captain COOK, in vol. II. p. 447, of his voyage. *Robeles* fixes the latitude of the place where he received his account in 65. 48. and in longitude 206. 30. The same people remembered also the visit paid to them by *Bebring*, several years before, when forty of the natives visited his ships in four leathern boats. Two important circumstances in the annals of the country.

Robeles also visited the two intermediate isles; one he calls *Imoglin*, which was five versts long, and two broad. It had two villages, containing two hundred and three males, and a hundred and ninety-five female inhabitants. It lay forty versts from the *Asiatic* shore. The second isle he calls *Ijelgin*: its length was three versts; its breadth one and an half: its distance from *Imoglin*, three versts; from *America* about thirty. Its number of inhabitants eighty-five males, and seventy-nine females. The chief of this isle was a native of *America*.

* Découvertes faites par les Russes, I. 172.

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He assured *Robelef* of a fact too curious to be omitted—that there was a colony of *Russians*, which have been long settled on that continent: that they are distinguished from the *Americans* by their long beards, and by their language: that they can write, say their prayers out of books, and worship pictures. *Robelef* wished earnestly that the chieftain would bring him over to his countrymen; but was told he did not dare to do it, lest *Robelef* should come to any mischance, for which he should be answerable to the *Tschutschis*.

ROBELEF was also told by a *Tschutschis*, who had formerly crossed to *America* for the sake of trade, and made acquaintance with a person, who afterwards visited him in the isle of *Imoglin*, and brought to him a board, on which was written on one side red characters, on the other black; and said he had it from people with beards, who desired him to deliver it to the *Russians* who were in garrison at *Anadirsk*; and that the purport of it was to obtain iron from them. The *Russians* of that garrison had a tradition, that out of seven *kotches* or vessels, which once sailed from the mouth of the *Lena*, along the coasts of the Icy sea, to double the *Tschutschis* point, three were never more heard of. These they believe to be the founders of this colony: but whether it has any better foundation than the story of the *Welsh* settlement in *North America*, by the sons of *Owen Gwynedd*, in 1170, appears to me a matter of great doubt.

ROBELEF informs us, that there is no visible ebb or flow in the Straights of *Behring*, and only a moderate current, running in summer from the Eastern ocean northward into the Icy sea, and about *August* turns to the south, and brings with it the floating ice. He adds, that the tide on the *Tschutschis nos* flows six feet.

The *Tschutschis* gave *Robelef* much information respecting the topography of the opposite coast of *America*: from these accounts a map* is formed (with the assistance of that by Captain *COOK*), in which is placed a vast river, emptying itself into the *Icy sea* a little to the south of *Cape Mulgrave*; then making a bend southerly, and taking a very long course in that direction. Its banks are made as full of towns and villages (all of them named), as the banks of the *Thames*; nor are the coasts, from its mouth to *Norton* sound, made less populous; and those from point *Shallow Water* to *Shoalness* vie in that respect with all the preceding. As Captain *COOK* met with no such marks of population, I must suspend my belief till these coasts have been further explored; which the spirit of curiosity, which now reigns, makes me not despair of seeing effected.

* See vol. IV. of *Neue Nordische Beytraege*, and the whole narration, at p. 105.

MIGRATION OF THE REIN-DEER.

The *Tschutschki* country is overgrown with yellow and white moss, which nourishes vast flocks of wild rein-deer. These animals are accustomed, in *May* or *June*, as soon as the *Anadyr* is clear from ice, to swim over the river by thousands, to the cold woodless countries towards the Icy sea, to save themselves from insects; and they retire again in *August*, and the beginning of *September*, to the woods, to change their horns. The neighboring inhabitants take the advantage of their migration, to kill great numbers of them for their provisions. The people are at this time particularly careful to avoid making much noise, or raising smoke in those parts where the rein-deer pass; and watch the first harbingers of their arrival. The hunters assemble in small boats, and when the herd of rein-deer is crossing the river, they row amongst them, and kill with lances as many as they can, which amount often to several hundreds. The herds crowd, during three whole days, so close together, that they cannot escape; but after three days the whole march is over, except by chance a single deer is now and then seen. The greatest number of rein-deer killed in this encounter are females (*Waschenki*), which cannot so easily make their escape, with their young ones, as the bucks, who are always foremost, and retire therefore sooner. The rein-deer in these eastern parts are in general much smaller than elsewhere in *Siberia*, the largest buck weighing no more than four puds, and a female about two and a half. The flesh, which is dried for preserving, is tied together in bunches, which contain two deer, and each bunch weighs a pud and half or two puds*.

CXXXIII.

STELLER found, on *Behring's* island, two hundred and eleven species of plants, of which more than a hundred grow in *Siberia*, and other mountainous countries; many are common to the eastern side of *Kamtschatka* and *America*. Brush-wood is only met with in the broadest part of the island. Near the northern part are some small alders with sharp-pointed leaves, and some wild roses. The *betula nana* grows in the marshes; and on the hills are some small junipers, and the *forbus aucuparia* or *wicken* tree.

The plants, not enumerated in the list of those of this island, are

Mimulus luteus.
Fumaria.
Fleris pedata.
Polypodium fragrans.
Andromeda polyfolia.

Cornus herbacea.
Epilobium angustifolium.
Cochlearia danica.
Pulmonaria maritima.

* A pud is 40 *Russian* pounds, or 36 *English*. Mr. Cox.

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The *Ojliaks*, to this day, in their dances put on masks, change their dresses frequently, and imitate the forms of beasts and birds, and often in a manner so striking and satirical, that one is surprized to hear of so perfect a pantomime among such a savage people. But would not ignorance or superstition ascribe to a supernatural metamorphosis these temporary expedients to deceive the brute creation, or to afford amusement to their countrymen by these frolicsome masquerades? The *Americans* may carry themselves thus dressed into the field of battle, as the *Apulian* hunter did, who fell by the hand of *Camilla*. Dress and arms were similar;

CLXI.

Caput ingens oris hiatus,
Et male texere lupi, cum dentibus albis:
Agrestisque manus armat sparus.

The height of the mountain on *Mayen's* isle is so great, that it may be seen at the distance of thirty leagues. Many parts of the coast are from twenty to thirty fathoms high. The sea at the north end is often frozen ten miles from the shore; and on one part of the isle are three stupendous icebergs, or mountains of ice. Off the north-east end are alternate calms, and sudden gusts of wind like whirlwinds, which make navigators shun the approaching it from that quarter.

CLXXVII.

The bottom of the sea round the isle is rocky and uneven, and of very various depths. There are places where there is only six or seven fathom water, with a black sand, possibly volcanic; and at a small distance is water of three hundred fathoms. In other parts the bottom is rocky, and most unfit for anchorage: a few creeks, pervious by difficult and narrow inlets, are capable of affording shelter, in this horrible spot, to a few shallows; but ships must anchor without, and then with the most sedulous circumspection.

The ships destined for the *Greenland* whale-fishery often visit this island first, for the sake of the seals, which are here in great numbers upon the ice. They are killed for the sake of the oil, which is extracted from their blubber; and for their skins, which, after being salted, are kept in casks, and used in *England* for making of boots and shoes. Our ships leave their ports in *February* or *March*, and arrive off the island in *March* or *April*, according to the time of their departure; and if they arrive in the first month, they generally find the sea full of ice; but that depends on the winds, for certain winds force it away, and leave the water clear. The ships usually continue in this sea till the beginning of *May*, when they stretch away to the east, and apply themselves to the whale-fishery, in about latitude 79, and even to that of 81.

Bontakoe

W H A L E - F I S H E R Y.

CLXXVII.

Bontakoe is the name of an isle in lat. 73. 30. not far from the coast of *Greenland*. I saw it in a map of *N. and S. America*, published by Mr. *Sayer*, in 1775. A little to the north of it is a promontory, the date of the discovery of which is 1605. This is all I learn of it.

CLXXIX.

DAVIS's freights is frequented by some of our whale-fishers: they sail from *England* (e. g.) *Yarmouth*, the beginning of *March*, arrive there about the middle of *April*, and go up the freights two hundred leagues, towards *Disco* bay, or North-east bay, usually called by the seamen *North-saft Bite*. In these parts the whales are larger, but fewer than in the *Spitzbergen* seas. Seals there are also scarceer. It is singular that no intelligence is to be obtained concerning *Baffin's* bay, from these navigators.

The following journal of the ship *Yarmouth*, shews the expedition with which the *Greenland* whale fishery is carried on.

April 11th. Sailed from *Yarmouth* roads.

16. Off *Lerwick*, *Scheland*.

21. Fall in with the first ice, about lat. 70.

27. Killed some seals. Working backwards and forwards through the ice to the northward.

May 15. Off *Fair Foreland*, lat. 78.

17. Killed the first whale.

June 20. Killed the seventh.

23. Took departure for *England*, from lat. 75. 31. long. 7.

July 8. Anchor in *Yarmouth* roads.

CLXXXVII.

MUNCK never reached beyond lat. 63. 30. A cruel fate attended this able seaman. Being still persuaded of the possibility of a north-west passage, he engaged several opulent people in the design, who equipped two vessels, and committed them to his care. On taking leave of his prince, *Christian IV.* some discourse arose concerning his late expedition. The king ungenerously reproached him with being the cause of its miscarriage. *Munck*, indignant at the aspersion, answered his majesty with warmth, on which the king struck him with his cane. *Munck* was so affected, that he took to his bed, refused all food, and died of grief at the unjust usage he had experienced*.

CXC.

The thermometer has been known, in *Hudson's* bay, to rise out of doors to 85, on the 12th of *July*, and to sink in the month of *January* to 45 below the cy-

* *Churchill's Coll.* II. 476.

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pher, in a glass regulated according to *Farenheit's* scale. It has been observed by Mr. *Hutchins*, that on the 6th of *July*, 1775, the quicksilver rose as high as 99; and once in the same month, for an hour or two, even to 103. In respect to cold, the quicksilver begins to congeal when it has sunk to about 40 below the cypher; but the spirit thermometer continues to shew a degree of cold so low as 46. The former remarks were made by Mr. *Wales*, at *Prince of Wales's* fort, in lat. 58° 55', correspondent to the southern part of the *Orknies*. Those islands lie surrounded by the sea: *Hudson's* bay has to the west a tract of continent extending in the narrowest part above thirty-five degrees, covered the whole winter with snow; and to the north a still more rigorous climate, a sea perpetually infested with ice: so let the wind blow either from the west or from the north, it is sure to bring with it the most severe effects. From the province of *New York* to this in question, the ground remains covered with snow the greatest part of the winter; later or earlier, as the country approaches or recedes from the south. The predominant winds are from the west, and those blow above three quarters of the year: but the north or north-easterly winds are observed to be the vehicles of snow. The north-westerly bring the severest cold.

The middle provinces are remarkable for the unsteadiness of the weather, or the quick transitions from heat to cold. Snow falls in quantities in *Virginia*, but does not lie above a day or two; yet even after a mild, or indeed, a warm day, the river *Potomac* has been frozen over in one night, strong enough to be passed, and that in places where it was two miles broad; and *James* river, where it has been three miles broad. These alterations are owing to the above-cited cause, the sudden arrival of the chilling winds of the north-west.

The provinces of *South Carolina* and *Florida* are subject to vast heats and furious whirlwinds, hurricanes, bursts of thunder, and fatal lightnings. Mr. *Henry Ellis* found the thermometer in *Georgia* at 105, in one of the summer months: a heat so far superior to that of the human body, even in that climate, that Mr. *Ellis* could not raise it above 97 by the application of it to his body. On *December* 10th it was at 86, yet the next day fell as low as 38. Well might Mr. *Ellis* remark the deleterious effect of these extraordinary changes on the human frame *.

The united fury of the thunder, lightning, and whirlwind, cannot be better illustrated than by the descriptive instance which happened in *South Carolina*, with which Dr. GARDEN, with his usual liberality, favored me; and of which he was an eye witness.

* Phil. Trans. l. 754, 755.

' Before I say any thing of that tremendous whirlwind which I mentioned to
 ' you in conversation, the particulars of which you desire, I shall observe that
 ' *Carolina*, in common with other warm climates, is subject to occasional tem-
 ' pests of various sorts; such as severe thunder storms, hurricanes, whirlwinds,
 ' &c. of different strength and violence. Thunder storms and gusts happen at
 ' all times of the year, particularly in the summer time; but there are some, of
 ' the most dreadful force and appearance, that happen chiefly in the spring and
 ' autumnal months. They generally rise between the west and north, and
 ' gradually advance, with accumulating thickness, always in a contrary direc-
 ' tion to the wind, which strengthens as the gust approaches, and rises in the
 ' atmosphere with deep and sullen darkness, pregnant with frequent bursts of
 ' sharp lightning, darting its tremendous forks in all directions. Every kind of
 ' animal seeks shelter and retreat. The wind increasing, and the clouds rolling
 ' on from contrary quarters, the opposing elements by their furious approach and
 ' violent contention produce a general uproar and darkness; and the atmosphere
 ' is hurried into eddies and whirlwinds, that fill the air with dust, leaves, and
 ' branches of trees, and every other light body that lies in their way; so that an
 ' almost total darkness takes place, before the important cloud, rolling on, at
 ' length bursts over you, and pours down spouts and torrents of rain, mingled
 ' with almost unintermitting peals of thunder, and the most alarming flashes of
 ' lightning, pointed and forked, which frequently strikes houses, and shivers in
 ' pieces the loftiest and stoutest trees. During the storm, heaven and earth
 ' seem to be in contention; and yet no sooner is its force spent, than all is sun-
 ' shine, calmness, and tranquillity.—These gusts generally happen in the after-
 ' noon and towards evening, though I have seen them at all times of the 24
 ' hours.—But, entirely independent of such storms, whirlwinds of different sorts
 ' arise in various parts of the country; and taking sometimes a rectilinear, and
 ' sometimes an irregular and varied direction, proceed through the country, mark-
 ' ing their progress (if of great strength and violence) by an avenue in the woods,
 ' of a greater or less extent according to their diameter, where every tree, plant
 ' building, &c. are torn up, broken, and laid flat; till at length the whirling
 ' column either suddenly lifts itself up, and vanishes in the air; or gradually di-
 ' minishing in force, bulk, and diameter, totally disappears. Small whirlwinds
 ' of this kind are frequent in the hottest weather: those of large size and great
 ' force fortunately happen seldom; but their tracks are now and then seen in the
 ' woods, and may be followed for miles.

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Of this kind, commonly known under the title of TYPHONS, a most violent one passed down *Ashley River*, on the 4th of *May* 1761, and fell upon the shipping in *Rebellion Road* with such fury, as to threaten the immediate destruction of a large fleet lying there ready to sail for *Europe*.

This terrible phenomenon was seen by many of the inhabitants of *Charlestown*, coming down *Wappen Creek*, resembling a large column of smoke and vapor, whose motion was very irregular and tumultuous, as well as that of the neighboring clouds, which appeared to be driving down nearly in the same direction (from the south-west), and with great velocity. The quantity of vapor which composed this impetuous column, and its prodigious velocity, gave it such a surprising momentum, as to plow *Ashley River* to the bottom, and to lay the channel bare, of which many persons were eye witnesses. When it came down *Ashley River* it made so great a noise, as to be heard by most of the people in town, and was taken by many for constant thunder; its diameter at that time was generally judged to be about three hundred fathoms (though from what I have since known of the breadth of the river, I am confident it must have been nearer double); and in height, to a person in *Broad-street, Charlestown*, it appeared to be about forty-five degrees, though it increased in magnitude and height during its progress to *Rebellion Road*. As it passed the town, nearly about the conflux of *Cooper* and *Ashley* rivers, it was joined by a column of the same kind, though not of the same magnitude, which came down *Cooper River*. Though this last was not of equal strength or impetuosity with the other, yet, on their meeting together, the tumultuous and whirling agitations of the air were seemingly much greater; insomuch that the froth and vapor raised by its sides in the river, seemed to be thrown up to the apparent height of thirty-five or forty degrees towards the middle; whilst the clouds, which were now driving in all directions to this place, appeared to be precipitated into the vortex, and whirled around at the same time with incredible velocity: just after this it fell on the shipping in the *Road*, and was scarce three minutes in its passage, though the distance is near two leagues. Five vessels were sunk outright; his majesty's ship the *Dolphin*, which happened to be at anchor just on the edge of the column, and all others in that situation, lost their masts; the other unfortunate five, which lay in the direct line of its progress, were instantaneously sunk. Whether was this done by the immense weight of this column pressing them into the deep? or was it done by the water being suddenly forced from under them, and thereby letting them sink so low, as to be immediately covered and ingulphed by the lateral mass of water? This tremendous column was seen upwards of thirty miles south-west from *Charlestown*,

‘ where it arrived twenty-five minutes after two o’clock, P. M. making an
 ‘ avenue in its course of great width, tearing up trees, houses, and every thing
 ‘ that opposed; great quantities of leaves, branches of trees, even large limbs,
 ‘ were seen furiously driven about and agitated in the body of the column as it
 ‘ passed along. When it passed *Rebellion Road*, it went on the ocean, which it
 ‘ overspread with trees, branches, &c. for many miles, as vessels arriving from
 ‘ the northward some days afterwards informed us. The sky was overcast and
 ‘ cloudy all the forenoon: about one o’clock it began to thunder, and con-
 ‘ tinued more or less till three. The mercury in *Fahrenheit’s* thermometer, at
 ‘ two o’clock, stood at 77° ; by four o’clock the wind was quite fallen, the sun
 ‘ shone out, and the sky was clear and serene, and not a vestige of the dreadful
 ‘ scene remaining, but the dismantled and dismantled vessels in the *Road*.’

CXCIV. That curious body the *Labrador stone*, which reflects all the colors of the peacock, is found there in loose masses. The late Mr. *La Trobe* shewed me a piece of exquisite beauty, finely polished, which he procured from the laudable missions in that country. It is, according to Mr. *Kirwan*, a *feldt-spat*, softer than the common kind.

CXCVI. I must acknowledge my obligations to vice admiral *Campbel*, for the trouble he took in procuring, during his government, the following accounts from the different divisions of the great island of *Newfoundland*; and some additions to the manner of carrying on its most important fishery.

Within the circuit of sixty miles of the southern part, the country is hilly, but not mountainous. The hills increase in height as they recede from the sea; their course is, irregular, not forming a chain of hills, but rise and fall abruptly.

The coasts are high, and the shores most remarkably bold. The same may be said of almost every part of this vast island.

The country is much wooded, and the hills (such which have not flat tops, to admit the rain to stagnate on them) are clothed with birch, with hazel, spruce, fir, and pine, all small; which is chiefly owing to the inhabitants taking off the bark to cover the fish stages. This *peninsula* is so indented by the fine and deep bays of *Placentia*, *St. Mary*, *Conception*, and *Trinity*, that it may be easily penetrated in all parts, which is done for the sake of fowling, or the procuring of spars for masts, oars, &c.

The island is on all sides more or less pierced with deep bays, which penetrate it in many places by isthmuses most remarkably narrow.

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The mountains on the south-west side, near the sea, are very high, and terminate in lofty headlands. Such are *Chapeau rouge*, a most remarkably high promontory; *Cape St. Mary's*, and *Cape le Hunc*. Such in general is the formation of the island: on the north-east, most of the hills in the interior parts of the country terminate pyramidally, but form no chain. The interior parts of the country consist chiefly of morasses, or dry barren hummocks, or level land, with frequent lakes or ponds, and in some places covered with stunted black spruce. The rivers of *Newfoundland* are unfit for navigation, but they are of use in floating down the wood with the summer floods. Still the rivers and the brooks are excellent guides for the hunters of beavers, and other animals, to penetrate up the country; which as yet has never been done deeper than thirty miles. Near the brooks it is, that timber is commonly met with, but seldom above three or four miles inland, and in vallies; the hills in the northern district being naked and barren.

In some parts of *Newfoundland* there is timber sufficiently large for the building of merchant ships: the hulk is made of juniper, and the pine furnishes masts and yards; but as yet none has been found large enough for a mast for a large cutter.

The fishery is divided into two seasons: that on the shore, or the shore season; commences about the 20th of *April*, and ends about the 10th of *October*; the boats fish in from four to twenty fathoms water.

The most important, the bank-fishing season, begins the 10th of *May*, and continues till the last of *September*, and carried on in thirty to forty-five fathoms depth of water.

Banking vessels have sailed from *St. John's* to the bank as early as the 12th of *April*. At first they use pork or birds for a bait; but as they catch fish, they supply themselves with a shell fish called *clams*, which is found in the belly of the cod. The next bait is the lobster; after that, the herring, and the launce, *Br. Zool.* III. No. 66, which last till *June*, when the *capelan* comes on the coast, and is another bait. In *August* the *squid* comes into use, and finally the herring again.

The greatest number of cod-fish taken by a single fisherman in the season, has been twelve thousand; but the average is seven thousand. The largest fish which has been taken was four feet three inches long, and weighed forty-six pounds.

A banking vessel of ten thousand fish ought to be filled in three weeks, and so in proportion; and eighty quintals (112lb. each) for a boat in the same time.

In 1785, five hundred and forty-one *English* vessels fished on the bank; a number exceeding that of the *French*.

A heap of dried fish twenty feet long, and ten wide, and four deep, contains three hundred quintals. Such an heap settles, in the course of forty-eight hours after it is made, about 1-12th.

An extraordinary splitter will split five quintals of fish in an hour. The average in that time is two.

There is no fishing during winter, on account of the inclemency of the season. It is supposed that the fish in a great measure quit the banks before that time, as in general they are very scarce when the fishing vessels go upon the banks early in the spring.

There are a few small towns on the coasts, which have gardens sown with *English* pulse; but many of the inhabitants quit the country in winter.

An admiral, or some sea officer, is governor of *Newfoundland*. He sails from *England* in *May*, and returns by the 30th of *November*.

COASTS.

The coasts of *Nova Scotia* are, in general, rude and rocky, with some variations. It is peninsulated by the *Atlantic* ocean and gulph of *St. Laurence*, and joined to the main land by a narrow isthmus. From *Bay Vert*, on the northern side, the shore is bounded with red cliffs, with beaches beneath, as far as *Port Luttrell*, and the same to a remarkable high rock, called, from its shape, *The Barn*. *Cape George* terminates the coast to the east. This promontory is iron-bound, and very high, its summit aspiring to four hundred and twenty feet above the sea. This, with *Point Hood* on the *Cape Breton* side, forms a great bay. On the western shore, between *Cape George* and the entrance of the gut of *Canso*, are most remarkable cliffs of plaster, lofty precipices, and extremely white.

PLASTER CLIFFS.

