WILLIAM BAKER'S SANHS PAPERS, 1851-1853

'Bridgwater High Cross' Vol 1 (1851) p 63

'Bridgwater Old Bridge' Vol 1 (1851) p 64

These articles are illustrated by engravings by T.H. Hair, perhaps copied from Chubb originals.

'Geology of Somerset', Vol 1 (1851), pp 127-139

'Somerset Fauna', Vol 1 (1851), pp 140-148

'Somerset Fauna, Fish', Vol 2 (1852), pp 97-110

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'Cannington Park Limestone', Vol 3 (1853), pp 125-132

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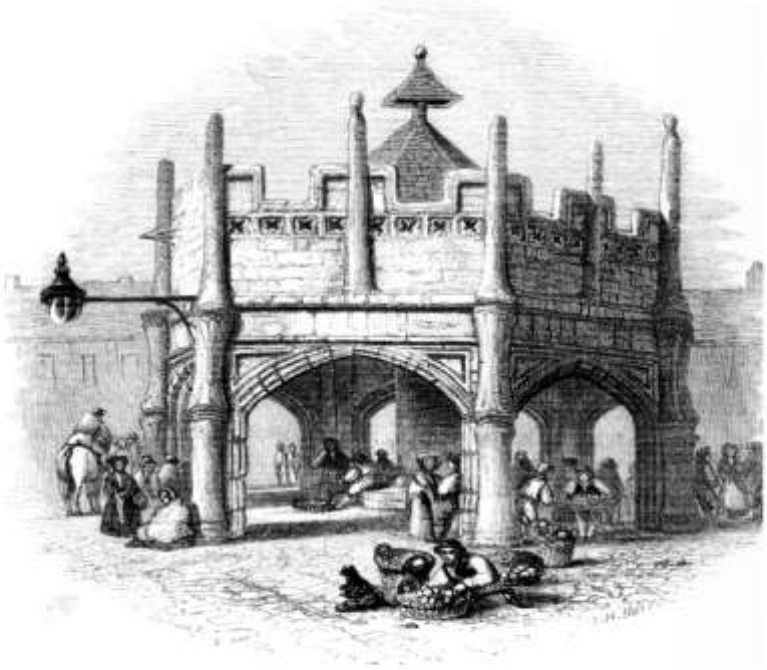
BRIDGWATER HIGH CROSS.
BY MR. W. BAKER.

The Cross here represented stood on the Cornhill at Bridgwater, opposite the entrance to High-Street. It was used as a market place for many articles, especially for fish, "and over it was a cistern, to which water was conveyed from a brook, by an engine fixed in what was formerly called the Queen's mill, and from this cistern water was carried into most of the streets of the town."– *Beauties of England*, 1764.

The cross was also used for many public purposes, such as for addressing the people, for proclamations, &c.

Oldmixon says "the Duke of Monmouth, after he was proclaimed king at Taunton (in his fatal rebellion) marched to Bridgwater. He was proclaimed in this town at the high cross by the mayor and his brethren in their formalities, and here his declaration was read."Many persons remember there having been on the cross the very appropriate inscription "mind your own business."

This handsome old cross was taken down about fifty years ago. It was no longer required for sending water through the town; the mill which supplied the cistern was used for grinding corn; and as a market place, it was superseded by new and more commodious buildings.



OLD MARKET CROSS AT BRIDGWATER,
(SINCE DESTROYED.)