The gut of *Canso* divides *Nova Scotia* from *Cape Breton*. It is not above a mile wide: it opens into *Chedabusto Bay*, which penetrates far into land. *Cape Canso* forms the most eastern point on this side of the gut; the land trends far to the west; from *Canso* to *Terbay* breaks into several white rocky heads. *Beaver Harbour* is guarded by most picturesque isles, rounded, with wooded tops. As far as *Halifax* it varies, with banks of red earth, or white insulated rocks: the capes and external isles are bounded with black flaty rocks, running generally out in spits from east to west, from the *Rugged Islands* to the *Devil's Isle*. Off *Halifax* are remarkably high red cliffs, linked with beaches: from thence to *Cape Sable*, an island which forms the most western extremity, is often broken, rocky, and white; but from *Port Haldimand* to *Cape Sable* the land appears level and low, with a shore of exceedingly white sand.

HARBOUR.

ISLE DE SABLE.

About twenty-three sea leagues from *Cape Canso*, in lat. 44, lies the singular *Isle de Sable*, or of *Sand*. It is in shape of a bow, in length about eight leagues,

and

and not a narrow point of tide from the main land. It contains multitudes of fish at low-water, and clear water, which the water breaks usually on the approach of the tide only, and seven or eight miles from this place. The services have been taken at *Cape Breton* for rent stones, and have upon the hollows and skirts green. Here are the best ports the sea and drift-wood hills have a forty-six feet

I quit the great bay. The bay divides *Chignecto*; harbours. with deep *Grand Manan* to the west by an extension by the narrow with vast numbers

* To this great bay, the most

and not above a mile and half broad in the broadest part. In the middle is a narrow pond of sea-water, running about half the length, which is filled every tide from the sea's rushing through a little gut on the north side. This pond contains multitudes of seals, some flat fish, eels, &c. and has about twelve feet depth at low-water. The entrance is often choaked with sand by a strong north wind, and cleared by the next southern blast. This island lies on a vast sand bank, on which the water gradually deepens to fifty fathoms. At each end is a bar; the water breaks on them often mast high: and there is, besides, a surf beating continually on the shore, to be heard in calm weather several leagues. No boats can approach the island without risque. Landing is practicable on the north shore only, and that only in calm weather. The north bar breaks, in bad weather, seven or eight leagues from the shore; and thousands of ships have been lost about this place. M. DE BARRÉS* was two years in surveying this fatal tract, and his services have been lately rewarded by the government of the isles of *St. John* and *Cape Breton*. The whole isle consists of fine white sand mixed with white transparent stones, but coarser than in the adjacent soundings: the face is much broken, and hove up into little hills, knobs, and cliffs, wildly heaped together. In the hollows are ponds of fresh water, frequented at times by variety of fowls. On the skirts grow juniper and blue berries in their season, and cranberries all the year. Here are some sheep, but plenty of beach grass, wild pease, &c. which serve to support the horses, cows, and hogs, which run about in a state of nature. Wickes and drift-wood afford fewel. The whole isle has a strange appearance; for the sand-hills have a conoid shape, are milk white, and some of them are a hundred and forty-six feet above the level of the sea.

I quit this singular spot to return to *Cape Sable*, just beyond which commences the great bay of *Fundy*, with infinite variety of picturesque and sublime scenery. The bay divides at the bottom into two others, the bay of *Mines*, and that of *Chignecto*; and, like the rest of the coast of this province, has numbers of fine harbours. Far from the shore of every part of *Nova Scotia* extends a skirt of sand, with deep water, and fine anchorage; but the harbours are most secure retreats. *Grand Manan* isle is very lofty, and lies in the mouth of the bay of *Fundy*, nearer to the western side. The bay of *St. Mary*, which lies on the eastern, is guarded by an extent of land and islands; the entrances between two of them, distinguished by the name of the *Grand* and *Petit Passage*, are particularly noble, very lofty, with vast mural fronts, and their tops finely clothed with trees.

BAY OF FUNDY.

GRAND AND
PETIT PASSAGE.

* To this gentleman's labors we owe the accurate charts of these and some other parts of *North America*; the most elegant and magnificent work of its kind extant.

The

VIEWS.

The gut or entrance into the harbour of *Annapolis Royal* is narrow, and has not less grandeur, neither is it wholly dissimilar. The isle of *Haute*, which lies in the middle of the approach to the bay of *Lines*, rises sublime and with mural sides out of the water, and is crowned with trees: from it is seen vast variety of beautiful scenery; such as *Cape Chignecto*, *Cape Doré*, and *Cape Split*; the last named from the vast columnar rocks which rise before it to an amazing height. Nearly opposite is *Partridge Island*, remarkable for the inclined disposition of its rocks. *Cape Blow-me-down* is another great precipice, not far to the east. Between these the stream of the current runs at the rate of five or six knots, even at neap tides. The tides in parts of the bay of *Fundy* rise to an amazing height, and force themselves into the great creeks with a bore or head from fifty to seventy-two feet high, and with prodigious rapidity. Hogs, which feed along the shores, are much more sensible of its approach than mankind: they are observed to listen, to prick up their ears for some time, and then run off at full speed.

HIGH TIDES.

THE ISTHMUS.

The bay of *Chignecto* is the last. This runs far inland, and is separated by the isthmus from the gulph of *St. Laurence*. If we reckon to *Bay Vert*, it is only twenty miles in breadth; but if we compute the space between *Petendiac* river and *Shediac*, on the side of the gulph, only fourteen. From hence the shore extends to the south-west; and we retain as far as the river *St. Croix*.

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C L A S S I. Q U A D R U P E D S.

THE Elk has deserted the south of *Sweden* for a considerable time; still some are found in the forests near *Stockholm*, more or fewer, according to the year, for they are a sort of vagabond animals. The chase is entirely reserved for the nobility or gentry; and even they are prohibited from killing them before the 24th of *August*, under penalty of fifty *rix-dollars*, or 11 *l.* 13 *s.* 4 *d.* The inhabitants dislike them greatly as neighbors, so much mischief do they do in the cultivated grounds. In *May*, *June*, and *July*, they are so bold, that the people are obliged to drive them away with blows of a stick: after that they are more difficult of approach. In *Femland*, a province of *Norland*, their chase is free to every one. The largest Elk Mr. *Oedman* ever heard of, weighed eleven hundred and sixty pounds. A fawn of this species, taken very young, is capable of being easily tamed, and may be made as familiar as a dog; but the male becomes fierce when it is in heat, at least if it is not castrated. It will drink greedily of wine, if given to it; and when it gets drunk, it will snort

P. 17.

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REIN AND FALLOW DEER.

it out of its nostrils. In a wild state, this animal feeds on the *lichens*, bark of the aspen poplar, the grey and the goat willows: when tame, it eats hay, and is very fond of peas straw; but the last must be given in small quantity, as it is apt to produce a fatal costiveness. When the female is closely pursued by the dogs, it will fling itself into the water with its fawn, and will continue swimming with it for many hours. She rarely brings more than one at a time. During winter, when the ground is covered with snow, the hunter cloaths himself with white linen, in order to render himself less visible.—Mr. Oedman.

22. Wild REIN-DEER are very scarce in the north of *Sweden*: the Wolves having almost extirpated this fine and useful animal. It is certain that horses cannot bear the smell of the *Rein*; they will, even on the first perception, become unmanageable, so that the riders cannot without difficulty keep them from running away with them.—Mr. Oedman.

27. It is positively said by *Stierxhook*, in his treatise *De jure Sueonum vetusto*, that in old time STAGS were unknown in *Sweden*, and that they were introduced there but a little before the time of *Gustavus Erickson*, who began his reign in 1521. Such Stags (says he, to distinguish them from the Rein-deer), which are now found in our southern provinces. Let me add, that it is certain that they have also long since reached *Norway*.—P.

33. FALLOW-DEER seem not to have been natives of *Sweden*; there are none in the forests, but which have escaped out of the king's parks: such as those near the capital; in the isle of *Oeland*; that of *Wesengore*, in lake *Wetter*; and at *Omberg*. Even Stags are rare in a state of nature and those only in the forests of *Smaland*.—Mr. Oedman.

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ROES are at present found scarcely any where but in the forest of *Smaland*, and that but rarely. The female brings only two at a time: the buck will defend itself with courage against the dogs, when driven to extremity. They never make a ring when they are hunted, but run strait forward, two or three *Swedish* miles, or twelve or eighteen *English*; and then return along their former track: but so fatigued as seldom to escape.—Mr. Oedman.

Mr. *Hutchins* was presented, by the *Weabipouk Indians*, with a Deer four feet eight inches long, and three feet two high. It was entirely white, except the back, which was mottled with brown. The fur was short and fine, like that of the Ermine. The *Indians*, in their manner of expression, said it came from a place where there was little or no day.—P.

In many parts of *Sweden* the number of WOLVES has been considerably diminished by placing poisoned carcases in their way: but in other places they are found in great multitudes. Hunger sometimes compels them to eat *lickens*; those vegetables were found in the body of one killed by a foldier, but it was so weak, that it could scarcely move. It probably had fed on the *lichen vulpinus*, which is a known poison to these animals.

Madness, in certain years, is very apt to seize the Wolf. The consequences are often very melancholy. Mad Wolves will bite Hogs and Dogs, and the last again, the human species. In a single parish fourteen persons were victims to this dreadful malady. The symptoms are the same with those attendant on the bite of a mad dog. Fury sparkles in their eyes; a glutinous saliva distils from their mouths; they carry their tails low, and bite indifferently men and beasts. It is remarkable that this disease happens in the depth of winter, so can never be attributed to the rage of the dog-days.

LEMMUS. FOX. LYNX.

Often, towards spring, WOLVES get upon the ice of the sea, to prey on the young Seals, which they catch asleep: but this repast often proves fatal to them; for the ice, detached from the shore, carries them to a great distance from land, before they are sensible of it. In some years a large district is by this means delivered from these pernicious beasts; which are heard howling in a most dreadful manner, far in the sea.

When Wolves come to make their attack on cattle, they never fail attempting to frighten away the men by their cries; but the sound of the horn makes them fly like lightning.—Mr. Oedman.

42. When the Arctic Fox has been in pursuit of the wandering *Lemmus*, p. 136. *Arch. Zool.* it sometimes loses its way home, and has been taken in places far from its natural haunts. The late Mr. *Kalm* has left an instance of one being taken in *Westrogothia*. Professor *Retzius* favored me with an account of one shot, on the 27th of last *October*, near to *Lund*, in lat. 55. 42.

48. Mr. *Hutchins* informed me of a whitish grey Fox, no larger than a Hare, common among the *Arctic* Indians: four thousand of their skins have been sent in one year to the factories.

50. The LYNX is the most formidable enemy which the Sheep has: it is pretended that they only suck the blood; but it is pretty certain that they also devour the liver and lungs, for those parts are often found eaten. The little *Kat-lo* or Lynx is very scarce; its fur is esteemed more valuable than that of the greater or *Warglo*. It is supposed to be a particular species.—Mr. Oedman.

57. Doctor PALLAS must have been misinformed as to the color of the Bears of *Kamtchatka*; for Captain KING, who saw several, assured

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me, that they are of a dun brown color; and feed chiefly on fish, or berries. They are far from rejecting animal food. Even mankind become their prey, when pressed by hunger; and they will hunt the natives in such cases by scent, and prowl out of their usual tracts for that purpose. At those times, or when wounded, they are exceedingly fierce*. It is said that they give chase to the *Argali* with great address: they know that they have no chance of taking them by speed; the Bears therefore climb up the rugged mountains, and gain the heights above the spots where the wild Sheep feed. They with their paws sling down pieces of rock upon the herd, and, if they happen to maim any, descend and make a repast on the lamed animal †. When the Bears find plenty of food, they will not attack the human kind: yet if they find a *Kamtjckadale* asleep on the ground, they will through wantonness bite him severely, and sometimes tear a piece of flesh away. People thus injured are called *dranki*, or the *slayed* ‡.—P.

Place between the *Common Weasel* and the *Stoat*, this species, newly discovered by Mr. *Helenius*, Professor at *Abo*, in *Sweden*.

75.

Mustela nivalis.—*Fennorum Nirpa Lumiko, Lumitirka, Nov. Act. Acad. Reg. Scient. Suec. vi. 1785. p. 212.*—*Lappon. Seibbsh.*—*Ruffis Laska.*

W. With large canine teeth: body in summer grey, with a tincture of rufous: tail of the same color: belly white. Length from the tip of the nose to the base of the tail six inches and a half: tail an inch and a half. Shape of the *Stoat*.

Inhabits the north of *Finland* and *Lapland*. Lives during the summer in the forests; in winter frequents villages and houses. Feeds on mice, small birds, their eggs and young; eats also frogs. Is itself the prey of rapacious birds, and of the *Ermine* or *Stoat*. In winter changes to white, the whiskers, and a few hairs in the tail, excepted. Has not the

* Captain KING, in *Cook's Voyage*, III. 305.

† Same 306. ‡ Hist. *Kamtchatka*, III. 386.

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foetid smell of the Weefel and Stoat. Is taken in traps baited with a mouse, or small bird. The skin is equal in price to that of the Ermine.—Professor *Retzius*.

94. The common *English* Hare is found in *Sweden*, and is perhaps the only kind in the southern part. Professor *Retzius* is of opinion, that it does not differ in species from the *Varying*, No. 37. *Arch. Zool.* I have given my reasons, in the *Tour to Scotland*, and my *History of Quadrupeds*, vol. II. p. 370, for differing from his respectable opinion. In *Sweden* the common Hare is in summer of a dusky brown: in winter becomes cinereous. In that state, I have seen a brace sent over to *England*. In *Scania* they are twice as large as they are in the northern parts of *Sweden*, i. e. than those I call the *Varying*.
98. The BEAVER is extremely scarce in the lower part of *Sweden*. Mr. *Oedman* recollects but one instance, and that was in *Westrogothia*. It was so little known there, that the common people regarded it as a prodigy.
109. The *Caqua*, or CANADA PORCUPINE, feeds much on the bark of pines or juniper: it is their food the greatest part of the year, and the buds of willows their chief support the rest. In walking it drags its tail along the ground. *Indians* discover them by the track they make, but chiefly by the unbarked trees.
111. The *Wenusk*, or QUEBEC MARIOT, feeds on coarse grass. It burrows in the earth in a perpendicular manner. The *Indians* take it by pouring water into the holes, which forces it out.—P.
151. Five varieties of Seals are found in the *Baltic*. It is made a doubt whether they are not even distinct species. The first is the Grey Seal, *Grå Siäl*, which when just born is wholly yellow: but that color soon grows obscure, and the skin becomes varied

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ried with spots or waved lines. This variety is the large of those which inhabit the *Swedish* seas.

The second is the *Hautskål*. This, when just dropped, is more white, and never changes, unless to a tinge of pearl color, when it has ceased growing. It never attains the size of the former, lives separate from it, and is more timid.

These two varieties live on the high seas, and feed on herrings, *meduse*, and blennies. During winter they retire under the ice, through which they form holes by blowing on it, let the thickness be ever so great. In summer they mount on the sand-banks to sleep.

The Seal called the *Wikare gris*, and *Wikare noir*, are two varieties, which sleep on shore. The two preceding sometimes sleep in the sea, keeping their heads above water; they sleep so sound that the hunters can reach and harpoon them in that situation. The *Wikare* feeds chiefly on the *gasterosteus aculeatus*, LIN. three-spined stickleback, *Br. Zool.* III. No. 129. and becomes so fat, that when killed it cannot sink to the bottom. The young of the Black *Wikare* are constantly black; those of the Grey *Wikare* always grey.

Fifthly. The *Morunge* is always striped (*tigré*). This species is of late years so diminished, that for ten years past there has not been seen one in all the *Swedish archipelago*.

If these five are varieties, they are certainly varieties which live always separated, and never mingle with one another.

The chase of the Seals in the gulph of *Bothnia*, is as remarkable as that of the *Greenlanders*. In the spring, when the rivers of *Lapland* force with their stream, into the sea, vast masses of ice, the Grey Seals and *Hautskåls* retire upon them. The hunters never neglect the opportunity of taking them: they find out these floating mountains, which, according to Mr. *Hjarné*, are twelve or fourteen fathoms in thickness below water, and of a great extent. The hunters lay in provisions for
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six weeks, and a hearth to dress their meat on. They then moor their boat to one of these mountainous pieces of ice, the hollows of which are filled with Seals. They cloath themselves in white, to render themselves less suspected by those animals. They also whiten their boats with lime; and sleep in them during night, and thus pass ten or twelve days among the ice, till they discover the Seals. When they hear a certain crackling, they consider it as a sign that the piece of ice is about to fall to pieces; they guard against the consequences, and seek another; and so continue rowing from one piece of ice to another, in search of the Seals, till they have exhausted every object of the chase.—*Mr. Oedman.*

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THE *Falco Melanætos*, and the *F. Fulvus* of LINNÆUS, or my *Black Eagle*, are the same; the *F. fulvus* being only the young of the first. It is a scarce species in *Sweden*.—Mr. *Oedman*. 195.

The OSPREY returns into *Sweden* later than the Kite. Mr. *Oedman* flings new light on the history of this bird: he says that it breeds on the tops of the highest trees, and makes its nest with wonderful art, of the twigs of the fir tree, and lines the bottom with polypodies. It lays three eggs, of the size of those of a Hen, marbled with rust-color. It brings fish and serpents to feed its young; and even eels of a vast size: this makes its nest very foetid. It does not prey on birds, but on fish only. It defends its nest with great spirit. 199.

F. with a very sharp bill, furnished with a large and pointed process in the upper mandible: cere yellowish: head, front of the neck, breast, and belly, white; each feather marked along the shaft with a streak of brown; the narrowest are on the head: back and coverts of the wings of a dirty blueish ash-color; edges of the feathers whitish, and many of them tipped with the same: primaries dusky; exterior webs blotched with
I white,

STREAKED
FALCON.

white, interior barred with the same: tail of the same color with the back, and barred with white; the bars do not reach the shafts, and, like those in the *Iceland Falcon*, oppose the dark bars on the adverse side: legs blueish. Length two feet two inches.

This fine species inhabits *Hudson's Bay*: is new, and to be placed in p. 202.

GOLDEN
EAGLE.

Is to be placed among the *American* birds, having been discovered to be an inhabitant of *Hudson's Bay*.

Julius Firmicus, a celebrated writer in astrology, who dedicated his books to *Mavortius Lollianus*, consul in 354, affirms, that whosoever were born under the influence of *Mercury* and *Virgo*, would be strong and industrious, and be well skilled in breeding fine horses, and in training Hawks and Falcons, and other birds useful in bird-catching, &c. By this it appears, that actual falconry was in use long before the time I imagined.

214.

The ERNE, or CINEREOUS Eagle, the *Vultur Albigilla* of LINNÆUS, is the first year wholly dusky, even to the bill, cere, and tail. In the second year the cinereous color commences, tessellated with black; the tail becomes white; and the end of its feathers for some time tipped with black.

It is very easily made tame: will attach itself to its master, distinguish him from others, and receive him with many marks of endearment. When hungry, repeats the sounds, *tack tack*; and when satisfied with food expresses its content, by a repetition of the same note. Is particularly fond of fish: is a sluggish and cowardly species, and will be put to flight even by the Turkeys.—Mr. *Oedman*.

214.

The GOLDEN EAGLE has been taken, twenty-five years ago, in *Scania*, of a snowy whiteness; it is still alive.—Professor *Retzius*.

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The KITE is the first of the migratory birds which appears in *Sweden* in the spring. Mr. *Oedman*.

223.

The KESTRIL breeds not only in ruins but in hollow-trees. Mr. *Oedman*.

The *Strix Aluco* of LINNÆUS; *La Halote*, de *Buffon*, I. 358; *Pl. Enl.* 441, is a bird of *Sweden*, omitted in the *Arctic Zoology*. I never met with it, therefore borrow the description from Mr. *Latham's Ornithology*.

The head is large: irides dusky: circle of feathers round the eyes greyish: upper part of the body deep iron-grey, spotted with black and white: breast and belly white, striped down with ragged black strokes: legs and feet covered with feathers, white, with numerous black specks: tail barred with reddish ash and black: the first feather of the wings exceeds the rest by two or three inches: the wings reach beyond the end of the tail.

This species lays, in *April*, from three to five eggs, of a snowy whiteness: the young are blind to the tenth day, and are covered with filthy red warts. The female parent feeds them with mice. They fly towards the end of *July*. The note of the young is like the noise of gnawing one's teeth. The old fly in the most quiet manner, and make no sort of noise: they feed on small birds, but vetches have been found in their stomach. In the summer they live in the woods; towards winter return to the neighborhood of houses. It refuses to eat in captivity, and loses its life with its liberty. If one of its young is taken away, it removes the rest to another place.

The SHORT-EARED OWL, *Arct. Zool.* II. No. 115. appears to me to be *La Chouette* of the *Comte de Buffon*, and his *Moyen Duc*, ou *Hibou*, tab. 29. of the *Pl. Enlum.* In p. 102. of my *Indexes* to his *Ornithologie*, and the *Pl. Enl.* I have endeavoured to clear up the confusion, which the illustrious writer has introduced on the subject.

229.

Doctor *Tengmalm*, an able ornithologist, resident near *Stockholm*, lately discovered a new species of Owl, of the size of a Blackbird. The bill dusky, tipped with white: from its corners, to each eye, is a line of black: the irides yellow: the circle of feathers round the eyes is white, mixed with dusky: head grey, striped with white, and surrounded with a dusky circle spotted with white and dusky: primaries dusky, barred with white: breast and belly white, varied irregularly with dusky marks: tail above, of a dusky grey, striped with white: toes feathered to the claws; grey, with pea-shaped spots of white.

236. The LITTLE OWL appears in *Sweden* with the first rays of the sun: its voice is a most acute whistle, by the imitation of which, small birds are readily collected together.

240. The RED-BACKED SHRIKE returns to *Sweden* the latter end of *April*: makes its nest in low bushes, in form of a cup, near a quarter of a yard in diameter, of wool, soft dry grass, &c. with amazing art. The young are long before they fly: the task of feeding the young rests chiefly on the female; and principally the food consists of insects of the *hymenoptera* order. Their food is not confined to those, for Mr. *Oedman* has seen about the nests the exuvizæ of thousands of hornets. The female defends its nest stoutly, yet at other times is very timid: the male with great affection feeds its mate, when the latter is on the duty of incubation; and during that time is rarely seen at home. When the female has quitted the nest, the male undertakes the care of the young; sitting for their protection in the top of some neighboring tree: the female sits in fearful silence: its mate elevates its voice. This species feeds chiefly on insects, seldom on small birds.—Mr. *Oedman*.

245. The RAVEN in winter lives in *Sweden*, in flocks, near the shores of the sea, to support itself on whatsoever the waves fling up. The rustics.

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rustics esteem it a bird of ill omen, especially when it is heard croaking near the houses of the sick. They fear shooting this bird, under a notion that it will spoil their gun.—Mr. Oedman.

The CARRION CROW is never seen farther north than *Norrcopin*, lat. 58. 45.—Mr. Oedman. 245.

The ROOK has not been observed in *Sweden*, except in the southern province of *Scania*, and the isle of *Oland*.—Mr. Oedman. 250.

It is very singular, that the HOODED CROW, when it migrates, at the approach of winter, out of *Smoland*, retires into *Upland*, a province three degrees to the north of the former: there it lives during winter, near the shores, in the manner of the Raven. It is a bird detested by the natives. Feeds on the eggs of the wild Geese and Ducks. Is driven away from the isles by the BLACK-BACKED GULL.—Mr. Oedman. 251.

The JACKDAW is seldom met with beyond *Helsingeland*, a province lying between lat. 61. and 62. 33. Inhabits towers, but often uses the deserted nests of Woodpeckers.—Mr. Oedman. 251.

The NUTBREAKER comes very late into *Sweden*; and stays there till the nuts are gathered. Is not to be seen beyond *Upland*. Hazel nuts rarely are to be met beyond *Gefle*, lat. 60. 45: they have indeed been planted, by Mr. *Hozstrom*, at *Skellesta*, near the arctic circle: they endured the winter, but did not bear fruit. The nuts of *Oland* are greatly sought after in *Sweden*, and thought there as sweet as almonds.—Mr. Oedman. 252.

The JAY is eaten in *Sweden*; and taken in springes, baited with the berries of the mountain ash, or *forbus aucuparia*.—Mr. Oedman. 252.

The

WOODPECKER. HOOPOO. GROUS.

277. The GREEN WOODPECKER inhabits the wooden steeples of *Sweden*, as well as trees.—Mr. *Oedman*.
285. The HOOPOO is called the Harfogel, or Soldier-bird, not from its crest but its note, uttering, as it runs on the ground, the note *opp, opp, opp*, thrice repeating it, then hastens most swiftly to another spot, and repeats the same. *Opp*, in the *Swedish* language, signifies the same as *To Arms!* hence this bird has been styled the omen of war.—Mr. *Oedman*.
312. The GREAT GROUS* is very easily tamed if taken young, and is fed with corn. The males, in a domestic state, emit the same note all the year, which in a wild state they only use in the season of love. When a cock of this species is shot in the woods, its widows are heard to utter a note inexpressibly miserable at their loss. In the love season the females have been found so greatly overpowered with the all-ruling passion, as to lay themselves on the ground, soliciting the company of the males, with their usual note; and so intent on the expected joys, as to neglect their own safety so much, that the peasants have actually taken them up in their hands.—Mr. *Oedman*.
314. The SPURIOUS GROUS, or *Racklebanen* of the *Swedes*, is a breed between the cock of the *Black Grouse*, and a female of the *Great Grouse*; its note partakes of both species. It is restless, constantly moving from tree to tree; is therefore hated by sportsmen, as it gives other birds notice of their approach. This variety is well figured by Doctor *Sparman*, in his *Museum Carlsonianum*, tab. xv.—P.
314. The BLACK GROUS in the winter-time fills its craw with the catkins of the birch, before it retires under the snow; and by this means can sustain life seven days without any other food.—Mr. *Oedman*.

* I change the *trivial*, WOOD to that of GREAT, as it is not peculiar to this species to inhabit woods.

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The cock of the Black Game has been known in *Sweden* to cover the common domestic Hen, which did produce a barren spurious breed. 314.

THE GREAT BUSTARD is very common in *Scania*, or *Schonen*; but Professor *Retzius* informs me, he never saw nor heard of it in that province. 321.

The STARE winters in *Denmark*, but sometimes never quits *Scania*.—Mr. *Oedman*. 331.

The WATER OUZEL is used by the *Russians* as a remedy against the dropsy. The whole bird, unfeathered, is reduced to ashes in a pot; it is taken in one dose, and acts as an absorbent.—Mr. *Oedman* saw it succeed beyond all expectation in an *ascites*: his father, a gentleman eighty years of age, almost suffocated with a quincy, and with his stomach greatly swelled, was restored to health in four days by this simple remedy only, and has survived, in good health, seven years since the trial. 332.

The song of the REDWING differs from that of the musical THRUSH, in most essential notes.—Mr. *Oedman*. 342.

Mr. ARGILLANDER observes, in the *Aff. Stockholm*, 1786, that the GOLDEN ORIOLE returns to *Savolax*, in *Finland*, in the end of *May*, and retires in *September*: that it is much more frequent in the north of that province than the south, living in the birch woods along the coasts. Two males attend one female: is it therefore *biandrous*? During summer, they keep by threes or fours together: towards autumn the flocks increase in numbers: foretel storms by an alteration in their whistle. They fly like Thrushes: are timid birds, yet very irascible, and will bite very hard: are so tenacious of life, that one which was shot through by two great shots, lived two days. The flesh is as good as that of the Thrush.—Mr. *Oedman*. 343.

347 and 354.

Doctor TENGMALM observes, that the HAW GROSBEEK, and CROSS-BILL, come alternately in vast flocks, but never appear at the same time.

348.

The PINE GROSBEEK is the first year of an orange color, the second of a scarlet.

379.

The LESSER REDPOLE migrates in flocks of above two hundred, about *Michaelmas*, and not one female amongst them.—Mr. Oedman.

391.

The PIED FLY-CATCHER returns to *Sweden* in *April*: lives near the water: lays five eggs, in the hollows of trees.—Mr. Oedman.

The SPOTTED FLY-CATCHER, *Br. Zool. I. No. 134.* returns later.—Mr. Oedman.

The FIGENTER, *Muscicilla bicodula*, is not found in *Sweden*, LINNÆUS being somehow or other mistaken.—Mr. Oedman.

414.

The GOLDEN-CRESTED WREN, and COMMON WREN, never quit *Sweden* in the winter. The last lives during that season in the thickest bushes.—Mr. Oedman.

418.

The PETTYCHAPS visits *Sweden* in the middle of *May*.

420.

The SCOTCH WARBLER, or *M. Acredula*, is discovered by Doctor TENGMALM to be no other than a young yellow Wren.—*M. Trochilus.* Mr. Oedman.

The AZURE TITMOUSE is found in *Sweden*, at the farm of *Sueby*, in *Sodermanland*; and figured in that elegant work, by Doctor *Sparman*, before cited. tab. xxv. 2.

In the same work, tab. xxi. the same gentleman describes and figures a new species of BUNTING, under the name of *Emberiza Maelbyensis.*

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byensis. It was discovered on the estate of Count *Carlson*, at *Maelby*, in *Sodermanland*. The bill and legs are reddish: the crown, cheeks, and fore part of the neck, are cinerous: between the eyes and nostrils is a white spot: the chin and vent white: lower part of the breast, belly, and thighs, rust-colored: back and coverts of wings rust-colored and black: primaries dusky, edged with rust: in the tail *ten* feathers; the six middlemost wholly black; the two outmost, on each side, have the upper part of their interior parts white; the rest black.—*Dr. Sparman*.—P.

D I V. II. W A T E R - F O W L.

441. **T**O the SPOON-BILL may be made these additions:—They are found in vast flocks on the borders of the river *Yaik*, about *Kalminjowa*, where they resort to feed on the fresh-water mussels. When they are disturbed, they rise high into the air, and assume an oblique and winding form, which no noise can discompose or break. Their plumage, especially in their flight, exhibits a most dazzling whiteness. I do not trace them farther south than *Aleppo*, which is one of their winter retreats.

Notwithstanding their fishy food, they were formerly esteemed a delicacy. A grove at *Sevenbuys*, near *Leyden*, was, in the middle of the last century, one of their breeding-places; and was rented from the lord of the soil, by a person who made a profit of their young. But when I was there, in 1765, I found that the grove had been long cut down, and the birds quite driven away. They are never seen in *England*, except by accident.

442. The HOOPING CRANE breeds in the north, in unfrequented places, near the sides of lakes; and makes its nest on the ground with grass and feathers: lays two white eggs, and sits twenty days. The young are first yellow, and by degrees become white. They feed on insects and worms, which they get from the bottoms of shallow ponds.

445. The GREAT WHITE HERON is gregarious, and may be seen in *Carolina*, perched on trees, in flocks of thirty or more.

445. RED-BILLED. RED-BILLED HERON, *Latham*, v. 93.—*Catesby*, i. 77.—*Le crabier à bec rouge*, *de Buffon*, vii. 401.

H. With a red bill, two inches and three quarters long. Irides yellow: legs green: plumage of a snowy whiteness. LENGTH eighteen inches.

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Inhabits during summer *Carolina*. Frequents rivers and ponds. Feeds on fish, frogs, &c. Retires south at approach of winter.

The BITTERN of *Hudson's Bay* does not bellow like the *Engliff*. 451.

To the *Siberian CRANE* may be made these additions:—It makes a noise like the Whistling Swan. It is very shy, and difficult to approach; the moment it sees a man, be he ever so far off, it instantly rises into the air, which resounds with its cries. Its great height giving it the advantage of seeing all round to a considerable distance; the sportsman is therefore obliged to use great caution. The least rustling of the reeds sets it on its guard. He therefore approaches it under some cover, or when the bird is busied in taking the small fishes, on which it feeds. Apprehensive as it is of men, it is fearless of dogs, and will attack them with great fury, which gives the master opportunity of making his shot. In the breeding season it is quite intrepid, and will guard its young with great courage, and with its sharp bill become a very dangerous opponent to the person who attempts its nest. The male and female alternately protect the young. Those of the first year are of the color of ochre; in the second they become white: the skin is as red as the bill. They are frequently reared with the young of other Cranes at *Tobolski*, and other parts of *Siberia*, and will agree with them very well; but will grow enraged at the sight of children, and eagerly attack them. This species possibly extends to *China*, a bird, extremely like it, being frequently seen on the *Chinese* paper. 455.

The WHITE STORK is never seen farther north in *Sweden* than *Scania*. 455.

The BAY IBIS has been seen of late years in the isle of *Oland*. This species begins to form a settlement there, and to return annually. 460.
—Mr. *Oedman*.

470. The female Woodcock may be distinguished from the male by a narrow stripe of white along the lower part of the exterior web of the outmost feather of the wing. The same part, in the outmost feather of the male, is elegantly and regularly spotted with black and reddish white. In the bastard wing of each sex is a small pointed narrow feather, very elastic, and much sought after by painters as a pencil.

471. The Dusky Snipe is to be reckoned among the *Swedish* birds, one having been killed near *Stockholm*.—Mr. *Oedman*.

MARBLED
GODWIT.

Length nineteen inches. Bill orange, four inches long, black towards the tip: plumage on the upper parts of the body brown, marbled and spotted with rufous white: cere and chin white: quills, rufous cream-color, marked with minute brown specks: the whole of the under parts of the body pale rufous; the breast and sides very pale, transversely barred with dusky waved lines: vent rufous white: tail rufous, crossed with six or seven brown bars: legs black.

Inhabits *Hudson's Bay*. Communicated by Mr. *Latham*.

HUDSONIAN
GODWIT.

Length nearly seventeen inches: bill three, bending a little upwards; the base half pale, the rest black: crown blackish, spotted and streaked with dusky white: sides of the head, and back part of the neck, nearly the same, but paler: lore dusky: over the eye a white streak: chin whitish: back and scapulars dusky brown, spotted with rufous white: lesser wing coverts brown; in the middle paler, and marked with a few spots of white: larger coverts, plain ash-color: quills black, with white shafts, the bases of them, from the fourth, white for one-third of their length: rump white: the whole of the under parts, from the chin to the vent, fine rufous bay, waved across with dusky lines: tail feathers white at the base, and dusky the rest of their length: legs black.

Inhabits *Hudson's Bay* with the last. Communicated by Mr. *Latham*.

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The ALWARGRIM breeds in all the morasses of *Smoland*: those which migrate to the *Swedish Alps*, return at *Michaelmas*, and re-migrate through *Helsingeland*, where thousands of them are seen covering the fields.—Mr. *Oedman*.

483.

The SPOTTED GALLINULE, *Br. Zool.* II. No. 215, appears in *Hudson's Bay* in *May*; retires in *October*: lurks about the rivers and lakes: lays ten or twelve white eggs under some bush. LENGTH eight inches; in weight not three ounces.

491.

The COMMON GALLINULE is found in *Sweden*, but omitted in its *Fauna*.—Mr. *Oedman*.

492.

I guess that the RED-NECKED GREBE is found in *Sweden*, it being figured by Dr. *Sparman*, tab. IX. of *Mus. Carlson*. He calls it *Colymbus Parotis*.

499.

Mr. *Oedman*, like myself, has separated the GUILLEMOTS from the DIVERS. The young birds are distinguished, to their third year, by the softness of their nails.

516.

LESSER GUILLEMOT, *Br. Zool.* ii. No. 235.—*Latham* v. 331.—*Ringua*, *Brunnich*, No. 110.

517.

G. With a black, slender, and weak bill, two inches and a half long: crown, and all the upper part of the body, wings, and tail, dusky mouse-color: tips of the secondaries white: from the chin to the vent white: legs black. Length sixteen inches, extent twenty-six; weight nineteen ounces.

Inhabits *Iceland*, and possibly all the other northern coasts of *Europe*; frequents the *British* seas only in winter; are seen with the Black-billed Auks, in flocks innumerable, in the *Firth of Forth*, in pursuit of sprats; are also seen on the coasts of *North Wales*, and *Devonshire*, in the same season.

The

The excrements of the BLACK GUILLEMOT, in the *Norwegian* seas, are of a scarlet color, occasioned, as is supposed, by its feeding on the *ascaris verispellis*, or *rodaut*.

526.

The CASPIAN TERN has been lately discovered near *Stockholm*. It returns to the *Baltic* before the *Black-backed* Gull. Lays three eggs on the bare rock; white, thinly painted with black.—Mr. *Oedman*.

Mr. OEDMAN has considered the different species of Gulls with more attention and judgment than any other naturalist. On his remarks I make the following corrections of my own mistakes, and those of most other ornithologists.

The *Wagel* is only a young Herring Gull, not arrived at its full plumage. The *Silvery*, or *Larus Argentatus*, on the reverse, is a very old bird of the same kind, whitened by age and cold. The eggs of the Herring Gull, in *Sweden*, are darker colored than those of *England*.

The KITTIWAKE, or Three-toed Gull, undergoes three alterations of color. In the first stage of its life, its plumage is much mixed with black, and is at that time the same with my *Tarrock*.

In its second stage, is the same with the *Kittiwake*; and in the last, is the same with the *Larus Rissa*.

The LAUGHING GULL has been seen only very lately on the *Baltic* sea.

Mr. OEDMAN says, that the *Ivory* Gull merits the name of *snowy*, from its superlative whiteness.

532.

The GLAUCOUS GULL breeds on the rocks of the *Baltic* sea, and must be placed among the birds of *Sweden*. It lays three blueish eggs, with some large black spots. They are very sharp at the lesser end.

The WINTER GULL, *Br. Zool.* II. No. 248, has been discovered to be the young of the common Gull, not arrived at its full plumage.

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This species of Gull was discovered by Mr. *Hutchins*, in *Hudson's Bay*. Its bill is black, and three inches long: head, neck, breast, and belly, of an uniform brown: primaries black; coverts and scapulars brown, marked with white: tail black, speckled and tipped with white. LENGTH twenty-three inches; extent four feet and a half; weight two pounds and a half. Perhaps a young *Skua* Gull: the natives call it *Keash*.

KEASH.

To the genus of *Petrel* may be added the following species.

534.

Latham, vi. 396.—*Quebrantahuecos*, *Boug. Voy.* 63.—*Cook's Voy.* ii. 205.—*Forster's Voy.* 516.—*De Buffon*, ix. 519.

GIANT.

P. With a very strong bill, four inches and a half long, much hooked at the end, and of a fine yellow, like that of polished box; the tube reaches to the commencement of the hook. At the corners of the mouth is a naked yellow skin: the crown is dusky: hind part of the neck and back light brown, mottled with dirty white: wings, scapulars, and tail, an uniform dusky brown: fore part of the neck, breast, and belly, white: legs short, strong, and of a greyish yellow: the spur very strong and sharp. Length forty inches; extent of wings seven feet: equal in body to a goose.

These birds are very common off the western coast of *North America*, and in the sea between that continent and *Kamschatka*, and quite cover the rocks of the intervening chain of isles with their numbers. *Steller* saw multitudes feeding on a dead whale, two hundred versts from land. They spread over the ocean like the little species of *Petrel*, and like it is the harbinger of storms. Sailors dislike their appearance, and call them *Mother Cary's Geese*, as they do the lesser kind her *Chickens*. *Mother Cary* was probably a witch, protectress of these ominous birds: for seamen as well as landmen had their belief in the *weird* sisters, who

PLACE.

Hand

P E T R E L.

Hand in hand,
Posters of the sea and land.

They often appear the day before a storm, sometimes skimming the surface of the water, following the course of the waves with expanded and seemingly motionless wings; as the winds increase so do their numbers; gathering round the ship, sometimes flying round, at others floating on the waves, but always keep near, till the return of fair weather*.

They are found as high north as the *Kamschatkan* seas; and along the western coasts of *America*, in different places, as low as *Staaten* land. They have been seen in the northern hemisphere in *March*, *April*, and *May*. In the southern, for example, in *Terra del Fuego*, and *Kerguelin's* island, in *December*. They are very foolish birds; and were found in the last place so tame, as to suffer the seaman to knock them on the head with sticks. The *Russians*, on account of the stupidity of these birds, call them *Gloupichi* †. They feed on the carcases of seals, whales, or any others they meet with. *M. Bougainville* intimates, that they also prey on live birds; for he speaks of them as the enemy of certain kinds frequent on the *Falkland* isles ‡. From the vast strength of their bills, they certainly are a redoubtable foe: the *Spaniards*, from that circumstance, call them *Quebrantabueffos*, or the *Bone-breaker* ||. Our circumnavigators eat of them, and call them a good food.

It is very probable that they migrate, with the *Albatros*, into the southern hemisphere, and breed there. The eggs of the Pintado Petrel were found on *Kerguelin's* land in *December*. A small blue species, and a small black one, were also seen at the same time ashore there §. This concurrence of four species of a genus, which is never found on land, unless at the season of breeding, renders certain that this is one of the

* *Ulloa's* voy. II. 220. octavo, transf.—*Pernetti's* voy. transf. 100.

† *Descr. Kamschatka*, 492, 505.

‡ *Bougainville's* voy. transf. 62.

§ *Ulloa*.

§ *Cook's* last voy. I. 87.

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places, and *December* one of the months in which they perform the first great command of perpetuating their race.

Latham, vi. 403.—*LEV. MUS.*

BLACK-TOED.

P. With a black bill, an inch and a half long: chin, throat, and space round its base, of a pale silvery grey, minutely speckled with dusky: crown, upper part of the neck, back, wings, and tail, of a sooty black, a little hoary on the back: whole lower part of neck and body of a hoary ash: tail rounded at the end: legs, and one third of the length of the webs, very pale: the rest of the webs and the joints of the toes black. Length thirteen inches.

From a specimen in the *Leverian* Museum, supposed to come from the western side of *North America*.

Latham, vi. 416.—*Br. Mus.*

DUSKY.

P. With a dusky bill, an inch and an half long: instead of tubular nostrils, only two small apertures: upper part of the body dusky black, lower white: sides of the neck mottled with brown and white: edges of the middle coverts of the wings whitish: legs placed as far behind as the vent, dusky on their outsides, pale on the inner: two inner toes yellowish: webs orange. Length thirteen inches.

Inhabits *Nootka* sound; and *Christmas* isle, in the Pacific ocean, lat. 1. 59. north. long. 202. 30. East.

PLACE.

The GOOSANDER fears less the cold than the ice, the last preventing it from feeding: one was seen in *Helsingeland*, in the month of *January*, in the most intense cold. It returns among the first birds in the spring. It lays fourteen eggs, sometimes in hollow trees, sometimes under bushes. The males, in the month of *July*, often sleep on the water with their heads under their wings. They feed chiefly on *Blennies*.

537.

The *Mergus Castor* of LINNÆUS, is the female of this species.

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The

MERGANSER. GOOSANDER.

540. The MINUTE MERGANSER, *Art. Zool.* II. p. 540. A. is the female of the *Smeru*.

537. The Red-breasted *Goosander* arrives later in *Sweden* than the Great *Goosander*. It has such a predilection for the color of red, that the shooters use dogs of that tinge, and even cover their bodies with red cloth or linen, when they are engaged in the pursuit of this species.

BROWN. Mr. HUTCHINS adds two species to this Genus, discovered by him in *Hudjón's Bay*.

The head of the first is of a dark brown. From the orbits is a whitish brown stroke, extending backwards, and ending in a large pendent crest; the upper part of it brown, the lower black: greater and lesser coverts, scapulars, and tail, black: secondaries of the same color, but each web is broadly edged with white: chin speckled with black and white: breast bluish grey, lightly mottled with white: belly white: vent tawny: beyond the junction of the thighs with the body are a few black feathers marked with red: legs dusky yellow. WEIGHT twenty-three ounces. LENGTH seventeen inches and a half.

This species arrives in the bay in *May*, as soon as the rivers are open. Makes its nest about the lakes, with grass, lined with feathers pulled from its own breast: retires when the rivers are frozen.

BLUE. The next is called by the natives *Waw peow ne way se pis*. Has a black, long, slender bill: forehead and crown of a shining black, and the feathers long: about the ears are some dirty white feathers: throat and belly white: breast and vent blue: the hind part of the neck inclines to brown: primaries, scapulars, bastard wing, and lesser coverts, dark blue: greater coverts blue, marked with a white spot: secondaries white on the outside, blue on the inner: tail black, short, and rounded: legs blue. WEIGHT fourteen ounces. Length fourteen inches.

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Arrives in *Hudson's Bay* in *June*: lays ten small white eggs, and makes its nest on the top of some stump of a tree, near the sides of ponds, and forms a cavity by scraping away the rotten wood: hatches in *July*, and immediately conveys its young to the water: retires in *October*.

SWANS were twice seen, in *April*, in *Nootka* sound, flying northward, towards their breeding-places. These birds accompany the Geese in their vernal visit to *Hudson's Bay*, in flocks of about nine: are very numerous inland, but also breed along the coast.

540.

The GREY LAG GOOSE appears as soon as the sun has force enough to melt the ice; that is in *May*. They alight and feed on the grassy spots: they collect in flocks of twenty or thirty: stay about three weeks: separate into pairs, and resort along the coasts to breed. In *July* they moult, at which time the *Indians* knock them down with sticks. Some are brought alive to the factories, where they are fed with corn, and thrive greatly. About the middle of *August* the Geese return to the marshes with their young, and continue there till *September*.

The BLUE-WINGED GOOSE is very numerous about *Albany Fort*, but grows more scarce towards the north. The head and neck of the male is of a pure white.

547.

BRENT GEESSE stay about three months in *Hudson's Bay*, and are very numerous.

551.