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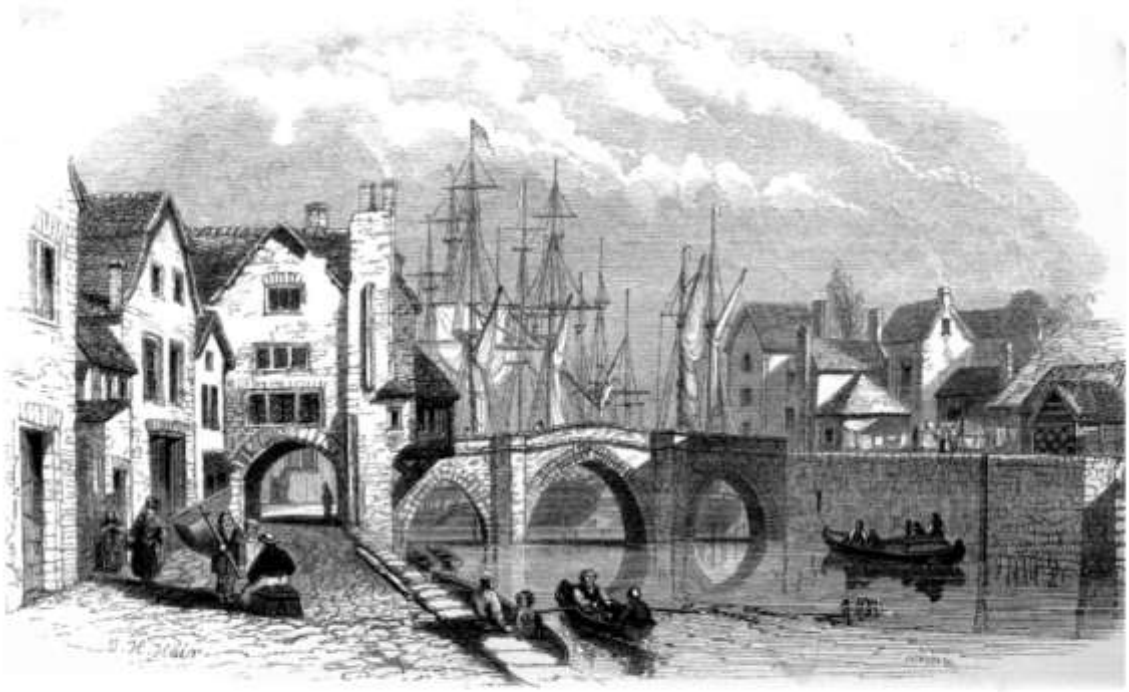
BRIDGWATER OLD BRIDGE
BY MR. W. BAKER.

The building of the stone bridge over the River Parrett at Bridgwater, which is represented in this engraving, was begun in the time of King John, by William Brewere, and finished in Edward the First's reign, by Sir T.Trivett, a gentleman of Cornwall "whose arms being a trivet," says William of Worcester, "were affixed to the copings of the structure."

When Bridgwater was stormed and taken by Cromwell's forces in July, 1645, this Bridge obstructed the successful advance of the storming party for two or three days.– Oldmixon in his history of the royal house of Stuart, says "Captain Rynolds, of Cromwell's regiment of horse, at the head of the forlorn hope, drove the cavaliers from the drawbridge at St. John's, which was let down and a passage made to the east gate, which was soon forced open, and Rynolds, entering Eastover with his horse, scoured the streets of that part of the town, up to the stone bridge. There was at that time a gate at the bridge, where the enemy (the royalists) made barricades, and drew up a draw bridge."

The massy piers of this fine old bridge obstructed the passage of barges up the river, and often occasioned much damage, at the first rush of the tides; in the year 1795 it was taken down, and the present handsome cast-iron arch erected in its place.



OLD BRIDGE, BRIDGWATER.
(REMOVED IN 1795.)

Vol 1 (1851), pp 127-139

THE GEOLOGY OF SOMERSET
BY MR. W. BAKER.

I COME before you as one of the representatives of the natural history department of this society, to offer a few observations on the most striking geological features of our highly interesting field of research,—the beautiful county of Somerset.

The course which I have laid out for myself is, to pass from the oldest formation, in the order of geological time, to our rich alluvial lands, which are now in a state of accumulation; and to offer a few brief remarks on the features of the principal formations, merely to open the way for future papers of detail, on the numerous interesting portions of the province, which we now call our own.

More than thirty years ago, a young member of our very oldest geological family, – syenite – was observed at Hestercombe, one of the extended branches of the Quantock-hills, and the fact recorded in the transactions of the London Geological Society, by Leonard Horner, Esq. late president of that society.– This discovery indicates that granite may be found in other parts of our western district.

The Quantocks, and the hills farther west, are the transition, or grauwacke, formation, and are of the lowest sedimentary deposits.