The VELVET DUCK is always on the sea, and never on the lakes. Returns to *Sweden* the latest of any, and lays the latest; even the eggs have been found fresh layed in the beginning of *July*. They are white, and about eight or ten in number. This species lays them under the juniper bushes, and covers them close with its elastic feathers. The young dive most admirably. The mother fights in defence of them, but resigns them to the victor. They live entirely on shells.

555.

556. The SCOTER appears in *Sweden* in the earliest spring, ready for its migration towards the extreme north.

566. The LONG-TAILED DUCK is the true *Alfogel* of the *Swedes*, not the PINTAIL. LINNÆUS has formed two species out of it, and I have described a young male as its female; so great are the variations of plumage in different stages of life. I have seen many, but all of them stuffed. Mr. *Oedman*, who has had opportunity of examining multitudes fresh from the shot, thus describes an old female.

The bill is black, sometimes surrounded with a pale circle, sometimes plain: the region of the eyes white: crown, and a certain space on each side of the neck, dusky: round the lower part of the neck is a whitish collar: breast mixed with dusky and grey, growing gradually hoary till it is lost in the whiteness of the belly: shoulders varied with dusky, rufous, and grey: back and rump black, sprinkled transversely with grey: primaries dusky: the coverts mixed with grey: tail short and cuneiform.

The crown and neck of the young female is black, sprinkled with white: across the bill is a band of red: space round the eyes cinereous, edged with white: throat, bottom of the breast, and belly, white: back dusky-ash: tail dusky, white on its sides. It may be observed, that the younger the bird is, the more it is tinged with rufous: and that the long feathers in the tail are the character of the male.—Mr. *Oedman*.

The WESTERN DUCK, and another, supposed to be its female, have been killed at one shot, in a river in *Ostergotland*, and are both engraved in the *Mus. Carlson*, tab. VII. VIII.

The FEMALE is entirely ferruginous, marked with dusky and black: the bill and legs black: the primaries, and greater coverts, dusky, some of the latter tipped with white. Has much resemblance to the RED DUCK of the *Arctic Zoology*, II. p. 576. N.

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CLASS III.

REPTILES.

DIV. I. PEDATED.

Br. Zool. III. p. 7. GENUS I*.

Green Turtle, *Catfish*, ii. 38.Testudo marina vulgaris; et *juvencua*, *Raii Syn. Quad.* 254. 256.Testudo Mydas, *Lin.* 350.La Tortue franche, *Rochfort Antill.* i. 495.GENUS.
I. TORTOISE.

1. GREEN.

TORTOISE with fin-like feet: two claws to the fore, one to the hind: a blunt head: convex shell: the dorsal segments smooth.

This species abounds about the *Bahama* isles, but never lay their eggs there, but migrate at certain seasons from *Cuba*; yet this kind, and the *Loggerhead*, deposit their eggs in the sand on the beaches, in *East Florida*, and feed during summer in the rivers and creeks †. *Carolina* is supplied with them from the *Bahamas*, as an article of luxury. They breed about *Cuba*, and other adjacent isles.

PLACE.

Testudo *Caretta* dicta, *Raii Syn. Quad.* 258.La Caret, *Rochfort Antill.* i. 502.Testudo imbricata, *Lin.* 350.

2. HAWKBILL.

TORTOISE, with the upper mandible incurvated: with two claws on every foot: the plates of the back elevated and sharp: two rows

* The references of pages, in genera and species, are to the last octavo edition of the *British Zoology*. The numbers, in respect to species, are the same in both *quarto* and *octavo*.

† Doctor GARDEN.

of lateral plates, divided by narrow elegant sutures; the lower row terminates in sharp points, tending backwards.

PLACE.

This and the two following kinds inhabit the *Babama* isles, and breed on them. This is the species which yields the beautiful shell, formerly highly esteemed for cabinet works.

3. LOGGERHEAD.

Testudo marina Caouanna dicta, Raii Syn. Quad. 257.

La Caouanne, Rochfort Antill. i. 501.

Loggerhead T. *Catesby, ii. 40.*

T. With a large head, with a triple order of plates from the back to the sides.

PLACE.

This species ranges from the *Babamas* midway to the *Azores*; having been struck, sleeping on the water, in lat. 30. north. Are very voracious, bold, and very foul feeders. They live much on shells, and have strength to grind or break with their mouths the strongest *buccina*. Their flesh is rank, and little esteemed.

The Trunk Tortoise, *Catesby, ii. 40.*

4. TRUNK.

T. Of a narrow form, but very deep: the upper shell, being very convex, grows to a great size: the flesh rank, but much oil is extracted from it, which alone makes it valuable.

PLACE.

Described, but never seen, by Mr. *Catesby*, who gives the above account from relation.

5. RIVER.

New Tortoise. Soft-shelled Turtle, *Ph. Tr. 1771. p. 266.*

T. With a depressed body; in the middle hard and boney, towards the edges flexible, and resembling thick tan-leather; in many parts tuberculated: the *sternum* smooth and white, reaching, in form of a saddle, about two thirds the length of the lower part, the rest covered with a skin.

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T O R T O I S E.

HEAD triangular; nose slender, produced like that of a mole: the neck thick, long, retractile: IRIDES lemon-colored, lively: have a skin like a nictating membrane.

FORE-FEET with five toes, and two spurious; strong claws on the three first: HIND-FEET with the same number of toes and claws, with only one spurious: skin of the legs loose, wrinkled, dusky green: TAIL short and thick.

Inhabits no further north than the rivers of *Savannah* and *Altamaha*, in *South Carolina*; also those of *East Florida*: grows to a great size, to seventy, and even a hundred pounds in weight. Is very strong, swift, and fierce; and, if attacked or disturbed, will raise itself on its legs, and leap forward, to bite the assailant, with great fury and violence. The flesh is very delicate, and even preferable to that of the Green Tortoise.

This species (with beautiful drawings taken from the live animal) were communicated by Doctor GARDEN, late of *Charleston*, and described and engraven in the *Philosophical Transactions*.

PLACE.

T. With a small HEAD, depressed: upper mandible hooked: eyes near the end of the nose: middle row of scales obtusely pointed: STERNUM lozenge-shaped; joined to the sides by a strong membrane: TOES five before, four behind: legs squamose and plicated: length of head and neck six inches and a half: body nine: TAIL five and a half, cultrated, scaly, and at top strongly serrated.

6. SERRATED.

Inhabits the rivers of NEW YORK. Seen in the collection of Mr. *Tho. Bolton*, near *Halifax*.

PLACE.

Testudo Carolina, *Lin.* 352.—*Gron. Zooph.* No. 77.

Land Tortoise from *Carolina*, *Edw.* 205.—*Lawson*, 133.

7. CHEQUERED.

T. With a blunt nose: long thick neck covered with a purplish skin: irides yellow: body very convex; scales large, marked with concentric lines; color brown, chequered with yellow: five toes on the fore

M 2

feet;

feet; four on the hind, with strong claws to each: only the rudiment of a tail.

PLACE.

Inhabits *Carolina*: sleeps, like other land Tortoises, during winter: feeds on snails, tadpoles, young frogs, and mushrooms: is an utter enemy to the Rattle Snake; will seize it below the neck, and, by drawing its own head into the shell, becomes invulnerable: the snake twines about the Tortoise; but is soon destroyed, and left on the ground.

8. MUD.

Mad Tortoise, *Edw.* 287.—*Lawson* 133.

T. With a blunt head: flat smooth shell, divided into thirteen dusky segments, surrounded with a rim of others: the sternum covering almost the whole belly: five toes on the fore feet, four on the hind, webbed, and furnished with claws: tail slender, with a hard horny point.

PLACE.

Inhabits *Pensylvania* and *Carolina*. *Lawson* praises it as an excellent food, especially in *May* and *June*. Their eggs are also very good, but they are the prey of so many animals, that few arrive at perfection.

II. F R O G.

Br. Zool. III. 9. GENUS II.

9. BULL.

Rana ocellata, *Lin.* 356.

Bull Frog, *Lawson*, 132.—*Catsfly*, ii. 72.—*Kalm.* ii. 170.

F R. With dusky red irides, surrounded with a yellow ring: the auricles covered with a thin circular skin, forming a spot behind each eye: four toes on the fore feet: five palmated toes behind. It grows so large, says *Lawson*, that I have seen one with as much meat on it as a pullet. Color of a dusky brown mixed with yellowish green, and spotted with black: the belly yellowish white, faintly spotted.

PLACE.

Sit in pairs, at the springs of small rills; are supposed by the people of *Virginia* to be the purifiers of waters, and respected as the *genii* of the fountains. If surprized, leap into the mouth of the spring, and lie secure.

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During winter remain torpid under mud. In the spring begin to bellow: the noise is like that of an enraged bull; and so loud as to be heard, in a still evening, a mile. Will go three yards at a leap. *Kalm* says, they frequent only ponds and stagnant waters. All writers agree in their devouring little chickens, ducks, and goslings. They are edible. Some were brought alive, a few years ago, to *England*.

Water Frog, *Catesby*, ii. 70.

10. STRIPED.

FR. With large black eyes, and yellow *irides*: long limbs: upper part of the head and body of a dusky green, spotted with black: from each eye to the nose a white line: from each eye along the sides to the rump, a yellow line.

They frequent rivulets and ditches, which they do not quit for the dry land. It is said they will spring five or six yards at a leap.

PLANT.

Rana arborea, *Lin.* 357.

Green Tree Frog, *Catesby*, ii. 71.—*Larson*, 132.

11. TREE.

FR. Of a slender shape: bright green color, marked on each side with a line of yellow: eyes black; *irides* yellow: four toes before, five behind; at the end of each toe a round membrane, concave beneath, not unlike the mouth of a leech.

Lurk under the lower sides of leaves, even of the tallest trees, and adhere firmly, by means of the membranes at the ends of their toes, sticking to the smoothest surface: a looking-glass was held before one, at four yards distance; it reached it at one leap, and stuck closely to it. At night these Frogs make an incessant chirping, and leap from spray to spray in search of insects.

PLANT.

I believe this species to be common to *America* and the warmer parts of *Europe*.

Land

12. LAND.

Land Frog, *Catesby*, ii. 69.—*Lawson*, 132.

FR. With the appearance of a Toad: above grey or brown, spotted with dusky; below white, faintly spotted: *irides* red: short legs.

PLACE.

Frequent the high lands: seen most often in wet weather, in the hottest time of the day: leap: feed on insects, particularly the fire-fly, and ant. Sometimes the *Americans* bake and reduce this species to powder, which, mixed with orrice-root, is taken as a cure for a tympany.

13. CINEREOUS.

FR. With the back gibbous, cinereous, and smooth: belly yellow, and granulated: on each side, from the nose to the rump, is a white line: the same on the outside of the thighs and legs: toes bullated at their ends.

PLACE.

Inhabits *Carolina*.

III. LIZARD.

Br. Zool. III. 21. GENUS III.

14. ALLEGATOR.

Lacerta Crocodylus *Lin.* 359.—*Catesby*, ii. 63.—*Lawson*, 126.

L. With a vast mouth, furnished with sharp teeth: from the back to the end of the tail ferrated: skin tough and brown, and covered on the sides with tubercles. Grows to the length . . eighteen feet.

PLACE.

This dreadful species is found in the warmer parts of *North America*; and most numerous as we approach the south, and the more fierce and ravenous. Yet in *Carolina* never devours the human species, but on the contrary shuns mankind; yet will kill dogs as they swim the rivers, and hogs which feed in the swamps. It is often seen floating like a log of wood on the surface of the water, and is mistaken for such by dogs, and other animals, which it seizes and draws under water to devour at its leisure. Like the wolf, when pressed by long hunger,
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it will swallow mud, and even stones, and pieces of wood. They often get into the weirs in pursuit of fish, and do much mischief by breaking them to pieces.

They are torpid during the winter in *Carolina*, and retire into their dens, which they form by burrowing far under ground; it makes the entrance under water, and works upwards. In spring it quits its retreat, and resorts to the rivers, which it swims up and down; and chiefly seeks its prey near the mouth, when the water is brackish.

It roars and makes a dreadful noise when it leaves its den, and against bad weather. It lays a vast number of eggs in the sand, near the banks of lakes and rivers, and expects them to be hatched by the sun: multitudes are destroyed as soon as hatched, either by their own species, or by fish of prey. In *South America* the Carrion Vulture is the instrument of Providence to destroy multitudes; by that means preventing the country from being rendered uninhabitable*.

Lacerta sex-lineata, *Lin.* 364.

Lion Lizard, *Catefby*, ii. 68.

15. LION.

L. Of a grey color, marked lengthways on each side with three whitish lines: long legs: very long tail, which it curls up, looking fierce at the same time. The size about six inches.

Inhabits *South Carolina* †, and the greater *Antilles*. Very inoffensive. Remarkably agile, but is a prey to rapacious birds.

PLACE.

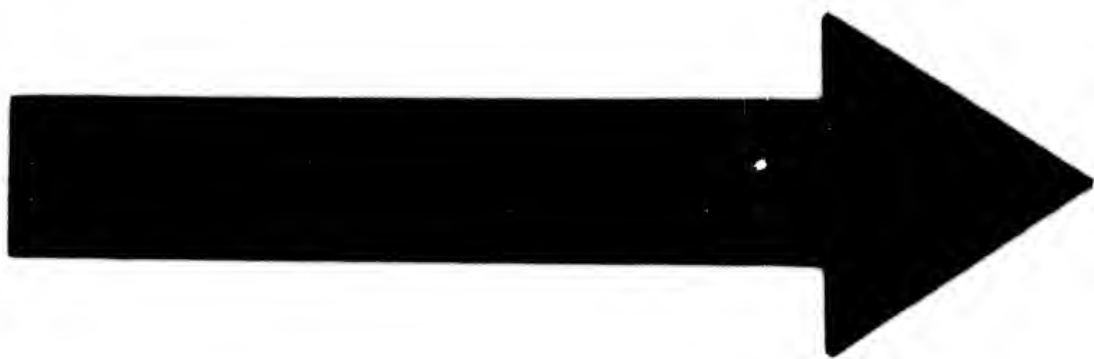
Green Lizard of *Carolina*, *Larvfon*, 131.—*Catefby*, ii. 65.

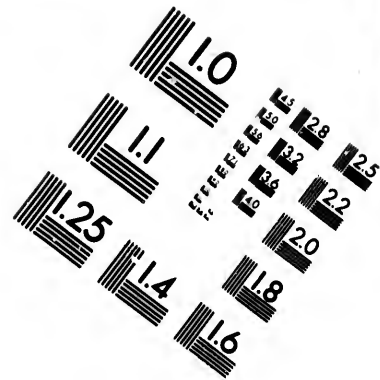
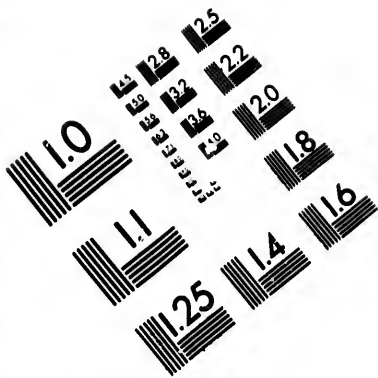
16. GREEN.

L. Totally green: very slender: tail near double the length of the body. Whole length about five inches.

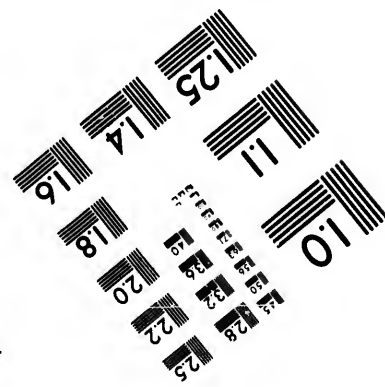
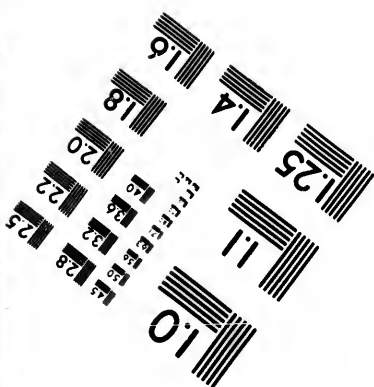
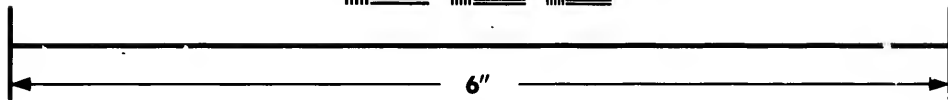
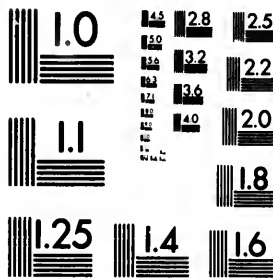
* *Arctic Zool.* II. 193.

† Doctor GARDEN.





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PLACE. Inhabits *Carolina*: domestic, familiar, and harmless. Sports on tables and windows, and amuses with its agility in catching flies: gazes at mankind without concern: swells its throat into a protuberance, which it discharges at will. Cold affects the colors: in that uncertain climate, when there is a quick transition, in the same day, from hot to cold, it changes instantly from the most brilliant green to a dull brown. Is sometimes tempted by a gleam of sun to quit its retreat, but by the sudden change of weather is so enfeebled, as not to be able to return to its hole, and will die with cold.

17. FIVE-LINED. L. 5-lineata. L. cauda tereti mediocri, dorso lineis quinque albidis, *Lin.* 366.

L. With one yellow line under each eye, two between, and one on each side above: upper parts of the body dusky, marked with five lines of a pale yellow color, reaching to the middle of the tail: belly scaly and striated: tail half as long again as the body.

PLACE. Inhabits *Carolina*.—DOCTOR GARDEN.

18. GUANA.

L. Iguana, *Lin.* 366.
The Guana, *Catesby*, ii. 64.

L. With the top of the back and tail strongly ferrated: the gullet ferrated in the same manner. Sometimes found to be five feet long. Has small teeth, and will bite hard.

PLACE. Inhabits the rocks of the *Babama* islands; and lurks in cliffs, or hollow trees: feeds entirely on vegetables and fruits: the fat of the abdomen assumes the color of that which it has last eaten: has a most disgusting look; yet is esteemed a most delicate and wholesome food; noxious only to venereal patients*. Is slow: not amphibious; yet on necessity will continue long under water: swims by means of the tail, keeping its legs close to the body. *Guanoes* are the support of the natives of the *Babamas*, who go in their sloops from rock to rock in

* *Linnaeus.*

search of them. They are taken with dogs trained for the purpose. As soon as caught, their mouths are sewed up, to prevent them from biting. Some are carried alive for sale to *Carolina*; others salted and barrelled for home consumption.

Lacerta fasciata, *Lin.* 369.
Blue-tail Lizard, *Catesby*, ii. 67.

19. BLUE-
TAILED.

L. With a short head: brown body, striped from the nose to the tail with five yellow lines: the tail slender and blue. Length of this species six inches.

Inhabits *Carolina* and *Virginia*. Possibly differs only in sex from the *Five-lined Lizard*.

PLACE.

Lacerta punctata, *Lin.* 370.
Spotted Eft, *Catesby App.* 10.

20. SPOTTED.

L. With the crown, back, and upper part of the tail, dusky, marked on each side of the back with a row of round white spots: throat, sides, and belly, dull yellow. Length five inches.

Inhabits *Virginia*.

PLACE.

Lawson, 131.

21. SCORPION.

L. With a copper-colored back, and orange belly; called by *Lawson*, the Scorpion Lizard: very active in running up trees: is said to be venomous?

L. With a long head, and great blunt nose: the whole animal of a dusky color, with a row of large white spots on each side of the back: tail carinated above and below: body divided and surrounded by *annuli*. LENGTH about six inches.

22. ANNULATED.

Called in *America*, the *Well Slow*.—MRS. BLACKBURN'S *Museum*.

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23. SLENDER.

I H A V E examined another, about eight inches long, as slender as a crow-quil: head small: tail blunt, and of equal thickness: body marked from head to tail with lines of pale brown and black: belly lead-color: tip of the nose and tail white.

I think its place was *Carolina*.

IV. SIREN.

Body and head anguilliform: two feet placed below the neck.

24. SIREN.

The Mud-Iguana, Ph. Tr. 1766. p. 189.

S. With anguilliform head and body: eyes minute: nostrils on the sides of the nose: teeth sharp, ranged in transverse rows, fit for biting or grinding: three openings to the gills, with three pennated appendages on each side of the covers: the legs are in form of arms, placed high on the breast, not remote from the throat: each foot has four divided toes, with a claw to each: the body covered with small scales sunk in gelatinous matter; color dusky, but the sides dotted in lines with white: the tail compressed, and, like that of an Eel, supplied above and below with a ray-less fin.

PLACE.

Peculiar to the muddy swamps of *South Carolina*; lurking beneath the ancient trunks of trees that impend over the water: makes a croaking noise: fragile, for if cast on the ground it breaks in three or four pieces.

SIZE.

Grows to the length of thirty-one inches.

DIV. II. WITHOUT FEET.

SERPENTS.

With plates on the abdomen : plates and scales beneath the tail ; a rattle at its end. LINNÆUS.

V. RATTLE-SNAKE.

Crotalus horridus, 167. Scutis, 23. Scutellis, *Lin.* 372.
Rattlesnake, *Catsfly*, ii. 41.—*Lawson*, 128.

25. GREAT.

R. With a brown broad head : yellowish brown back, marked with broad transverse dentated bars of black : scales rough : belly cinereous : the jaws furnished with small sharp teeth ; four fangs in the upper jaw, incurvated, large, and pointed, the instruments of death ; at the base of each a round orifice, opening into a hollow, that near the end of the tooth appears again in form of a small channel : these teeth may be erected or compressed : when in the action of biting, they force out of a gland near their roots, the fatal juice : this is received into the round orifice of the teeth, conveyed through the tube into the channel, and thence with unerring direction into the wound.

The tail furnished with a rattle, consisting of joints loosely connected ; the number uncertain, depending, as is pretended, on the age of the animal, it receiving with every year a new joint. Authors mention forty and seventy*.

Rattlesnakes grow to the length of eight feet, and, according to a news-paper account, to fourteen.

* *Kalm*, in the *Swedish Medical Essays*, 290.—*Ph. Tr. abridg.* vii. 412.

PLACE.

Swarm in the less inhabited parts of *North America*: now almost extirpated in the populous; none found farther north than the mountains near lake *Champlain**: but in the south infest *South America*, even as far as *Brazil* †. Love woods and lofty hills, especially where the strata are rocky or chalky: the pass near *Niagara* abounds with them. Being slow of motion, they frequent the sides of rills, to make prey of frogs, or of such animals that resort there to quench their thirst: are generally found during summer in pairs: in winter, collect in multitudes, and retire beneath ground, beyond the reach of frost: tempted by the warmth of a spring day, they are often observed to creep out weak and languid: a person has seen a piece of ground covered with them, and killed with a rod between sixty and seventy; till, overpowered with the stench, he was obliged to retire.

They couple in *August*, and then are most dangerous: are viviparous, and bring forth, in *June*, about twelve young ones: between that and *September* they acquire the length of a foot.

Providence hath given mankind a security against the bite of these dreadful reptiles; for it does not often fail warning the passenger of its vicinity, by the rattle of its tail. In fine weather that monition is always given, in wet weather seldom, which gives the *Indians* a dread of travelling amidst the woods in rainy seasons.

It moves along with the head on the ground; but if alarmed, it flings its body into a circle, coiling itself with the head in the centre erect, and with the eyes flaming in a most terrific manner. Happily it may be easily avoided: it is slow in pursuit, and has not the power of springing at its assailant, like many of the innocent tribe.

It is difficult to speak of its fascinating powers: authors ‡ of credit describe the effects. Birds have been seen to drop into its mouth, squirrels descend from their trees, and leverets run into its jaws.

* *Kalm's Travels*, iii. 48. † *Marcgrave*, 240.

‡ *Lawson-Catsby*—Ph. Tr. abridg. ix. 56, &c. vii. 410.—*Brickel's Hist. Carolina*, 144.—*Beverley Virginia*, 260.—*Colden*, i. 12.

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Terror and amazement seem to lay hold on these little animals: they make violent efforts to get away, still keeping their eyes fixed on those of the snake; at length, wearied with their movements, and frightened out of all capacity of knowing the course they ought to take, become at length the prey of the expecting devourer, probably in their last convulsive motion.

Rattlesnakes are apt to frequent houses: every domestic animal on their approach, as if by instinct, takes alarm; dogs bristle, and the poultry crest their feathers; hogs only attack them, feeding on them with impunity. The brave *Indians* will also eat their flesh: a MAN, says the *Mohawk Sachem*, eats every thing without distinction, dogs, snakes, frogs, &c.: it is womanish to be delicate in the choice of food.

The bite of this Serpent is of the most venomous kind; if the wound is on a vein or artery, death ensues rapid as thought*; if in a fleshy part, there are hopes of a remedy; the most efficacious, if done in time, is either the burning, or the cutting out the part affected. The symptoms are, *nausea*, convulsions, spitting of blood, and bloody stools; loss of the use of the limbs; swellings, and discolored skin; fever, *deliria*; and, if the cure takes any length of time, disturbed rest, and dreams of the most horrible kinds †.

The use of the famous *Radix Senega*, *Amœn. Acad.* ii. 126, or *Polygala Senega*, *Sp. Pl.* ii. 990, which was once supposed to have been an effectual remedy against the bite of this dreadful reptile is now exploded, but it still maintains its character in several disorders. Its efficacy, particularly in pleurisies, is most fully established in *Virginia*: formerly near fifty out of a hundred died of that distemper, but by the happy use of this root, hardly three out of the same number have been lost.

* *Kalm*, in *Suediſh Med. Essays*, 282.

† *Pb. Tr.* vii. 410. &c. xi. 256.

26. SMALL.

Crotalus durissus, 173—21.—*Lin.* 372.
Small Rattlesnake, *Catesby*, ii. 42.

R. Of a brown color tinged with red, marked with distinct spots of black with white edges.

Catesby doubts whether this is a distinct species, as serpents sometimes change their marks with the change of their skins.

LINNÆUS's character of the number of plates and scales, assures us of its specific difference.

Less venomous than the former.

27. MILIARY.

Crotalus miliarius, 13—31.—*Lin.* 272.

R. With cinereous body, with three rows of black spots, and a red one between each of those on the back.

LINNÆUS quotes *Catesby*, 42, for this species; but his *Cr. Durissus* suits that writer's description. Doctor *Garden*'s name is prefixed to this, so it is certain this species or variety exists.

VI. BOA.

Plates on the abdomen, and beneath the tail: no rattle. LINNÆUS.

28. HOGNOSE.

Boa contortrix, 150—40.—*Lin.* 373.
Hog-nose Snake, *Catesby*, ii. 56.

B. With a large convex head; poisonous glands; no fangs*: nose turned up; cheeks inflated: short body: crown and back of a brownish color, with large and regular spots of black: the hinder part of the body with transverse bars of yellow between the black: belly white, with small spots of black.

PLACE.

Inhabits *Carolina*: is very sluggish, and has a most malevolent aspect. That examined by *Catesby* was only a foot long. He suspects that it might have been a young one, which had not got its fatal teeth.

* Doctor GARDEN in *Lin. Syst.* 373, and *Catesby*.

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Viper, *Br. Zool.* III. 26. GENUS IV.

VII. SNAKE.

Coluber æstivus, 155—144.—*Lin.* 387.
Green Snake, *Catesby*, ii. 57.

29. FAMILIAR.

SN. With a slender body, of an uniform pale green. A small species.

Inhabits *Carolina*: lives among the branches of trees, on flies and other insects: is easily tamed, and become so familiar, that some people will carry it in their bosom.

PLACE.

Blueish green Snake, *Catesby*, ii. 47.
Coluber mycterizans, 192—167.—*Lin.* 389:

30. PORRACEOUS.

SN. With a very slender body, of a blueish green color: head small: nose turned up at the end.

Inhabits trees, and lives on insects like the former.

Coluber fimus, 126—45. } *Lin.* 375.
130—25. }

31. CROSSED.

SN. With a roundish head, turned-up nose, a black crooked band between the eyes: a white cross on the top of the head, with a black spot in the middle: body black, fasciated with white: belly black.

Inhabits *Carolina*.

PLACE.

Water Viper, *Catesby*, ii. 43.
Horn-Snake, *Lawson*, 130.

32. WATER.

SN. With a large head, small neck; fangs in the upper jaw: color of head and back dusky: belly fasciated with black and yellow. At the end of the tail a small horny substance.

Inhaioits

PLACE.

Inhabits *Carolina*: swims well, and is very dexterous in catching fish. During summer, numbers of them are often seen hanging in the boughs of trees over the rivers, watching the approach of fish or fowl, and frequently drop into boats passing beneath. They plunge on their prey, and pursue it with great swiftness; and, as soon as they catch it, swim ashore to devour it: are called the *Water Rattlesnakes*, and are supposed to be as fatal in their bite. The little horn at the tail gives it a dreadful name, as if armed with death at both extremities. The superstitious believe, that by a jerk of that part it can mortally wound any animal, and even cause a tree to wither by transfixing the bark.

33. BLACK.

Catesby, ii. 48.—*Coluber constrictor*, *Lin.* 385.—*Larsson*, 132.—*Kalm*, ii. 202.

SN. Wholly of a shining black; it grows sometimes to the length of six feet.

It is not only perfectly harmless, but extremely useful in clearing the houses of rats, which it pursues with wonderful agility to the very roofs, and all parts of barns and outhouses, for which good services it is cherished by the generality of *Americans*. It is also said, that it will destroy the Rattlesnake, by twisting round it, and whipping it to death. In the time of copulation it is extremely bold and fierce, and will attack mankind; but its bite has no more effect than a scratch with a pin. It is so swift that there is no escaping its pursuit. Many ridiculous frights have happened from this innocent reptile. As every one in *America* is full of the dread of the Rattlesnake, they are apt to fly at the sight of any of the serpent kind. This pursues, soon overtakes, and by twisting round the legs of the fugitive, soon brings him to the ground: but he happily receives no hurt, but what may result from this fright: all the mischief this species does is to the housewives, for it will skim their milk-pans of the cream, and rob their hen-roosts of all the eggs.

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Coach-whip Snake, *Catesby*, ii. 54

34. COACH-WHIP.

SN. With a long slender body, growing very small towards the tail ;
of a brown color.

Inhabits *Carolina* : very active, and runs very swiftly : the *Indians*
believe it will cut a man asunder by a jerk of the tail.

PLACE.

Corn-Snake, *Catesby*, ii. 55.

35. MAIZE.

SN. With a body beautifully marked with red and white, like some
of the ears of *Maize* or *Indian* corn.

Inhabits *Virginia* and *Carolina*. Great robbers of hen-roosts.

PLACE.

Black Viper, *Catesby*, ii. 44.

36. THICK.

SN. With a great head, and fangs : body thick and short : color entirely
black.

Inhabits *Carolina* ; and lives in the higher lands : is slow of motion :
if irritated, distends its head to a vast size, and hisses horribly. Its bite
very fatal.

PLACE.

Brown Viper, *Catesby*, ii. 45.

37. BROWN.

SN. With a large head and great fangs : thick body : entirely brown.
About two feet long.

Inhabits *Virginia* and *Carolina* : in the last styled the *Trunchion* Snake :
is slow and sluggish, even at approach of danger : will defend itself vi-
gorously. Its bite very venomous.

PLACE.

O

Copper

38. COPPER-
BELLY.Copper-bellied Snake, *Catesby*, ii. 46.
Red-bellied Sand Snake, *Lawson*, 131.

SN. Without fangs, but with a viperine head. back and sides brown: belly dirty red or copper-color. Near as large as the Rattlesnake.

PLACE.

Inhabits *Carolina*: frequents water, but oftener lives on land: enters hen-roosts: sucks eggs, and devours poultry. Is bold and active: not poisonous.

39. STRIATED.

Coluber striatulus, 126—45.—*Lin.* 375.

SN. With a smooth head, with a dusky striated back, paler beneath. A small species.

PLACE.

Inhabits *Carolina*.

40. DOTTED.

Coluber punctatus, 136—43.—*Lin.* 376.

SN. With a cinereous body: yellow beneath: marked with three rows of black specks, three deep in each row.

PLACE.

Inhabits *Carolina*.

41. HOOPED.

Coluber doliatus, 164—43.—*Lin.* 379.

SN. With a whitish body, half surrounded with bands of black: two alternately nearer to each other, connected at the bottom. A small kind.

PLACE.

Inhabits *Carolina*.

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Coluber fipedon, 144—73.—*Lin.* 379.

42. DUSKY.

SN. Wholly dusky.

Inhabits *North America*.

PLACE.

Coluber fulvius, 218—31.—*Lin.* 381.

43. TAWNY.

SN. With a body surrounded with twenty-two black, and twenty-two tawny rings, the last spotted with black, and marked before and behind with white.

Inhabits *Carolina*.

PLACE.

Coluber firtalis, 150—114.—*Lin.* 383.

44. VITTATED.

SN. With a dusky body, slightly striated, and surrounded with three blueish green bands.

Inhabits *Canada*.

PLACE.

Pensacola, Mr. *Ellis*.

45. PENSACOLA.

SN. With a narrow white stripe from head to tail; on each side a broad one of black, this bounded by another narrow one of white; and beneath that another of black, dentated: belly white, marked on each side with a row of minute black spots. LENGTH nine inches.

Inhabits *Pensacola*.

PLACE.

Little black and red Snake, *Edw.* 349.

46. MINUTE.

SN. With a jetty black head and back: white ring round the neck: rich scarlet body: flame-colored eyes, not so large as the common greater earth-worms.

Inhabits *Pensylvania*: lives in crevices of rocks, walls, or dried wood, feeding on beetles, worms, &c. Seldom appears abroad.

PLACE.

Another

47. GOLDEN-
EYED.Another small Snake, *Edw. Gl.* vol. iii. p. 291.

SN. With chestnut-colored back, and deep yellow belly: these colors divided from each other, the whole length, by blue lines, speckled with black: round the neck a collar of yellow spots. Eyes gold-color.

PLACE.

Inhabits *Pensylvania*.—Whether a variety of the former?

VIII. FRAGILE.

Scales both on the abdomen, and behind the tail, *Lin.* 390.

48. GLASSY.

Anguis ventralis, 127—222.—*Lin.* 391.Glass Snake, *Catsby*, ii. 59.

SN. With a very small head: broad cloven tongue: small smooth scales closely connected: back and sides brown, blended with green, most elegantly spotted with yellow in regular rows: belly yellow: thick body.

PLACE.

Inhabits the sandy woods of *Virginia* and *Carolina*: so brittle as to be broken in three or four pieces at a single stroke, the muscles being articulated quite through the *vertebræ*. Very harmless.

49. BLIND.

Br. Zool. ii. N° 15.—*Anguis fragilis*, *Lin.* 392.

PLACE.

EXactly the same with the *English*, but shorter and more slender. Inhabits most parts of *America*.

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F I S H of NORTH AMERICA.

ONE tooth issuing out of the upper jaw, direct, strait, long, spiral, stuck in a socket. I. NARWHAL.

Two orifices on the head.

Monodon monoceros, *Lin.* 105.—*Faun. Suec.* N° 48.—*Arledi Gen.* 78.—*Syn.* 108.
Monoceros piscis, *Wil. Ichth.* 42.—*Raii Syn. Pisc.* 11.—*Worm. Mus.* 283.—*Mus. Reg. Hafniæ*, pars I. sect. iii. tab. 1.

50. UNICORN.

N. With a tooth issuing out of the left side of the nose; a small one hid under the muscles on the right: head sharp: mouth small: skin smooth and black, and sometimes finely marbled with black and white: the body thick; small only near the tail: no back fin, but has three lumps instead, and one on the belly: two small pectoral fins: the tail divided, and each lobe bending inward like a crescent.

The length of the fish alone, is often above twenty feet; of the tooth ten feet*. A fish of sixteen feet had a tooth six feet six inches long. One six feet six inches long weighed, with the head, a hundred and fifty pounds. There are instances of both teeth growing to nearly the same length, *i. e.* seven feet five, and seven feet †; two inches distant at the bottoms, thirteen at the points.

* *Crantz Greenland*, i. 111.

† *Mus. Reg. Hafniæ*, tab. 1. fig. c.

PLACE.

Inhabits the northern seas, from *Norway* to within the *Arctic* circle: plentiful in *Davis's Straits*, and the north of *Greenland*: the natives, for want of wood, make rafters of the teeth. *Wormius* says, the flesh is a deadly poison. ? From the horn may be distilled a very strong *sal volatile*: the scrapings esteemed *alexipharmic*, and used of old in malignant fevers, and against the bites of serpents. The use of it to the animal is either as a weapon of defence, or as an instrument to loosen and disengage from the rocks, or bottom of the sea *, the sea plants on which it feeds. It swims swiftly, and can only be struck when numbers happen to be found together, and obstruct their own course with their teeth †.

The tooth of this animal was in old times imposed upon the world as the horn of the *Unicorn*, and sold at a very high price. The heirs of the chancellor to *Christian Frisius* of *Denmark*, valued one at 8,000 imperials ‡. There is a magnificent throne made of this species of ivory for the *Danish* monarchs, which is still preserved in the castle at *Rosenberg*. The price of this material was superior to gold.

* *Crantz Greenland*, i. 11.† *Ibid.*‡ *Museum Reg. Hafniæ.*

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C L A S S I V. F I S H.

D I V. I. C E T A C E O U S.

II. C A R T I L A G I N O U S.

III. B O N E Y.

D I V. I. C E T A C E O U S F I S H.

Br. Zool. iii. 50. GENUS I.

II. W H A L E.

Common Whale, *Br. Zool.* iii. N° 16.—*Marten's Spitzberg.* 130.—*Catesby App.* xxxii.— 51. COMMON,
Grantz Greenland, i. 107.—*Phipps's voy.* 185.
 Whalebone Whale, *Dudley,* in *Ph. Tr. abridg.* vii. 424.

TO avoid repetition, all the cetaceous fish, which have the names of *Catesby* or *Dudley* prefixed, are placed here on their authority.

I am informed that vast numbers of cetaceous fishes are seen in the warm gulf stream in the winter season.

Pike-headed, *Br. Zool.* iii. N° 17.

52. PIKE-HEADED.

Scrag Whale, *Dudley* in *Ph. Tr. abridg.* vii. 425.

Balaena Boops, *Lin.* 106.

Fin-fish, *Br. Zool.* iii. N° 18.

53. FIN.

Fin-back Whale, *Dudley,* &c. 425.

Balaena Physalus, *Lin.* 106.

Hump-

54. HUMP. Hump-back Whale, *Dudley*, &c. 425.
55. BEAKED. Beaked Whale, *Br. Zool.* iii. N^o 20.
Bottle-nose, *Catchy App.* x. xii.
56. CACHALOT. *Br. Zool.* iii. 61. GENUS II.
57. BLUNT-HEADED. Blunt-headed Cachalot, *Br. Zool.* iii. N^o 21.
Sperma Ceti Whale, *Dudley*, &c. 425*.
58. HIGH-FINNED. High-finned, *Br. Zool.* iii. N^o 23.
Sword-fish, *Catchy App.* xxxii.

THIS in *America* is called the *Sword Fish*, from the long fin on the back, which is not unlike a scymeter.

III. DOLPHIN.

59. GRAMPUS. *Br. Zool.* iii. 65. GENUS III.
Grampus, *Br. Zool.* iii. N^o 20.
Killer, *Dudley*, &c. 428.—*Catchy App.* xxxii.
60. PORPESE. Porpesse, *Br. Zool.* iii. N^o 25.—*Catchy App.* xxxii.

PORPESES swarm from *Hudson's Bay* to *Carolina*, and haunt the creeks in pursuit of herrings and other fish: vast numbers are taken near *Petite Riviere*, in the river *St. Lawrence*, from the end of *September* to the beginning of *November*, when they are in quest of the eels, which in those months ascend the river in vast multitudes. The inhabitants use this method:—they place boughs of trees, with their leaves on, in a curved form from the shore, during low water. The Porpesses, which get above them at high water, and attempting to return at the ebb, are terrified with the rustling of the leaves, and, hesitating to proceed for fear of a snare being left for them, continue so long swimming confusedly backward and forward, as at length to be left on the bottom, so become an easy prey at low water.

* These are inserted on the authority of *Mr. Paul Dudley*, who described the whales of *New England*.

Arch. Zool. i. 182.—Delphinus albicans, Faun Groenl. p. 50.

61. BELUGA.

I Refer to the above references for an account of this species. It is found from *Greenland* to the river *St. Lawrence*, and the shores of *Nova Scotia*. *Charlevoix* informs us, that the skins of this and the common *Porpoise* are tanned, and manufactured into the resemblance of *Morocco* leather; and that it is proof against a musquet ball*.

* *Voy. dans l'Amérique Septentr. v. 217.*

DIV. II. CARTILAGINOUS FISH.

IV. LAMPREY.

Br. Zool. iii. p. 76. GENUS IV.

62. SEA.

Lamprey, *Br. Zool.* iii. N° 27.—*Catesby App.* xxxii.

PLACE.

LAMPRIES are not common, but Mr. *Lawson* says he once caught one in a wear in *Carolina*.

V. RAY.

Br. Zool. iii. 82. GENUS V.

63. THORNBACK.

Thorn-back, *Br. Zool.* iii. N° 37.

FOUND off *Carolina*, but less common than the next species. *Lawson*.

64. STING.

Sting-ray, *Br. Zool.* iii. N° 38?

THIS and the preceding, on the authority of *Catesby*, *App.* xxxii. and *Lawson*, p. 157, who says, they are so very common, that few or none will eat them.

65. DIVEL.

Divel Fish, *Lauton. Carol.* 152.—*Catesby App.* xxxii.Raie cornue des Açores mobular des Caraïbes, *Du Hamel*, iii. 295, tab. xvii.

R. With a bifurcated snout: sides extending into two sharp-pointed fins: tail extending from the body, slender, long, and taper. A fish of a singular structure, and of a dark color.

Grows to an enormous size, and has vast strength; one has been known

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known to entangle its snout or horns in the anchor of a sloop, and run with it two leagues against the tide. This is the same with the *Sea Devil* of *Nicuboff*, observed by him in the *East Indian* seas*.

Br. Zool. iii. 98. GENUS VI.

Br. Zool. iii. N° 42.—*Lawson*, 155.—*Catesby App.* xxxii.

FOUND on all the coasts of *North America*.

Squalus Tiburo, *Lin.* 399.

Tiburonis, minor species, *Marcgrave*, 181.—*Wil. Ich.* 55.

THIS species may be readily known by the shape of its head, which is triangular, like the head of an arrow, or heart-shaped, or as *Lawson* calls it, *shovel-nosed*. We give it on his authority. It is very probably the same fish, which is frequent in the *Brazilian* seas, those of the *Antilles*, and may easily extend to *Carolina*.

The *Brazilians* call it *Papana*: it has three rows of small teeth, with which it bites and mangles in a dreadful manner †. *Piso* praises it as a delicate food.

Lawson speaks of a lesser species of Shark, which is called *Dog Fish*; but from his account we are unable to determine which kind is intended.

Squalus pristis, *Lin.* 401.—*Catesby, App.* xxxii.

SH. With two dorsal fins and an anal: two holes on the top of the head for the discharge of water: lips covered with rough hard tubera instead of teeth: at the end of the nose is a flat bone, in some five feet long, and armed on each side with twenty-four long, strong, and

* *Churchill's Coll.* ii. 350.—*Wil. Ich. App.* 5. † *Piso*, *Hist. Nat.* 50.

Q

sharp-

VI. SHARK.

66. WHITE.

PLACE.

67. ARROW-
HEADED.

68. SAW.

Sharp-pointed teeth *. The number of teeth varies with age. The skin rough; above of a deep ash, below white. Doctor *Grew* suspects that this fish may grow to the length of eight yards †.

PLACE.

Inhabits all seas, from *Greenland* to those of the *Brazils*: is found in those of *Africa*, and of the *East Indies*. It is an innoxious animal: its jaw is only a weapon of defence. The two orifices on the head make it connected with the cetaceous fish.

VII. ANGLER.

Br. Zool. iii. 120. GENUS VII.

69. COMMON.

Common Angler, *Br. Zool.* vol. iii. N° 51.

VIII. STURGEON.

Br. Zool. iii. 124. GENUS VIII.

70. EUROPEAN.

Sturgeon, *Br. Zool.* iii. N° 53.

THIS is the same species with the *European*. They are found in great numbers, during summer, in the great *American* rivers. They are very common in those of *Carolina*, but very rare in those of *Florida*. Are struck with spears in the night, attracted by the light of torches made of the wood of the black pine. The shores of the rivers are often covered with dead Sturgeons, which have been wounded, and died after escaping from the harpoon. They are often observed to leap to a considerable height out of the water, and have been known to fall into the small boats or canoes, and sink them; so that it is very dangerous to pass in the places which are much frequented by these fish, as there have been many instances of people losing their lives. In some of the rivers of *Virginia* they are found in such multitudes, that six hundred have been taken in two days, with no more trouble than putting down a pole with a hook at the end, to the bottom, and drawing it up again,

* *Marcgrave*, 160.

† *Grew's Museum*, 86.

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On perceiving that it rubbed against a fish*. The *Americans* may make considerable improvements in the methods of taking Sturgeon, by consulting those used by the *Tartars* on the *Volga*, who draw great advantage from their fisheries, and the preparation of the *caviar* from the roe. Much oil may also be extracted from the fat entrails, which is flung away after clearing the *caviar* from them †.