Few or no organic remains have been found in the grauwacke of Somerset, but some are known in the same class of rocks in Devon and Cornwall. In our hills, however, we have numerous beds of limestone, rich in madrepores, corals and encrinites. This limestone is much quarried for manure in several places. Weather-worn, or polished specimens, are interesting for geological cabinets. They are richly colored, – yellow, red, brown, pearl-grey, and almost black. Copper has been obtained in considerable quantities in the Quantocks, but not sufficient to pay for working. Mining operations have been carried on at Broomfield and Doddington. At Broomfield, the ore has been obtained as a rich yellow sulphuret, associated with quartz and grauwacke; and at Doddington, as green and purple malachite in coraline lime-stone. Rich and beautiful specimens of these ores are to be seen in the cases in the society's rooms at Taunton. Iron ore is found in those hills, but more abundantly in the western hills.

It is probable that in former times, perhaps as long ago as when the Romans exercised military sway in this country, and improved the knowledge of our forefathers in many of the arts of life, – pig iron was smelted on our western hills; for charcoal scoriae, and fragments of crucibles, mixed with iron ore, are found in the Brendon hills. The almost insulated Cannington park is marked in the Ordnance map as one of the subordinate limestone beds of the Quantock hills, although so far removed from them. Mr. Horner in his geological survey of the western part of Somerset, says "Cannington park is composed of a highly crystalline limestone of a pearl grey color, having a very close grain. I examined it with very great care, in order to discover whether it contained any organic remains, but I could not find the slightest trace." * * * "It is very probable that by a more minute examination, madrepores and shells may be found in this limestone; for it certainly has very much the appearance of what is called transition limestone." – We now know that corals and encrinites are readily found there.

The beautifully wooded and watered combes of the grauwacke hills are widely known, and so are their lofty eminences[*] which command extensive and magnificent prospects.

Haddon Hill, (near Dulverton) 1140
Culbone Hill, (Porlock) 1211
Grabbist, (Dunster) 906
North Hill, (Minehead) 1059

[*] Dunkery Beacon 1697 feet.

Willsneck, (Quantock) 1270
Douseborough 1022
Cothelstone 1066

The Mendip Hills, extending from the neighbourhood of Frome to the Bristol channel, come next in geological age. The prevailing rock is carboniferous or mountain limestone, resting on the old red sand stone, which protrudes through the limestone at some of the highest parts of the district. Various conglomerates and sandstones make up large portions of this series of rocks. The limestone contains numerous species of molluscous shells, besides corals and encrinites. – These hills have undergone mighty disturbances, as is exemplified in the stupendous Cheddar cliffs, and in the romantic Brockley, Goblin, Burrington and other combes.

The insulated rocks, Steep Holmes and Flat Holmes, seem to have been broken off from the limestone hills of the Mendip district, and the corresponding carboniferous strata of Wales, at one of those sublime movements by which God has been pleased to prepare the world as a habitation for the widely extending family of man.

The grand scenery of Cheddar cliffs can hardly be surpassed in the kingdom, and the rocky combes of Mendip have a romantic beauty, widely different from the calm richness of those of Quantock and the more western hills. The caverns of Mendip are interesting and wonderful, as the tombs of numerous animals, many of which are fortunately now extinct. – In that at Uphill, the Rev. D. H. Williams of Bleadon found bones of rhinocerus, hyena, bear, ox, horse, stag, fox, and of many small animals, and of birds. In Hutton cavern have been found bones of elephant, tiger, hyaena, bear, wolf, horse, hare, rabbit, fox, rat, mouse and birds. In Banwell cavern, – buffalo, deer, wolf, bear, fox, mouse or bat. We see in these vestiges that formidable creatures once inhabited our beautiful country, but doubtless at so remote a period, that we may believe the highest order of inhabitants, – man, had little or no possession here; and that therefore the beasts had to strive for supremacy only amongst themselves.

In the Mendip hills are some good examples of trap or volcanic rock. At the eastern side of the railway cutting at Bleadon, there is an interesting example of a down ward bend of lias strata, running apparently under mountain limestone, which has been disturbed by the trap. – Lead, calamine, and other metals have from distant time been obtained in the Mendip hills, but mining operations have not been carried on, on a grand scale, at any period.