Acipenser huso, *Lin.* 404.—*Bloß.* iv. 86. tab. cxxix.

71, *MUSEO.*

I Saw, among the subjects of Natural History transmitted to Mrs. *Ann Blackburne*, from *New York*, some young Sturgeons of a small size: their noses were blunt, and shorter than those of the common Sturgeons: the number of tubercles on each side were, in different specimens, which I counted, from five to eleven. In old fish these disappear, and the sides become quite smooth. This is the species which the *Germans* call *Hausen*, and the *Russians*, *Bjelunga*, on account of the whiteness of its color. They grow to a vast size: are found in the *Danube*, the *Po*, the *Mediterranean sea*, the *Euxine*, the *Volga*, and the *Caspian sea*; in the two last in vast abundance: and great profit is made from the ising-glass, *isthyocolle*, or fish-gluce, which is prepared from the bladders of this species, as well as that of the two other Sturgeons: and also from the *silurus glanis*, *LIN.* which may possibly be found in the great *American lakes*.

I have reason to think that the *Americans* possess in their lakes all the three species. A small one, weighing from six to forty pounds, is frequent in the inland lakes of *Hudson's Bay*. This is likely to be the *acipenser rutbanus*, *LIN.* 403; the *sterlet* of the *Russians*. Notwithstanding *America* has withdrawn itself from us, it is charity to point out the benefits they may enjoy, from the gifts of nature which they possess.

* Doctor *Burnaby's Travels*, octavo, p. 15.

† *Decouvertes faites par des Russes*, &c. i. 351.

IX. BALISTES

Head compressed, small.

Eight teeth on each side? the two foremost the longest.

A narrow aperture or slit above the pectoral fins.

Skin rough, scales adhering tightly to it. LINNÆUS.

72. UNICORN-

Bahama Unicorn fish, *Catfish*, ii. 19.

Balistes monoceros, *Lin.* 404.

B. With an oblong body, fusiform, or thickest in the middle: two sharp teeth in the upper, and four in the lower jaw, issuing from the solid bone, covered with a thin skin: irides pale, encircled with blue: just beyond the eyes, on the back, is a strong sharp and long spine, to be erected or depressed at pleasure; reaching, when down, to the dorsal fin: color, brown olive, with irregular waving lines of blue, intermixed with spots of black. Grows to the length of three feet.

PLACE.

Frequent among the coralline rocks of the *Bahama* isles: feeds on the *corallium porosum*, and other coralline substances, and on shells, which it grinds small. Esteemed poisonous.

73. OLD-

Old wife, *Catfish*, ii. 22.

Balistes vetula, *Lin.* 406.

B. With a deep body; suddenly lessening near the tail: mouth projecting, furnished with about twelve long teeth: first dorsal fin has three rays, or sharp bony spines: the first ray of the second, very long: first ray of the ventral fin spiny: tail lunated, with the exterior ray on each side of a vast length: mouth surrounded with rich blue: two incurvated lines of blue extend from it towards the breast: second dorsal fin, anal, and tail, dusky, edged with fine blue: body brown, with six dusky lines from the back down the sides. Of the length of about two feet.

Swims slowly. Is good meat when the rough skin is taken off.

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Caper. pefee Baleſtra, *Salvian Piſc.* p. 207.—*Grew's Muſeum*, 113.

74. BALESTRA.

B. With a deep body: firſt dorſal fin has three ſtrong ſpiny rays; the firſt the longeſt; the third remote: that and the ſecond very ſhort. Second dorſal fin and anal placed oppoſite; the rays ſoft; the ſcales covered with ſmall tubera, and diſpoſed in a cancellated or lattice form: tail even at the end.

This ſpecies is common to the *Mediterranean* ſea, and thoſe about *Bermudas*. It is called at *Rome*, *Baleſtra*, or the *Croſsbow*. No force can bring down the firſt ſpine of the dorſal fin; but on touching the foremoſt and left, they all three drop ſuddenly together, as a croſsbow is let off by the pulling of the trigger. The ſame circumſtance attends other fiſhes of this genus.

PLACE.

Ten ſlender teeth, a linear aperture.

Body covered with a hard integument.

No ventral fins. LINNÆUS.

X. OSTRACION.

OSTR. With a great head: noſe ſloping and pig-like: noſtrils placed juſt below the eyes, covered with a ſmall flap: dorſal fin placed near the tail: anal coreſpondent to it: back and ſides browniſh yellow, and rough like ſhagreen: belly flat, rough, and white: ſides, near the tail ſmooth.

75. SHAGREENED.

Taken off the coaſt of *New England*. Mrs. *Anne Blackburn*.

PLACE.

Br. Zool. iii. 129. GENUS IX. by miſtake, DIODON.

XI. TETRODON.

Tetrodon levigatus, *Lin.* 411,

76. PRICKLY.

T Above blueiſh, marked with two whitish ſtripes on each ſide: belly white, and aculeated as far as the pectoral fins.

Inhabits the coaſt of *South Carolina*. Doctor *GARDEN*. Miſnamed by LINNÆUS.

PLACE.

77. GLOBE.

T. With a globular belly, quite smooth, and of a whitish color: head and back olive, marked with incurvated lines pointing to the tail. Tail forked.

PLACE.

Found off *New England* and *Carolina*. See *Catesby*, ii. 28.

78. SHORT.

Sun-fish, La Lune, *Catesby Append.* xxxii.

Short, *Br. Zool.* iii. N^o 55.

Tetrodon Mola, *Lin.* 412.

XII. DIODON.

JAWS boney, undivided: linear aperture:
Body covered with strong moveable spines in all parts.
No ventral fins. LINNÆUS.

79.

I Cannot ascertain the species; but there was one taken off the coast of *Carolina*, as I collect from *Lawson*, who calls it a *Toad Fish*; the skin of which is full of prickles, and is good for nothing, only is preserved as a rarity. *Catesby* has also one in his Catalogue, *App.* XLIII. which he calls the *Hedge Hog Fish*.

XIII. LUMP.

Br. Zool. iii. 133. GENUS X.

80. COMMON.

Lump, *Br. Zool.* iii. N^o 57.

Cyclopterus Lumpus, *Lin.* 414.

XIV. PIPE.

Br. Zool. iii. 138. GENUS XI.

81. SHORTER.

Br. Zool. iii. N^o 61.—*Syngnathus acus*, *Lin.* 416.

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F I S H.

S E C T. III. B O N E Y.

S E C T. I. A P O D A L.

Br. Zool. iii. p. 142. GENUS XII.

XV. E E L.

Br. Zool. iii. N^o 63.—Muræna Anguilla, *Lin.*

82. COMMON.

ABOUND in all parts of *North America*: numbers are found below the great fall of *Niagara*. Vast quantities are taken in weels placed in the midst of a hedge, fixed in the water near the shore, as far as low-water mark, in different parts of the river *St. Lawrence*, where the tide flows. There they are left at the recess of the water.

Br. Zool. iii. N^o 64.

83. CONGER.

Muræna Helena, *Lin.* 425.
Black and Green Muray, *Catesby*, ii. 20.

84. MURAY.

E. With a stopping nose; two small beards at its end: a dusky fin, with a white edge, from the hind part of the head to the tail: no pectoral fins: color dirty green speckled with innumerable black spots. But they vary in color; some having the ground color grey.

They

They lurk in the *Babama* isles, among the stones and corals, and bite the legs of people that go into the water. Their teeth are very sharp, so that they draw blood; but they are by no means venomous.

85. BLACK.

Catfish, ii. 21.

THIS is only a variety of the former: is of a black color, marked with darker spots. They grow to the length of four feet: are very voracious and strong, and when hooked will twist themselves among the branches of coral and sea plants, which are often broken, and brought up with them.

No fish was in such high esteem with the *Romans* (for they are common to the new and old world). They were preserved in ponds, and became so familiar as to come when they were called.

Natat ad magistrum delicata muræna*.

Lucius Crassus, a person of rank, went into mourning on the death of a favorite *muræna*: and *C. Hirrius*, who was distinguished above all others for his fine fish-ponds, valued this species so highly, that he would by no means sell any; but so far favored *Julius Cæsar*, as to lend him six thousand for his triumphal supper.

Vedius Pollio, a great friend of *Augustus*, used to fling his condemned slaves into the ponds in which he kept his Murays, as food for those fishes; not that there was any want of wild beasts in the land, but because he took pleasure in seeing a man torn to pieces at once, which he could not otherwise enjoy †.

The *Latin* name of this fish is usually translated the *Lamprey*; a kind very unfit to execute the savage pleasures of this friend of *Augustus*.

* *Martial*, lib. x. Epig. 30.

† *Plin.* lib. ix. c. 23.

LANCE. SWORD FISH.

113

Br. Zool. iii. p. 156. GENUS XIV.

XVI. LANCE.

Br. Zool. iii. N° 66.—*Ammodytes tobianus*, *Lin.* 430.—*Bloch.* ii. 20.

FREQUENT off *Newfoundland*.

PLACE.

Br. Zool. iii. p. 160. GENUS XVI.

XVII. SWORD
FISH.

Br. Zool. iii. N° 68.—*Xiphias gladius*, *Lin.* 432.—*Bloch.* iii. 23.

86. SWORDFISH.

I Am not certain whether *Catesby* does not mean the high-finned *Cachalot*, by his Sword fish; yet as it is found in most seas, even to those of *Ceylon**, I give it a place here.

* *Mr. Loten.*

R

SECT.

S E C T. II. J U G U L A R.

XVIII. COD.

Br. Zool. iii. p. 172. GENUS XIX.

* With three dorsal fins.

87. COMMON.

Br. Zool. iii. N^o 73. *Gadus morhua*, *Lin.* 436.

CONSULT *Br. Zool.* iii. 137. and respecting the great *Newfoundland* fishery, p. cxcvi. of the Introduction to this work. But the fullest count of this important fishery is to be seen in *M. Du Hamel's* *TRAITÉ GÉNÉRAL DES PESCHES*, vol. ii. p. 37; where the whole economy is given, and the manner expressed by most numerous and elegant engravings. Codlings are caught, in the spring months, off the coast of *Carolina*, but they are considered only as stragglers from the great northern army.

88. FROST.

C Of an elegant taper form: no beard. Head dusky: back and sides prettily marked with black waving bands, reaching almost to the belly; the ground color dark, the dorsal fins and tail speckled with black. Are sometimes found a foot long, but generally not half that size.

PLACE.

The length of the specimen in the *Blackburnian* Museum was only four inches and a half, but sometimes grows to the length of twelve inches. It was sent from *New York* under the name of the *Frost Fish*, being probably the forerunner of winter.

89. HADDOCK.

Br. Zool. iii. N^o 74.—*Gadus aeglefinus*, *Lin.* 435.—*Bloch.* ii. 125.

PLACE.

ACCORDING to *M. Du Hamel*, ii. 81. is found off *Newfoundland*.

Br.

Br. Zool. iii. No 78.—*Gadus carbonarius*, *Lin.* 438.—*Bloch.* ii. 146.

90. COAL.

OFF *Newfoundland.*—*Du Hamel.*

PLACE.

* * With two dorsal fins.

Br. Zool. iii. No .—*Gadus merluccius*, *Lin.* 439.

91. HAKE.

Gadus Tau, *Lin.* 439.—*Bloch.* ii. 150. tab. lxxvii.

92. TAU.

C. With a large and circular mouth : broad and flat head : eyes placed over the sides of the mouth, and almost projecting over it : first dorsal fin consists of three sharp spines : the second extends far on the back, and is composed of soft rays : head brown : back and sides of the same color, spotted with white : belly white : tail round.

Inhabits the seas of *Carolina*, where it is called, from the form of its head, the *Toad Fish* : has much agreement, in the form of the head, with my trifurated Cod, No 34.—Discovered by Doctor GARDEN.

PLACE.

Br. Zool. iii. No .—*Gadus lota*, *Lin.*

93. BURBOT.

INHABITS *Hudson's Bay.* See *Introd.* cxci.

PLACE.

Introd. cxci.

94. MATHENEG.

INHABITS the lakes of *Hudson's Bay.*

PLACE.

Br. Zool. iii. p. 206. GENUS XX.

XIX. BLENNY

BL. With the whole body spotted in form of small pustules : color pale dull yellow.

95. PUSTULATED.

Inhabits the sea off *Newfoundland.*

PLACE.

S E C T. III. T H O R A C I C.

XX. REMORA.

Echeneis, *Lin.* 446. Genus CLVII.**H**E A D flat at top, marginated, and fulcated transversely.

96. AMERICAN.

Catefby, ii. 26.—Ech. neucrates, *Lin.* 446.

R. With sixteen furrows on the head. Length about a foot.
PLACE. Inhabits the ocean quite to *North America*: is often found adhering so strongly to the sides of *Sharks* and other great fish, by means of the structure of its head, as to be got off with difficulty.

This fish was believed, by all the antients, to have most wonderful powers, and to be able, by adhering to the bottom, to arrest the motion of a ship in its fullest course; and in love affairs, to deaden the warmest affections of both sexes*. *Oppian* gives an elegant account of its wonderful operations in the first instance; which we shall give from the translation which Mr. *John Jones* favored the world with from the *Oxford* press, in 1722.

The Sucking-Fish beneath, with secret chains,
 Clung to the keel, the swiftest ship detains.
 The seamen run confus'd, no labor's spar'd,
 Let fly the sheets, and hoist the topmost yard.
 The master bids them give her all the sails,
 To court the winds, and catch the coming gales;
 But tho' the canvas bellies with the blast,
 And boist'rous winds bend down the cracking mast,

* *Plin.* lib. ix. c. 25.

The

The bark stands firmly rooted in the sea,
 And will, unmov'd, nor winds nor waves obey;
 Still, as when calms have flatt'd all the plain,
 And infant waves scarce wrinkle on the main,
 No ship in harbor moor'd so careleſs rides,
 When ruffling waters tell the flowing tides.
 Appall'd the ſailors ſtare, thro' ſtrange ſurprize,
 Believe they dream, and rub their waking eyes.
 As when, unerring from the huntsman's bow,
 The feather'd death arreſts the flying doe,
 Struck thro', the dying beaſt falls ſudden down,
 The parts grow ſtiff, and all the motion's gone;
 Such ſudden force the floating captive binds,
 Tho' beat by waves, and urg'd by driving winds.

CORYPHÆNA. Head ſloping, and truncated: the dorsal fin
 extending the length of the back. LINNÆUS.

XXI. CORY-
 PHÆNE.

Cateſby, ii. 18.—*Novacula cærulea*, *Wil. Iſſ.* 214.

97. BLUE.

C. Wholly of a rich blue color: irides red: ſcales large: tail in
 form of a crescent: teeth ſo cloſely placed as to ſeem an entire
 bone. LENGTH, ſometimes above two feet.

Inhabits the ſeas of the *Babama* iſles, and from thence to the line.

PLACE.

Cateſby, ii. 29.—*C. Pittacus*, *Lin.* 448.

98. PARROT.

C. With blunt teeth paving the mouth like that of the Wolf Fiſh: irides
 conſiſt of two circles, red and yellow: a blue circle ſurrounds the
 eyes: upper part of the head brown; lower part, and covers of the gill,
 blue, edged with red; a yellow ſmall ſpot is ſeen juſt beyond each of the
 gills: a ſcarlet ſtroke points from them to the throat: body of a fine
 green:

green : pectoral fins varied with black, green, and purple : the dorsal of a cinnamon color : anal green, striped in the middle with red : ventral red, edged with blue : near the setting on of the tail is a rich yellow spot : tail lunated, green, with an incurvated transverse stripe of red.

Few fish equal this in richness of its color : it is also esteemed very delicate eating.

PLACE.

Is frequent among the *Babama* isles, and the *Antilles*, and also off *Carolina*.

These fish vary in color : that which Doctor GARDEN communicated to LINNÆUS had not less brilliancy.

99. LINEATED.

I See this in Doctor FORSTER's Catalogue, but can give no farther account of it.

XXII. BULL-
HEAD.

Br. Zool. iii. p. 216. GENUS XXII.

100. FATHER-
LASHER.

Br. Zool. iii. N° 99.—*Cottus scorpius*, *Lin.* 452.—*Blach.* ii. 17.

FREQUENT off *Newfound'and*.

101. ACADIAN.

B. With head, and covers of the gill, very spiny and rugged : dorsal fin consists of four spiny rays, the first very long, the rest gradually shortening ; the spines of the second and third longest in the middle, gradually shortening before and behind : tail rounded : color dirty yellow, blotched with purple. Length about five inches. Easily distinguished by its three dorsal fins.

PLACE.

Taken off *Nova Scotia*. A drawing of it communicated to me by Col. *Davis* of the artillery.

Lin. p. 454.—Doree, *Br. Zool.* iii. p. 221. GENUS XXIII.

XXIII. ZEUS.

Br. Zool. iii. N° 101.—*Muller's Zool. Danicæ Prodr.* 49. N° 370.—*Le Poisson Lune, Du Hamel*, iii. 14. tab. xv.

102. OPAH.

THIS fish extends to *Newfoundland*. It is found on the coasts of *Scotland*, of those of *Northumberland*, and again on those of *Devonshire*.

PLACE.

Br. Zool. iii. p. 226. GENUS XXIV.

XXIV. FLOUNDER.

* Eyes on the right side.

Br. Zool. iii. N° 104.—*Pleuronectes Flesus, Lin.* 457.—*Bleeb.* ii. 36.

103. COMMON.

Br. Zool. iii. N° 102.—*Pl. Hippoglossus, Lin.* 456.—*Bleeb.* ii. 42.

104. HOLIBUT.

Br. Zool. iii. N° 103.—*Pl. Plateffa, Lin.* 456.—*Bleeb.* ii. 29.

105. PLAISE.

Pl. plagiufa, Lin. 456.

FL. With an oblong body, cinereous, rough, and with the dorsal and anal tails united.

Inhabits *Carolina*.

PLACE.

Br. Zool. ii. N° 107.—*Pl. Solen, Lin.* 457.—*Bleeb.* ii. 39.

106. SOLE.

* * With

* * With eyes on the left side.

107. LINEATED.

Pl. lineatus, Lin. 458.—Sloane, ii. 77.

FL. Without pectoral fins : body covered with small rough scales : rays of all the fins, and of the tail, roughened with small tubercles like shagreen : upper part of the body and fins dark brown, streaked transversely with black : lower part white, marked with black round spots. In form of a Turbot. LENGTH of the specimen I described seven inches by five and a quarter.

PLACE.

Found from *New England to Jamaica.*

108. LUNATED.

Catefy, ii. 27.—Pl. lunata, Lin. 459.

FL. With dorsal and ventral fins, furnished with sharp spiny rays : upper part of the body brown, beautifully varied with semicircular marks of a rich blue color, placed in pairs, and facing each other : the part next to the dorsal fin spotted with the same color : tail of a rhomboid form : body of an oval shape.

109. DENTATED.

Pl. dentatus, Lin. 458.

FL. With a smooth body, round scaly tail, and the teeth pointing out of the mouth.

PLACE.

Inhabits the seas of *South Carolina.*—**DOCTOR GARDEN.**

XXV. CHŒ-
TODON.

Lin. 460. GENUS CLXIV.

T E E T H as slender as bristles, very numerous, and closely placed : six brancheostagous rays : dorsal and caudal fins : fleshy and scaly.

Ch.

Ch. alepidotus, *Lin.* 460.

110. SCALELESS.

CH. With a rhomboid body, without scales: blueish back: lateral line parallel to the back, and dotted: dorsal and anal fins placed opposite to each other, and filiform.

Carolina.—DOCTOR GARDEN.

PLACE.

Catesby, ii. 31.—*Ch. triostegus*, *Lin.* 463.

111. ANGEL.

CH. With a small projecting mouth: laminæ above the gills armed with sharp cærulean spines: irides yellow: body as if cut off behind, and waved. The whole deep and covered with large green scales, and those in a singular manner with very small ones: pectoral and ventral fins yellow: dorsal and anal fins very long, and falci-form, reaching far beyond the tail; their lower half green, the rest red; before each are three short strong spines: tail orange, rounded at the end, and as if stuck into the body. Length from head to tail, one foot.

These singular fishes are common off *Carolina*, and the *Bahama* isles, and esteemed for their delicacy.

PLACE.

Perca nobilis, *Lin.* 484.—*Chætodon*, *Seb. Mus.* p. 67. N° 12. tab. xxv. N° 12.

112. NOBLE.

CH. With a projecting mouth: body white, surrounded by eight black bands, which pass over the dorsal and anal fins. Length one inch eight lines.

Inhabits *North America*.—*M. De Geer's Museum*.

This is a genuine *Chætodon*; but we must allow good LINNÆUS his nap sometimes.

PLACE.

XXVI. GILT-
HEAD.*Br. Zool.* iii. p. 240. GENUS XXV.

113. SNAPPER.

Catfishy, ii. 17.—*Sparus fynagris*, *Lin.* 470.

G. With large eyes, and red irides: body taper, purple above and lighter below, elegantly marked lengthways with narrow yellow stripes: pectoral fins purple: tail red: the other fins yellow. Grows to the length of a foot.

114. PORR.

Catfishy, ii. 4.—*Sp. rhomboides*, *Lin.* 470.

G. Of a rhomboid form: yellow irides: whole body covered with large scales of a deep grey color, and yellow, placed in alternate rows, forming longitudinal stripes: fins and tail yellow: first ray of the anal is a very strong sharp spine.

PLACE.

Found off the *Bahama* isles, and reckoned a delicate species.

115. PORGY.

Catfishy, ii. 16.—*Sp. chrysope*, *Lin.* 471.

G. With yellow irides: large mouth: in the upper mandible one tooth before: in the lower two: body of a deep form, and brown, lightest on the belly: covers of the gills, pectoral, ventral, and anal fins, light blue.

116. SILVER.

Sp. Argyrops, *Lin.* 471.—*Zanthurus indicus*, *Wil. Isb.* App. 3.

G. With silvery irides: fore teeth conic: an oblong sinus in the back: tail lunated: three first rays of the dorsal fin extending far, and filiform.

PLACE.

Inhabits *Jamaica* and *Carolina*.—DOCTOR GARDEN.

Pudding

Padding wife, *Catfish*, ii. 12.—*Sp. radiatus*, *Lin.* 472.

117. RADIATEL.

G. With red eyes, with fine carulean radiations surrounding them: the head streaked also with blue: body olivaceous brown, each scale edged with blue: dorsal and anal fin yellow, waved at top, and edged with blue: from one pectoral fin to the other, surrounding the belly, are four lines of blue and yellow, placed alternate: tail even, dusky, ending in a band of yellow. Grows to the length of sixteen inches.

Perhaps varies in color: this differing in some respects from the specimen communicated to *JANNÆUS* by *DOCTOR GARDEN*.

Inhabits the seas of *Carolina*.

PLACE.

Sp. Virginicus, *Lin.* 472.

118. VIRGINIAN.

THE covers of the gills a little serrated: one black band passes from the shoulders through the eyes to the lower jaw; another from the shoulders along the sides to the pectoral fin: the body marked with parallel lines of blue, extending lengthways: the tail bifid, blunted at each extremity.

Inhabits *North America*.—In *Mr. De Geer's Museum*.

PLACE.

Br. Zool. iii. p. 244. GENUS XXVI.

XXVII. WRASSE.

Catfish, ii. 25.—*Labrus anthicus*, *Lin.* 474.

119. MUTTON.

WR. With red irides: upper part of the head dusky: covers of the gills purple: body reddish brown, brightening into red to the belly, which is white tinged with red: dorsal fin brown; the others red: tail much forked and red. Length between one and two feet.

PLACE.

Is common to the *Mediterranean* and *American* seas: is in high esteem for its delicacy among the *Babama* isles.

120. MANGROVE.

Catefby, ii. 9.—*L. griseus*, *Lin.* 474.

WR. With a pointed nose: very wide mouth; two large pointed teeth in front of each jaw: whole fish of a brown color, palest towards the belly: tail a little forked. Length about fourteen inches. *Catefby*, with a negligence very usual with him, has in his figure omitted the pectoral fins.

121. HOG.

Catefby, ii. 11.—*L. rufus*, *Lin.* 475.

WR. With a long protruded nose: the whole fish of a yellowish red: exterior ray of the tail on each side extends far beyond the others. Space between quite even.

122. CINEREOUS.

The Shad, *Catefby*, ii. 11. fig. 2.

WR. With the nose and fore part of the head smooth and cartilaginous: mouth small and toothless; the back part strong and boney: the whole fish cinereous, tinged with purple: lower part of the dorsal fin covered with a double skin.

123. GAPER.

Labrus hiatula, *Lin.* 475.

WR. With the body marked with six or seven bands: tail undivided: no anal fin.

PLACE.

Inhabits the seas of *Carolina*, as I suppose the three former do.

Catefby,

Catesby, Append. xxxiii.—L. Cromis, *Lin.* 479.—Guatucupu, *Maregrave*, 177.

124. DRUM.

WR. Of a silvery color, marked crossways with dusky bands: on the gill covers a single spine: dorsal fin appears like two, uniting midway: first ray of the anal fin short and rigid; the second great, thick, and compressed.—Communicated to LINNÆUS by DOCTOR GARDEN.

Catesby and *Lawson* mention both red and black *Drums*: the first says they are as large as Cod Fish. The red bite in the day-time eagerly at a hook; and are reckoned excellent, especially the head. Numbers are salted and sent in barrels to the *West Indies*.

In the night the inhabitants resort in their canoes to the bays and large rivers, and by the light of a fire kill great numbers by harpooning them.

Extends to *Brazil*.

PLACE.

Catesby, ii. 10. fig. 2.—L. Flavus, *Lin.* 479.

125. YELLOW.

WR. Wholly of a reddish color: slender form: nose smooth, projectile: three long teeth in the end of the upper mandible: a blue stripe from the side of the head to the corner of the mouth: tail rounded at the end. Grows to the length of a foot.

Carolina?

PLACE.

Mormyrus ex cinereo nigricans.—Bone Fish, *Catesby*, ii. 13.

126. BONE.

WR. Of rather slender shape: white irides: back dusky brown: belly white: tail much forked: nose slightly convex. Found in plenty about the *Bahama* isles.

PLACE.

Great

127. GREAT.

Great Hog Fish, *Catsby*, ii. 15.

WR. With smooth long projectile jaws, of a reddish purple color : head cased in a strong boney substance : at the end of the upper jaw four long sharp teeth ; at that of the lower, two : head black above, below purplish, varied with crooked blue strokes : back covered with great purple scales ; those on the belly paler, stained with yellow : on the back a fin divided into four parts, very long, falciform, and bending backwards.

SIZE.

This fish grows to the length of three or four feet. Mr. *Catsby* could not describe the tail, it having been cut off before it was brought to him. It is so singular a fish, as to merit a better figure and description.

128. ANTIENF.

Br. Zool. iii. N^o 115.

PLACE.

THIS I found among the fish sent to Mrs. *Anne Blackburne*, from *New York*.

XXVIII. PERCH.

Br. Zool. iii. p. 254. GENUS XXVI.129. YELLOW-
BELLED.*Catsby*, ii. 8. fig. 3.—*Labrus auritus*, *Lin.* 475.

P. With dusky blue back and sides : belly, tail, dorsal and anal fins brown ; ventral yellow : on the end of the covers of the gills a black spot, united with a smaller of red. Grows to the length of a man's hand.

PLACE.

Inhabits the fresh waters of *Carolina* and *Virginia*, especially mill-pools and standing waters. Is called the *Ground Perch*, from its covering itself in mud or sand.

Catefby, ii. 8. fig. 2.—*Perca fectatrix*, *Lin.* 486.

130. RUDDER.

P. With the upper part of the body brown, varied with large round spots of yellow: belly and sides streaked lengthways with regular narrow lines of white and yellow, dotted: the three first rays of the anal fin short, sharp, and boney. Length not four inches.

This species follows the rudders of ships, across the warm parts of the *Atlantic*, in vast numbers, and adhere to the bottom, to collect food from the slime sticking to it. It is wonderful that so small a fish should be able to keep up with ships in their swiftest course, unless, what is probable, they are carried with them.

Perca punctata, *Lin.* 482.

131. DOTTED.

P. With an undivided tail: dorsal fins sub-distinct: body marked with dotted lines of black: head silvery.

Inhabits *Carolina*.—DOCTOR GARDEN.

PLACE.

Catefby, ii. 3. fig. 1.—*Perca undulata*, *Lin.* 483.

132. CROKER.

P. With the body marked with brown or reddish brown, in an undulated manner: on the gill covers five short spines: tail red, slightly lunated: at the base of the pectoral fins a brown spot. Sometimes grows to the length of three feet.

Inhabits the great rivers of *Virginia*: the largest are taken in the deep parts of the *Chesapeak*. Is reckoned tolerably good meat.

PLACE.

Perca

133. EYED.

Perca ocellata, Lin. 483.

P. With the first ray of the dorsal fin very short: near the upper part of the body, close to the base of the tail, is a black eye, with a white iris: tail entire.

PLACE.

Inhabits *Carolina*, and is called there the *Bass*.—DOCTOR GARDEN.

134. PHILADELPHIAN.

Perca Philadelphica, Lin. 484.

P. With dorsal fins united; and marked in the middle with a black spot: body spotted with black, and fasciated with the same; lower part red: scales and covers of the gills fringed.

PLACE.

Inhabits *North America*; called there the *Cub*.—DOCTOR GARDEN.

135. BLACK.

Perca atraria, Lin. 485.

P. With dorsal fins united: lateral line strait: color entirely black, except the edges of the dorsal fin, which is white: tail entire.

PLACE.

Inhabits *Carolina*; called there the *Black Fish*.—DOCTOR GARDEN.

136. MARGOT.

Catesby, ii. 2.—P. Chrysoptera, Lin. 485.

P. With a gibbous back: upper mandible longer than the lower: whole body dusky brown: ventral, anal, and caudal fins yellow spotted with brown: tail, according to *Catesby*, forked; according to DOCTOR GARDEN, who is to be depended on, entire.

PLACE.

Inhabits *Carolina*.

Catesby,

Cateby, ii. 7.—*P. punctata*, *Lin.* 482.

137. NEGRO.

P. With dorsal fins united: body of a dusky color, regularly marked with small round blue spots: tail rounded. Length from six to ten inches.

Cateby, ii. 7.—*P. melanura*, *Lin.* 486.

138. BLACK-TAIL.

P. With head and back dusky: sides lighter, varied with yellow lines, extending from head to tail: tail black, much forked, and bordered all round with white. Size of the former.

Cateby, ii. 14.—*P. guttata*, *Lin.* 485.—*Cugupuguaca*, *Marcgrave*, 169.

139. HIND.

P. With the whole body covered with a thick skin: head of a muddy red: back of a dark reddish brown: sides green; and belly white: the whole sprinkled with round spots of a bright red: tail green, rounded, and the end edged with black. This species is about a foot long.

These fish are found in great plenty in the shallow seas of the *Babama* isles, and esteemed as good meat.

PLACE.

Rock-fish, *Cateby*, ii. 5.—*P. venenosa*, *Lin.* 486.

140. VENEMOUS.

P. With smooth thin scales: back and sides dusky: belly whitish: the whole marked with red spots, encircled with black, and placed at distances from each other: tail a little forked. They grow to the length of two or three feet.

This is reckoned the most poisonous fish of any about the *Babama* isles. Many of these noxious species are eatable in some places, of which the natives can give a near guess, but are sometimes miserably

T

deceived.

deceived. Mr. *Catesby* does not account for the cause of the poison ; but gives a fact which leads to an explanation. He once procured a diver to bring up some of the beautiful corals, which grow at the rocky bottoms of the shallow sea round the *Babama* isles. They are of unspeakable clearness, and shew, even at the depth of twenty fathoms, a most charming variety of groves of corals, keretophytes, astroitæ, and shells, animated with multitudes of fishes of the most glowing colors sporting among them. Many of the corals and sea plants are covered with a mucilaginous substance, which *Catesby* calls the coral in a soft and imperfect state: it is in fact the spawn of fish ; a part often poisonous, when the fish itself is poisonous ; witness that of the *English* Barbel. The diver brought up some of the corals thus bespined, and, to clean his hands from it, rubbed them on his belly. He was suddenly taken with most acute pains, and flung himself on the sands in most distracted postures, till the pains left him, which was in about a quarter of an hour. There may be other animals which have noxious qualities, such as the species of *Mollusca*, called *Laplysia*, *Medusa*, and *Holothuria*, which may deposit their spawn on the sea plants. The fish who haunt those places, greedily feed on it ; receive the deleterious qualities, which often prove of such bad effect to the persons who happen to eat of them ; while the very same species of fish, which has happened to feed in parts of the sea free from this poisonous substance, are eaten with the utmost safety.

Poisonous fish are not peculiar to those seas. Doctor *Forster*, and others, the companions of Captain *Cook's* second voyage, suffered severely by eating, in the *South Seas*, the *Sparus Erythrinus*, a fish quite innocent in the *Mediterranean**. A new species of *Tetrodon*, taken in the same seas, had similar effects. The *Tenije* of *Japan*, the *Tetrodon ocellatus* of *LINNÆUS*, is a poison that baffles all remedy: it is in that country the resort of suicides. The fatal qualities lie in the intestines, and some other parts, which are carefully flung away before it is dressed.

* *Forster's Voy.* ii. 237.

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Strange as it appears, the *Japanese* epicures will not deny themselves a dish they esteem so delicate, fatal as the effects are from neglect in the dressing. The good emperor only prohibits his officers and soldiers from touching this food: the rest of his subjects, he graciously permits to run the risque with impunity*.

Catsb., ii. 6.—*P. formosa*, *Lin.* 488.

141. GRUNT.

P. With the head elegantly striped lengthways with blue and yellow: mouth rising upwards: body covered with large brown scales, prettily edged with yellow: lateral line marked by lesser scales: tail much forked: dorsal fins united. LENGTH about one foot.

P. striata, *Lin.* 487.

142. STRATED.

P. With dorsal fins united: tail forked: second ray of the anal fin very strong: body striated.

Inhabits *North America*. That in *M. de Geer's Museum* differs only from the *Perca Melanurus* of the *Mediterranean*, by its tail not being black.

PLACE.

P. trifurca, *Lin.* 489.

143. TRIFURCATED.

P. With the head most beautifully varied: dorsal fins united: the body surrounded by seven cærulean bands: third and fourth rays of the dorsal fins spinous, and lengthened by a cetaceous filament, long as the spine itself: the tail is most singularly trifurcated.

Inhabits the seas of *Carolina*.—DOCTOR GARDEN.

PLACE.

* *Kampfer, Hist. Japan*, i. 134.

144. BASSE.

Br. Zool. iii. N^o 125 ?—*Catesby, App.* xxxiii.

I Am uncertain whether this is the same as the *British*, or whether it is the species described, N^o 133. which goes under that name in *America*.

145. APODAL.

Catesby, ii. 4. fig. 2.

P. With yellow irides, whole body of a dirty red : fins and tail of a deep yellow : dorsal fins united : tail much forked. Grows to the length of a foot. What is a singular mark of this fish, it wants the pectoral fins.

PLACE.

Is found about the *Babama* isles, where it is called the *Schoolmaster*.

146. RIVER.

Br. Zool. iii. N^o 124.—*Art. Zool. Introd.* cxc1.—*Catesby, App.* xxxii.

PLACE.

FOUND in the rivers of *Hudson's Bay*, where it grows to the weight of eight pounds.

XXIX. STICKLEBACK.

Br. Zool. iii. p. 261. GENUS XXVIII.

147. TWO-SPIND.

Forster's Cat. N. Am. An. 22.

I N Mrs. *Blackburne's* collection from *New York*.

148. THREE-SPINED.

Br. Zool. iii. N^o 129.—*Introd. Art. Zool.* cxc1.

PLACE.

VERY numerous in *Hudson's Bay*.

Gasterosteus Carolinus, *Lin.* 490.

149. CAROLINA.

ST. With eight spines on the back, and three on the anal fin: body oblongly oval: lateral fins strait, subcarinated towards the tail: dorsal and anal fins fulcated: tail forked.

Inhabits *Carolina*.—DOCTOR GARDEN.

PLACE.

Gast. canadus, *Lin.* 491.

150. CANADA.

ST. With eight dorsal spines: none on the anal: body oblong: anal fin, and first dorsal fin, falcated.

Inhabits the same place, and discovered by the same naturalist.

PLACE.

Cateby, ii. 14.—*Gast. saltatrix*, *Lin.* 491.

151. SKIP-JACK.

ST. With the dorsal fin placed low on the back: eight spines connected by a thin membrane; weak, and may be depressed into a furrow: tail forked: color on the back green, when just taken: one row of teeth in the lower, two in the upper jaw.

Inhabits the same place. Is continually skipping out of the water; from which it gets its name.

PLACE.

Br. Zool. iii. p. 264. GENUS XXIX.

XXX. MACK-REL.

Scomber hippos, *Lin.* 494.

152. HIPPOS.

M. With a single row of teeth, and two large in front: lateral line bending very much: somewhat spiny behind: dorsal fin red: ventral

ventral and anal yellow: spurious dorsal fins united: on the covers of the gills a black spot.

PLACE. *Carolina.*—DOCTOR GARDEN.

153. YELLOW-TAIL.

Sc. Chrysurus, *Lin.* 494.

M. Without teeth: the spurious fins united and yellow: spines placed at some distance before the anal fin: tail yellow.

PLACE. The same place, and discoverer.

154. TUNNY.

Br. Zool. iii. N^o 133.—*Spanish Mackrel, Lawson, 155.*—*Bloch.* ii. 87. tab. LV.

LAWSON says, that they are caught with *hook and line*, in the inlets, and out at sea, and that they grow to the length of two feet or more.

Few fish spread farther than this. It is found in the *Chinese*, in the *Indian*, in the *Norwegian*, the *British*, the *Mediterranean*, the *North American*, and the *Brazilian* seas. I suspect that these are distinct species, or perhaps varieties from age or climate. That which I had opportunity of examining, from a subject just taken in *Loch Fine*, differed from those commonly described or figured; but it quite agrees with the gigantic kind, so well distinguished from the others, and engraven by *Rondeletius*, lib. viii. c. 12. p. 249. under the name of *Orcynus*. This is a point which must be decided by those who inhabit places where these fishes are taken in abundance. But I am confident of the fidelity of the drawing, and of the description of mine in the *British Zoology*.

Sc. Pelamis, *Lin.* 492.—Bonito, *Lawson*, 155.

155. BONITO.

THIS is another species of *Tunny*, which frequents the inlets of *Carolina*, and the ocean adjacent to them. It grows to the length of three feet, and is taken by the harpoon and fish-gig. They are seen in vast numbers in all the tropical countries, and enliven, by the chase they give to other fishes, the tediousness of a long voyage. They live chiefly on the *sapia*, and flying-fishes.

Br. Zool. iii. p. 276. GENUS XXXI.

XXXI. GUR-
NARD.

Trygl. evolans, *Lin.* 498.

156. FLYING.

G. With a square and broad nose: two slender spines above each eye, two at the top of the head, and two beyond the gills: ten spiny rays in the first dorsal fin, which is marked with a great black spot: the scales on the lateral line are small, black, and very rough: the space above that line brown, spotted with black: belly white: pectoral fin black, very broad, and so long as to extend two thirds the length of the body.

Inhabits the sea off *New York*, *Carolina*, and *Jamaica*.—Described from a specimen in *Mrs. Blackburne's Museum*. The same with the Rough Gurnard in *Doctor Forster's Catalogue*.

PLATE.

ABDOMINAL.

* * * *

A B D O M I N A L.

XXXII. LOCHE.

Br. Zool. ii. p. 282. GENUS XXXII.

157. BEARDLESS.

Cobitis heteroclita, *Lin.* 500.

L. Beardless, slender, with large smooth scales: head flat and scaly: lips furnished with teeth: dorsal fin placed beyond the balance: that and the anal opposite: dusky, dewed over with pellucid spots: belly yellowish: tail rounded, varied with white spots and black bands; the end transparent.

PLACE.

Inhabits *Carolina*.—DOCTOR GARDEN.

158. BEARDED.

Br. Zool. iii. N^o 142.PLACED here on the authority of *Lawson*, 160.

XXXIII. AMIA.

Head boney, naked, rough: the futures visible.

Teeth sharp, closely set in the jaws and palate.

Two nasal beards.

Twelve brancheostegous rays. Body scaly, LINNÆUS.

159. BOLD.

Amia calva, *Lin.* 500.

A. With a slender body: lateral line strait: on the throat two shield-like bones, striated from the center: covers of the gills blunt and boney: head as if scalped: pectoral and ventral fins of the same size: ventral in the middle of the abdomen: tail rounded, with a black spot at the upper part of the base: dorsal fin extends far.

PLACE.

Inhabits *Carolina*.—DOCTOR GARDEN.

4

Head

Head naked: several beards about the mouth.

XXXIV. SILURE.

Branchiostegous rays, iv. xiv.

First ray of the dorsal or pectoral fin spiny, dentated backwards.

LINNÆUS.

Silurus Felis, *Lin.* 503.

160. FELIS.

S. With four beards on the lower lip: above the mouth, one on each side: back blueish: ventral and anal fins red: tail bifid.

Inhabits *Carolina*.—DOCTOR GARDEN.

PLACE.

S. catus, *Lin.* 504.—*S. Felis*, 503.—*Catesby*, ii. 23.—*Bagre*, alia species, *Margrave*, 173.

161. CAT.

S. With four short beards on the lower jaw, and a very long one issuing from under each eye: the dorsal fin small and conic; the second dorsal fin without rays, and fat: all the other fins small and red: tail forked and red: head round, and very ugly: mouth and gape very large: teeth small: skin smooth like that of an eel: upper part of the body dusky: lower, pale flesh color: in form round, thick, and clumsy. Grows to the length of two feet.

Inhabits the sea and rivers of most parts of *North America*; preys on all sorts of small fishes, even those of its own kind. In taste resembles an eel, and is much esteemed. Is a fish of slow motion. Probably, like the fishing frog or angler, it tempts the small kinds to sport within reach of its great mouth, by the lure of its beards.

PLACE.

LINNÆUS says this species is found also in *Asia*.

162. ARMED.

S. *Cataphractus*, *Lin.* 506.—*Catechy*, iii. 19. fig. 1.

S. With the head, some of the fore part, and all the upper part, covered with smooth angular boney plates: no teeth: the sides, to the tail, covered with plates placed perpendicularly, the middle of each is notched, and in the middle of the notch is a sharp hook; each of these bones lap over one another: tail round: belly soft and membranous: pectoral fins consist of only a strong bone, serrated on each side: the dorsal fin formed in like manner, but serrated only on the upper side; placed in a socket; and capable of being erected or depressed at pleasure: the other fins formed like those of other fishes. Length ten inches.

PLACE.

This singular fish was taken off *New England*, and deposited in Sir *Hans Sloane's Museum*.

XXXV. TEU-
THYS.

Head a little truncated.

Six branchiostegous rays.

Single row of teeth, of the same length, placed closely.

LINNÆUS.

163. TANG.

Catechy, ii. 10.—T. *Heparus*, *Lin.* 507.

T. Of a rhomboid form: small projecting mouth: dorsal fin spiny, extending from the top of the head almost to the tail: head, covers of the gills, and whole body, covered with large scales. Every part of the fish is of a fine deep blue, but most brilliant on the fins: tail broad and lunated. Length is sometimes twenty inches. Near the tail, on each side, is a very strong and sharp-pointed bone, capable of being erected at pleasure; on the approach of the *Barracuda*, or any fish of prey, it sets it up as a protection.

Br. Zool. iii. p. 284. GENUS XXXIII.

XXXVI. SAL-
MON.

Br. Zool. iii. N^o 143.

164. COMMON.

THIS fish is frequent in the northern parts of *America*, but decreases in number as it approaches the south. I believe none are found beyond *New York*.

Introd. Ar&Z. Zool. cxc1.

165. NAYMACUSH.

INHABITS the lakes of *Hudson's Bay*.

PLACE.

Br. Zool. iii. N^o 146.

166. TROUT.

THE same species of *Trout* as the *English* is found in *Newfoundland*, and according to *Lawson* in *Carolina*.

PLACE.

Br. Zool. iii. N^o 149.—*Introd. Ar&Z. Zool.* cxc1.

167. CHAR.

Introd. Ar&Z. Zool. cxc11.

168. OMISCOMAY-
CUS.

INHABITS *Albany* river, in *Hudson's Bay*.

PLACE.

Br. Zool. iii. N^o 145?

169. SEA.

COMMON in the sea and rivers of *Carolina*; are so tender, that if they happen to be surprized with a frost in the fresh waters, they become torpid, and float on the surface as if they were dead: whole canoes full have been taken up in that state: if they are put into warm water they will revive. *Lawson*, 158.

U 2

White

170. WHITE.

White fish, *Lawson*, 160.

IT is by guess that we place this here, on supposition that it is a species of *Albula*, or *Laverettus*, of authors. *Lawson* says, that it is found far up the rivers of *Carolina*; that it grows to the length of two feet and a half; and that it is very excellent meat.

171. GUINIAD.

Br. Zool. iii. N^o 152.—*Introd. ArÆ. Zool.* cxc1.

PLACE.

FOUND in vast abundance in *Hudson's Bay*.

172. SEA-GUINIAD.

Introd. ArÆ. Zool. cxc11.

173. SMELT.

Br. Zool. iii. N^o 151.