The coal formation comes next in geological order. All the coal fields of Somersetshire are north of the Mendip range. – Mr. Rutter in his *Delineations of the north western division of the county of Somerset*, remarks that "the seams of coal, throughout this district, are comparatively very thin, their aggregate thickness in any single coal pit scarcely exceeding that of one of the ordinary seams in the principal coal fields in England. The district may however be considered rich in this valuable mineral, and as able to answer largely the future demand. Many of the ancient pits may be drained and worked to advantage, on the present improved system. No coal has been found south of the Mendip range; but since the mountain limestone dips beneath the marshes, towards the Quantock hills, it seems probable that there exists an intermediate basin beneath the red marl, which forms the uppermost sub-stratum in this alluvial tract."

This information Mr. Rutter says he obtained chiefly from Buckland's and Conybeare's observations on the south western coal district of England: How wonderful is the providential care for man, which is exemplified in the vast stores of coal, preserved from the exuberant vegetation of an early era of creation, to be opened at the times when they were especially required! – In the early period of man's abode on earth, indeed in the early times of most nations, forests supplied fuel; but as multitudes of the human race spread over the world, and their wants increased, they were directed to the stores which had been so marvellously preserved for them.

Philosophers have anticipated the exhaustion of some of the coal districts, and speculated on the inconvenience that will arise; others encourage us with a hope that, before this time shall have arrived more refined, less dangerous, and less laborious means of supplying light and heat for all

our increasing wants, will have been discovered.

New red sand stone comes next in order, being the overlaying rocks of the coal measures. In Somerset this is an extensive and varied series of deposits; it is derived from the disturbed strata of older formations, and known as grauwacke conglomerate, magnesian conglomerate, red marl and red sand. Several varieties of these rocks are strong features of the grauwacke district, and the magnesian conglomerate, or dolomite, forms an important part of the carboniferous and coal districts. These rocks are made up of angular fragments of contiguous strata; or of such as have been brought by the action of water from a moderate distance, and are slightly abraded; or of thoroughly abraded fragments, as those are which compose the shingle bank, the boundary of the channel from Stolford to Sherton. In the western district, many of these rocks contain pebbles of limestone in great abundance, and are called popple rocks; they are extensively worked for lime in many places.

In the neighbourhood of Milverton and Wiveliscombe, the limestone in the conglomerate beds is much worn by abrasion, and they contain such fossils, and have such other characters, as may lead geologists to look to the spaces between Mendip-hills and the Holmes, as the localities from which these water-worn pieces of carboniferous lime-stone rock were derived.

Mount Radford, near Bridgwater, is composed of drifted sand, and small and large rounded and angular fragments of grauwacke from the Quantock hills, with scarcely a trace of limestone. The gravel which elevates Bridgwater a little above the alluvial land, is rounded, and was probably washed from the Quantocks also; it rests on the red marl, the immediate substratum which extends through so large a part of our county, underlaying the rich levels of Bridgwater, Brent, and Yatton, the Vale of Taunton Deane, as well as many of the smaller vallies, and our lias, green sand and other hills.

Lias is an extensive formation in our district, resting conformably on the new red sand stone. – It forms hills of moderate elevation between Taunton and Somerton, and the Polden hills, from Langport to the river Parret at Pawlet. – It makes the bed of the river at the passage at Combwitch, rises again at Hill in the parish of Otterhampton, and extends in a narrow belt bordering the coast to Blue Anchor. The lias extends no farther westward, except a small patch six miles beyond, at East Lynch.

The cliffs of the coast from Sherton Bars to Blue Anchor are of lias, and its associate, red sand stone, which contains much gypsum between Watchet and Blue Anchor. They present numerous instances of disturbance in curious curvatures and faults, and there are good examples of bold elevated rocks. The features of these rocks, however, undergo frequent changes, by the waves washing away at the base, and bringing down large masses, from time to time, at no great intervals. The strata of the beach are much contorted; Mr. Horner in his geological survey before alluded to, says, “It would be impossible by any description of particular instances of disturbance, to give an intelligible representation of the extraordinary appearance of the coast, in walking over it at low water. I cannot better convey an idea of it, than by comparing it to the great waves of the sea suddenly consolidated. These waves now broken in many directions exhibit various sections of their internal structure.”

The lias of our district is not so rich in organic remains, I believe, as the same formation at Lyme Regis. However, ichthyosauri and plesiosauri have been found as nearly perfect skeletons, those from the vicinity of Street and of Watchet being probably the most perfect. Bones of pterodactylus have also occurred. Pentacrinites, echini, ammonites, and nautili, and numerous species of bivalve and univalve shells are abundant. On the beach near Blue Anchor are multitudes of compressed ammonites, having the beautiful irridescent nacre. The bone or coprolite bed has been found, I believe, wherever the lower strata of the lias have been reached.

The different members of the oolite formation extend across the eastern part of the county, from the neighbourhood of Castle Gary to that of Bath. Inferior oolite caps the lias hills of Dundry, Glastonbury, Brent, &c.* Fossils are very abundant in these beds.

The upper or green oolite is extensively worked in the vicinity of Bath.

The green sand hills called Black Down, are a striking range, bordering the county, south of Taunton and Wellington; their peculiar outline attracts the eye from distant parts of the county.

Although there is very much that is interesting in these two last formations, we must pass lightly over them.

The alluvial lands of our county are very extensive, and proverbially rich. The extended levels opening on the Bristol channel have doubtless been estuaries in recent geological time. Sand banks, parts of former sea-barriers, elevate above the surrounding land Westonzoyland, Chedzoy and other villages, and their valuable corn fields; they prove their comparative late formation by the multitudes of shells which they contain, all of species now living on our coast, and many of them retaining their colour and markings. The lower part of the humerus of a young mammoth has been found at Chedzoy.

Under the rich soil of our levels, beds of peat occur at different depths; they also form the surface of extensive tracts of our county. The Sedgemoors are fast emerging from their morass-like state, and cultivation is spreading widely over them.*

Our peat bogs at the Burtles still retain much of the wild character of morass; they have been extensively cut for fuel, and now cultivation is gradually doing its beneficial work here also. The botanist and entomologist still find them interesting fields of research, and our friend, Mr. Stradling, has informed us of their antiquarian interest. Beds of peat occur in the clay pits and other excavations near Bridgwater, from twelve to sixteen feet deep, and contain bones of many kinds of animals, horns, shells, and trunks of trees. Similar animal remains, and even pottery, were found by the late Mr. Anstice and myself, mixed with sand, flints, grauwacke, and other gravels, nearly thirty feet beneath the surface, at the old canal basin at Huntworth. Our alluvial lands must be constantly, though slowly, increasing in elevation, as our rocky shores are always wasting. Every inland flood brings down from the hills new material, and in dry weather, when the wind is from the sea, sand is blown from the extensive flat beaches at Burnham, Berrow, Weston, &c., against the sand hills and to the land beyond. When the sun is bright and the breeze favourable, a dried stratum of sand is thus taken up and carried off in light clouds at intervals of about five or ten minutes. When the tide is out, the weather calm, and the sun bright, a dense vapour just covers the beach, and has all the appearance of water at particular parts, producing sometimes the interesting spectacle – mirage.

The following extract from the excellent little book *The Earth's Antiquity*, by the Rev. J. Gray, will be in place here. "Treasured in the earth's indurate bosom are medals of creation. A new sense is, as it were, added by geology to man, conveying a before unenjoyed perception of beautiful existences. Scenes previously unappreciated, are now through this newly opened avenue, happily appropriated, and where we hitherto saw only sterile vacuity, there now spring forth to view bright and monitory things. We hear sermons in stones! what is now every mountain range, and swelling hill, that rises before our view? Not, as heretofore, a mere amorphous mass of senseless rock; it is a sanctuary of an Almighty workmanship, elaborated with a skill inconceivable and sublime, through the revolutions of countless time! What is now every chasm, dipping into the secluded recesses of the fractured earth? Not as heretofore, a mere empty, rocky cavern, but a fully tenanted sepulchre of long past races of living beings, which bespeak a Creator no less omnipotent than allwise! He it is who from the beginning hath laid the foundations of the earth, and the whole sustentation of the varied creations thereof has been the sole work of His hand."