THIS is another *British* fish, mentioned both by *Catesby* and *Lawson*. The last says they are very fine, but that they lie a great way down the sounds towards the ocean.

174. SLENDER.

Sea Sparrow Hawk, *Catesby*, ii. 2. fig 7.—*Salmo fætens*, *Lin.* 513.

S. With a long slender body covered with brown scales: sharp small teeth: belly whitish: tail forked. **LENGTH** fourteen inches.

PLACE.

Inhabits the seas of *Carolina*. I suppose, from the name which **LINÆUS** gives, that its smell is very offensive.

Salmo arcticus, *Faun. Groenl.* 177.—*Clupea villosa*, *Muller*, N° 425.—*Lodna*, *Olaffen's Iceland.*—Capelan de l'Amérique Septentr. *Du Hamel*, ii. 149. tab. xxvi. 175. CAPELAN.

S. With a pellucid smooth head: first dorsal fin placed in the middle of the back; pectoral broad, rising under the gills, and extending to the belly: ventral fins large: anal very large, and angulated; more so in the male than the female: tail forked: lateral line in the MALE bristly: the cover of the gills marked with a black spot: the form of its body thicker than that of the *female*: the color, above the lateral line, dull green; beneath, silvery speckled with black, and often tinged on the belly with violet. Seldom exceeds six inches eight lines in length.

This species swarms off the coasts of *Greenland*, *Iceland*, and *Newfoundland*: they are one of the great supports of the *Greenlanders*, and a sort of desert also after their most delicate repasts. They live at sea most part of the year, but in *April*, *May*, *June*, and *July*, come in shoals incredible into the bays; there they are taken in nets, resembling our shrimp-nets, either from the shore, or out of the boats, in such multitudes as quickly to make a lading. They are then dried on the rocks, put into sacks, and preserved for use in the caves of the mountains, or under heaps of stones. They are eaten in this form; but many are dressed fresh as soon as taken. It has the smell of a cucumber, when newly caught. Authors have unjustly attributed to it a bad scent and noxious qualities.

These lines, translated from the *Norwegian*, express the disgusting attributes of this little fish:

“Bort *Lodde* med al din forgiftige stench,” &c.

Away, *Lodde*, with thy poisonous stench,
All the world wishes thee pain and torment;

Thou art to us a rod and a scourge,
 Thou art a harlot pretending to fly,
 In order to draw the unwary youth away with her out of town ;
 They run after her like the wanton he-goats after the females*.

They feed on the small crabs, and on *confervæ*, which grow on the shores. In *Greenland* they spawn in *May*, *June*, and *July*, and deposit the eggs on the sea plants : millions in that season follow the windings of the bays : the females go first ; the males follow, to give effect to the spawn : the bottom of the sea seems covered with it.

They are taken in vast quantities in *Newfoundland* : they are sometimes preserved in barrels : often kept in brine, or half salted, for baits for the fishery †.

The first voyager who takes notice of them is *Master Anthony Parkhurst*, who visited that island in 1578, and gives a very facetious account to his shipmates of his art in charming these, and another fish he calls a *Squid*, into his power. I refer to Mr. *Hackluyt*, vol. iii. 133, for the account.

XXXVII. PIKE.

Br. Zool. iii. p. 320. GENUS XXXIV.

176. COMMON.

Br. Zool. iii. N° 153.

PLACE.

FREQUENT in all the lakes from *Hudson's Bay* to *Carolina*.

Many of these fish are taken in the *Baltic* sea, and reckoned far more delicious than those of the lakes ‡.

* *Pontoppidan*, ii. 133.† *Du Hoxel*, ii. 151.‡ Prof. *Retzius*.*Carethy.*

Catefy, ii. 2.—Efox vulpes, *Lin.* 516.

177. FOX.

P. With a wide mouth, and small sharp teeth : body covered with large thin scales ; brown above, white on the belly : tail very much forked. Length above sixteen inches.

Inhabits the seas of the *Babama* isles.

PLACE.

Catefy, ii. 1.

178. BARRACUDA.

P. With the body and head very much resembling the *European Pike* : eyes large : mouth very wide : under jaw longer than the upper : four very large and sharp teeth in the front of the upper jaw ; in that of the lower, a single great and sharp tooth : two dorsal fins : tail large and forked : color a deep brown, whitish on the belly. Grows to the length of ten feet:

Found in abundance about the seas of the *Babamas*, and as far as *Jamaica*. Swims exceedingly swift, and is of dreadful voracity : will attack and devour men when they are bathing. The flesh has a disagreeable smell and taste, and is frequently poisonous ; causing great sickness, vomiting, intolerable pains in the head, and loss of hair and nails : yet the hungry *Babamans* formerly were under the necessity, at times, of feeding on it.

PLACE.

This species, the *Mullet*, N° 185, the *Grunt*, N° 141, *Snepper*, N° 113, *Parrot*, N° 98, *Old Balistes*, N° 73, and the *Globe Tetradon*, N° 77, extend to the coast of *Guinea* ; probably many others, natives of the warm parts of *America*, reach to congenial seas.

179. BONEY.

Elox osseus, *Lin.* 516.—Green Garfish, *Cateby*, ii. 30.

P. With long slender jaws, armed with many small teeth: dorsal fin placed very near to the tail: whole body covered with hard boney scales; those on the belly placed obliquely: back green: belly pale red: tail rounded; of a dirty red, speckled with black. Grows to the length of three feet.

Lawson speaks of a white *Garfish* with scales knit together like armour. He adds, that the meat is very white, and looks liker flesh than fish; that the *Indians* only esteem it: and that the gall is green, and a violent cathartic. I imagine *Lawson* calls it white in regard to the flesh, and that he means the same fish as *Cateby*.

PLACE.

Inhabits the rivers and fresh waters of *Virginia*.

180. CAROLINA.

P. With a slender body: long and slender nose: the under mandible the longer: dorsal and anal fins opposite: scales very thin and distinct; not layed over each other, nor boney.

Communicated by Doctor GARDEN to LINNÆUS: described by the last, after the preceding species, with a doubt whether it is not a variety.

PLACE.

Inhabits the rivers of *Carolina*.

181. GAR.

Br. Zool. iii. N^o 154.

PLACE.

FREQUENTS the seas of *Carolina*. *Lawson*, 157.

Elox

Eloz Brasiliensis, Lin. 517?

182. BRASILIAN.

P. With the under jaw very slender, and twice as long as the upper: the head smooth: body covered with small scales: dorsal and anal fins opposite: between them and the tail a row of small spurious fins like the Mackrel.

Taken off *Croque* harbour, and communicated to me by Sir *Joseph Banks*.

PLACE.

Head smooth: a roughness on the edges of the jaws, and on the palate.

XXXVIII. ELOPS.

Thirty branchiostegous rays. LINNÆUS.

EL. With a long body: one dorsal fin placed in the middle: head large and shining, flat on the top: tail deeply furcated: just at its base, above and below, is a strong lanceolated spine, placed horizontally.

Inhabits the seas of *Carolina* and *Jamaica*.

PLACE.

Br. Zool. iii. p. 327. GENUS XXXV.

XXXIX. ARGENTINE.

Herangus minor Bahamensis, Pilchard, *Catesby*, ii. 224.—*Atherina Carolina*, Lin. 519.

183. BAHAMA.

CATESBY gives the figure of a small brownish fish, under the name above given; but leaves no further description, than that it is a small silver-scaled fish resembling a herring, but smaller, and tolerably good food. He omits in his figure the dorsal fin, which it doubtlesly has.

X

They

PLACE. They are very numerous in the shallows, near the low parts of the *Babama* isles, through which they are carried by the tide a little way within land. Vast quantities are taken by the natives at the ebb, by stopping up the little channels they come through.

XL. ATHERINE.

Br. Zool. iii. p. 328. GENUS XXXVI.

184. SILVERY.

Atherina menidia, *Lin.* 519.

ATH. With a small smooth head: dorsal fin small, and placed far behind: tail forked: body covered with small scales: side line strait, broad, and of a splendid silvery appearance: body pale yellow. Length four inches and a half: of a slender elegant form: the belly a little prominent.

PLACE. This fish inhabits the fresh waters of *New York* and *Carolina*, where it is called the *Silver Fish*.

XLI. MULLET.

Br. Zool. iii. p. 329. GENUS XXXVII.

185. COMMON.

Br. Zool. iii. N° 158.

PLACE.

FREQUENT off the *American* coasts.

186. WHITE.

Mugil albula, *Lin.* 520.—Mullet, *Catesby*, ii. 6. fig. 2.

M. Of a more slender form than the *English*: mouth small and toothless: tail large and much forked. Length

PLACE.

Caught in great numbers in the *Babama* seas, at the time they go in shoals to spawn. Are reckoned an excellent fish.

Br.

Br. Zool. iii. p. 333. GENUS XXXVIII.

XLII. FLYING.

Cateby, ii. 8.—*Exocoetus volitans*, *Lin.* 520.—Flying Fish, *Br. Zool.* iii. N° 159:

COMMON in most seas.

PLACE.

Head compressed in all parts.

XLIII. POLY-
NEME.

Scaly: nose very blunt and prominent.

Certain pliform appendages to the pectoral fins. LINNÆUS.

P. With seven appendages: tail broad, whole, and pointed.
Inhabits the coasts of *North America*.

187. VIRGINIA.
PLACE.

Br. Zool. iii. p. 335. GENUS XXXIX.

XLI. HERRING.

Br. Zool. iii. N° 160?

188. COMMON.

HERRINGS leave the salt water in *March*, and run up the rivers and shallow streams of *Carolina*, in such numbers, that the inhabitants fling them ashore by shovels full. Passengers trample them under feet in fording the rivers. They are not so large as the *English*, but exceed them in flavor when pickled: they turn red on being salted. Quere, if of the same species?

A wonderful inundation of fish happens annually within the northern cape of *Cheasapeak Bay*, where incredible numbers of various kinds are flung on shore, which is covered with them three miles in length, and to a great depth. In the general spawning season they are pursued by the multitudes of voracious fishes, and thus are drove into destruction.

PLACE.

They are of all species and sizes. People who live inland come in the season with carts, to carry away what they want. Such numbers are left to putrify, that the place has got the name of *Magotty Point* *.

189. SHAD.

Br. Zool. iii. N^o 164.—*Catesby, App.* xxxii.

PLACE.

ACCORDING to *Catesby*, is found off *Carolina*.

XLV. CARP.

Br. Zool. iii. p. 353. GENUS XL.

190. COMMON.

Br. Zool. iii. N^o 165.

PLACE.

FOUND in *Carolina*. This, the Dace, Roach, and Gudgeon, placed here on the authority of *Catesby, App.* xxxii. and *Lawson, 159, 160*.

191. DACE.

Br. Zool. iii. N^o 173.

192. ROACH.

Br. Zool. iii. N^o 172.

193. GUDGEON.

Br. Zool. iii. N^o 361.

194. SUCKER.

Cyprinus catostomus, *Forster* in *Phil. Transf.* LXIII. 155. tab. vi.—*Introd. Arch. Zool.* CXCII.—*Lawson, 160?*

PLACE.

A New species, amply described by the learned *Forster*. The Sucking Fish, which *Lawson* compares to the Barbel without beards, is probably this kind; and of course a native of *Carolina*.

* *Catesby, App.* xxxiii.

C. With

C. With a short thick body, thick even to the tail, which is large and square: scales silvery. Length of the specimen I saw was four inches and a quarter. 195. MUMMY-
CHOG.

Inhabits *New York*, where it is known by the *Indian* name of *Mummy Cbog*. PLACE.

C. With only two branchiostegous rays: eyes very prominent, and near the corners of the mouth: lateral line bending a little down in the middle: tail forked: back brown: sides silvery. Length not quite two inches and a half. 196. MINUTE.

Sent from *New York* to Mrs. *Anne Blackburne*. PLACE.

A T page xciii. of the INTRODUCTION, may be added an account of a new species of *Anarhicas*, or *Wolf-fish*, discovered by Mr. *Laxman*, in the *White Sea*. It grows to about the length of three feet. The teeth in the jaws are numerous, and resemble canine teeth: the body is covered with numerous round minute spots of a pale brownish color, and with very large ones, thinly dispersed, of a dusky color. See *Asia Acad. Petrop.* 1781. p. 271. tab. vi.

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C L A S S V.*

I N S E C T S.

S E C T. I. BEETLES.

I. CHAFER.

*

Scarabæus lunaris. *Muf. Bl.*
 aloëus
 laniger
 nasicornis
 Carolinus
 mīras
 carnifex
 nachicornis
 Marianus
 stercorarius
 Amazonus
 Surinamus
 nitidus
 fepicola
 horticola, a variety
 occidentalis
 lanigerus
 fasciatus
 Indus
 brunus
 punctatus
 nobilis
 quadrimaculatus

* This is added by permission of Mr. Benjamin White, being printed from the enumeration of the animals of North America, published in 1771. for Mr. White, by that able naturalist Doctor John Reinhold Forster.

- Hudsonias. *Drury* t. 35. f. 7. N.
S. Muf. Bl.
 rufus. N. S. *Muf. Bl.*
 lævipes. N. S. *Muf. Bl.*
 piceus. N. S. *Muf. Br.*
 biunguiculatus. N. S. *Muf. Bl.*
 pilofus. N. S. *Muf. Bl.*
 testaceus. N. S. *Muf. Bl.*
- II. STAG-BEETLE *Lucanus* cervus
 capreolus
 interruptus
 — — — *N. B.* a brown variety
- III. LEATHER-EATER *Dermeftes* lardarius
 capucinus
 typographus
 fasciatus. N. S. *Muf. Bl.*
- IV. MIMICK-BEETLE *Hifter* unicolor
- V. WHIRL-BEETLE *Gyrinus* Americanus
- VI. CARRION-BEETLE *Silpha* vespillo. *N. B.* a great variety, and
 the small one too
 noveboracensis. N. S. *Muf. Bl.*
 bipuftulata
 quadripuftulata
 Americana
 obfcura
 aquatica
- VII. WEEVIL *Curculio* noveboracensis. N. S. *Muf. Bl.*
 palmarum
 Bacchus
 difpar
 anchoraco
 nucum
 incanus
 fcutellatus. N. S. *Muf. Bl.*

VIII. NUT-BEETLE	Attelabus	curculionoides Pensylvanicus.
IX. LADY-FLY	Coccinella	impunctata 7-punctata 13-punctata 2-pustulata
	* *	
X. GLOW-WORM	Lampyris	Pyralis marginata pilosa, N. S. <i>Muf. Bl.</i>
XI. SEED-BEETLE	Bruchus Pisi	<i>Kalm</i> 1173—1177
XII. GOLDEN-HONEY-BEETLE	Chrysomela	5-punctata occidentalis Boleti Philadelphica 3-maculata Americana lineola bicolor, variety with red thighs, <i>Muf. Bl.</i> scopolina obscura 10-maculata 12-punctata Phellandrii tomentosa Rhoi. N. S. <i>Muf. Bl.</i> spenicornis. N. S. <i>Muf. Bl.</i> lepturoides. N. S. <i>Muf. Bl.</i> lineato-punctata. N. S. <i>Muf. Bl.</i> trifurcata. N. S. <i>Muf. Bl.</i> laticlavata. N. S. <i>Muf. Bl.</i> fimbriata. N. S. <i>Muf. Bl.</i> frontalis. N. S. <i>Muf. Bl.</i> Hudsonias. N. S. <i>Muf. Bl.</i>

Y

XIII. BLISTER-

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Bl.

NUT-

I N S E C T S.

XIII. BLISTER-BEETLE	Meloë	vesicatorius majalis cinerea. N. S. <i>Muf. Bl.</i>	X
XIV. STINKING-BEETLE	Tenebrio	chalybeus Mauritanicus culinaris foffor	XX
XV. TORTOISE-BEETLE	Cassida	viridis bipustula? <i>Muf. Bl.</i>	
	* * *		
XVI. GLOSSY-BEETLE	Cicindela	hybrida Germanica riparia	XX
XVII. GROUND-BEETLE	Carabus	granulatus, γ . hortensis leucophthalmus inquisitor lividus, small variety marginatus crepitans Americanus cyanocephalus vulgaris piceus fericeus. N. S. <i>Muf. Bl.</i> fasciatus. N. S. <i>Muf. Bl.</i>	
XVIII. BURN-COW	Buprestis	gigantea mariana chrysofigma Austriaca	X
XIX. SPRING-BEETLE	Elater	oculatus phosphoreus ligneus? obscurus	XX

XX. WATER.

XX. WATER-BEETLE	Dytiscus	fuscipes marginatus
XXI. SOFTWINGED- BEETLE	Malacopteryx Cantharis	Americanus. N. S. <i>Muf. Bl.</i> tropica
XXII. WOOD-BEETLE	Leptura	mystica detrita Robinæ. <i>Drury</i> , t. 41. f. 2. N. S. <i>Muf. Bl.</i> Americana. N. S. <i>Muf. Bl.</i> nitens
XXIII. CAPRICORN- BEETLE	Cerambyx	imbricornis coriarius, variety melanopus lineatus spini barbibus araneiformis 4-maculatus fuccinctus fuaveolens Coquus hispidicornis. <i>Drury</i> . t. 41. f. 4. rusticus bajulus retrophthalmus. N. S. <i>Muf. Bl.</i> brunneus. N. S. <i>Muf. Bl.</i> palliatum. N. S. <i>Muf. Bl.</i> clavipes. N. S. <i>Muf. Bl.</i>
	* * * *	
XXIV. ROVE-BEETLE	Staphylinus	hirtus erythropterus
XXV. CLIPT-WINGED- BEETLE	Necydalis	collaris. N. S. <i>Muf. Bl.</i>
XXVI. EARWIG	Forficula	auricularia

S E C T. II. HALFWINGED INSECTS.

XXVII. COCKROACH	Blatta	Americana Orientalis Germanica livida. N. S. <i>Muf. Bl.</i>
XXVIII. CAMELCRICKET	Mantis	irrorata Carolina
XXIX. LOCUST	Gryllus	brevicornis gryllotalpa campestris citrifolius laurifolius mirtifolius? succinctus cristatus Carolinus
XXX. FLEA-LOCUST	Cicada	squamigera tibicen septendecim violacea spumaria phalænoides Lanio carinata. N. S. <i>Muf. Bl.</i> guttata. N. S. <i>Muf. Bl.</i> coccinea. N. S. <i>Muf. Bl.</i>
XXXI. BOAT-FLY	Notonecta	glauca lineata. N. S. <i>Muf. Bl.</i>
XXXII. WATER-SCORPION	Nepa	grandis
XXXIII. BUG	Cimex	lecticularis. <i>Kalm.</i> bidens ictericus floridanus

		C. album Atalanta Euphrosyne. <i>Kalm.</i> Cupido quercus Ichion Virgaureæ Bixæ
XXXVII. HAWK-MOTH	Sphinx	ocellata Populi Carolina Celerio Pinalis fuciformis, β . Tityus
XXXVIII. MOTH	Phalæna	Atlas Cecropia Paphia Luna Virgo Plantaginis Chrysothoea lubricipeda paranympha Gamma Pfi bilineata viridana bella pulchella

S E C T. IV. I N S E C T S with nervous Wings.

XXXIX. DRAGON-FLY	Libellula	flaveola depressa aenea umbrata Americana Carolina
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XL. CAMEL-

XL. CAMEL-FLY	Raphidia	cornuta
XLI. SPRING-FLY	Phryganea	bicaudata
XLII. PEARL-FLY	Hemerobius	pectinicornis
XLIII. SCORPION-FLY	Panorpa	communis

S E C T. V. I N S E C T S with Stings.

XLIV. BEE.	Apis	cordata melifica rostrata violacea Carolina pratorum æstuans noveboracensis, N. S. <i>Muf. Bl.</i> vespiformis, N. S. <i>Muf. Bl.</i> fericea, N. S. <i>Muf. Bl.</i>
XLV. ANT	Formica.	herculeana rufa
XLVI. WASP	Vespa	Carolina maculata, <i>Muf. Bl.</i> annularis quadridens Canadensis
XLVII. GOLDEN WALL-FLY		Chrysis cyanea
XLVIII. TAILED WASP	Sirex	Columba, <i>Muf. Bl.</i>
XLIX. SAW-FLY	Tenthredo	serophularie lutea viridis

L. ICHNEU.

L. ICHNEUMON-WASP	Sphex	fabulosa caerulea Pennsylvanica arenaria
LI. ICHNEUMON-FLY	Ichneumon	luteus
LII. NAKED BEE	Mutilla	occidentalis
S E C T. VI. Two-winged I N S E C T S.		
LIII. GNAT	Culex	pipiens. <i>Musquita</i> pulicaris
LIV. WASP-FLY	Afilus	æstuans gibbosus
LV. FLOWER-BREEZE	Bombylius	minor. <i>Muf. Bl.</i>
LVI. HORSE-FLY	Hippobofca	hirundinis <i>Muf. Bl.</i>
LVII. FLY	Mufca	illucens. <i>Drury, t. 44. f. 1. M. Bl.</i> leucopa vomitoria carnaria domestica
LVIII. WHAME	Tabanus	Americanus. N. S. <i>Muf. Bl.</i>
LIX. GADFLY	Oeftrus	Tarandi

S E C T. VII. I N S E C T S without Wings.

LX. SUGARMITE	Lepisma	faccharina
LXI. GROUND-FLEA	Podura	aquatica
LXII. DEATH-WATCH	Termes	pulfatorium
		LXIII.

LXIII. LOUSE	Pediculus	humanus ricinoides fuis cervi meleagridis
LXIV. FLEA	Pulex	irritans penetrans. <i>Chigger</i>
LXV. TICK	Acarus	Americanus Siro holofericeus
LXVI. LONGLEGGED- SPIDER	Phalangium	grossipes opilio acaroides. balænarum reniforme.
LXVII. SPIDER	Aranea	diadema clavipes venatoria
LXVIII. SCORPION	Scorpio	Americanus australis. <i>Muf. Bl.</i>
LXIX. CRABFISH	fentry minute land florid Sand common roughshelled spider dotted rock redclawed	<i>Cancer</i> pinnophylax <i>C. minutus</i> . <i>Kalm.</i> <i>C. ruicola</i> . <i>Cat. II. 32.</i> <i>C. floridus</i> <i>C. vocans</i> . <i>Cat. II. 35.</i> <i>C. mænas</i> . <i>Mir. B.</i> <i>C. granulatus</i> . <i>Cat. II. 36. N° 2.</i> <i>C. araneus</i> . <i>Mir. B.</i> <i>C. punctatus</i> <i>C. Grapfus</i> . <i>Cat. II. 36. N° 1.</i> <i>Cat. II. 37. f. 1.</i>
LXX. LOBSTER	common cynic	Cancer Grammarus <i>C. Diogenes</i> . <i>Cat. II. 33. f. 1. 2.</i> Z Soldier

.Bl.

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III.

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