However irrelevant such general views may be in an attempt to portray the geological peculiarities of a country where some prevailing formations engross the attention and restrict the labours of man; such views are singularly applicable to any consideration of the geologyof the county of Somerset. It is our privilege to reside in a district where geological extremes meet; where those varieties which are generally separated by great distance, are brought within the range of almost immediate inspection. We are within reach of the lowest formations, and of the latest, while the caverns of the Mendip and the Quantock ranges enable us to contemplate the brilliant results of

* These require further examination ; perhaps upper lias may be here.

crystallization, and the astounding remains of animals no longer denizens of England or of Europe. It may indeed, without any undue partiality for this favored county, be permitted us to question, whether there is any spot of equal dimensions on the surface of our planet, where the relative progress of creative energy is more distinctly unfolded, or the bounties dependant `on geological distribution more varied or profuse.

At all events we shall be justified in concluding, that there is not any known locality which affords greater facilities and inducements to the patient humble-minded student of nature, or more decided manifestations of the measureless bounty and power of the Creator.

‘**Somerset Fauna’, Vol 1 (1851), pp 140-148**

BY MR. W. BAKER.

MAMMALIA

CHEIROPTERA.

VESPERTILIONIDAE.

Great Bat. *Vesperfilio noctula*
Common Bat. *V.pipistrellus*
Whiskered Bat. *V. mystacinus*
Long-eared Bat. *Plecotus auritus*
Barbastelle. *Barbastellus Daubentonii*

RHINOLOPHIDAE.

Greater Horse-shoe Bat. *Rhinolophus ferrumequi*
Lesser Horse-shoe Bat. *R. hipposideros.*

INSECTIVORA.

ERINACIDAE.

Hedge-hog. *Erinaceus Europceus.*

TALPIDAE.

Mole. *Talpa vulgaris*

SORICIDAE.

Common Shrew. *Sorex araneus*
Water Shrew. *S.fodiens*
Oared Shrew. *S. remifer*

CARNIVORA.

URSIDAE.

Badger. *Meles taxus*

MUSTELIDAE.

Otter. *Lutra vulgaris*
Weasel. *Mustela vulgaris*
Ermine or Stoat. *M. erminea*
Polecat. *M. putorius*
Ferret. *M.furo*
Marten. *Martesfoina*

FELIDAE.

Cat. *Felis domestica*

CANIDAE.

Dog. *Cards familiaris*
Fox. *Vulpes vulgaris*

PHOCIDAE.

Common Seal. *Phoca vitulina*
Harp Seal. *P. Greenlandica*

RODENTIA.

SCIURIDAE.

Squirrel. *Sciurus vulgaris*
Dormouse. *Myoxus avellanarius*

MURIDAE.

Harvest Mouse. *Mus messorius*
Long-tailed Mouse. *M. sylvaticus*
Common Mouse. *M. musculus*
Brown Rat. *M. decurnanus*

CASTORIDAE.

Water Vole. *Arvicola amphibius*
Field Vole. *A. agrestis*
Bank Vole. *A. pratensis*

LEPORIDAE.

Hare. *Lepus timidus*
Rabbit. *L. cuniculus*
Guinea Pig.

PACHYDERMATA.

SUIDAE,

Hog. *Sus scrqfa*

EQUIDAE.

Horse. *Equus caballus*
Ass. *Asinus vulgaris*

RUMINANTIA.

CERVIDAE.

Red Deer. *Cervus elaphus*
Fallow Deer. *C. datna*

BOVIDAE.

Ox. *Bos taurus*

CAPRIDAE.

Goat. *Capra hircus*
Sheep. *Ovis aries*

CETACEA.

DELPHINIDAE.

Dolphin. *Delphinus delpkis*
Bottle-nosed Dolphin. *D. Tursio*
Porpoise. *Phoccena communis*
Grampus. *P. orca*
Round-headed Porpoise. *Pu melas*
Bottle-head. *Hyperoodon Butzkopf*
Greenland Whale. *Balcena mysticetus*

BIRDS

RAPTORES.

VULTURIDAE.

Egyptian Vulture. *Neophron percnopterus*
White-tailed Eagle. *Aquila albicilla*
Osprey. *Pandion halioeetus*
Peregrine Falcon. *Falco peregrinus*
Hobby. *Falco subbuteo*
Merlin. *F. cesalon*
Kestrel. *F. tinnunculus*
Sparrow Hawk. *Accipiter nisus*
Kite. *Milvus vulgaris*
Buzzard. *Buteo vulgaris*
Rough-legged Buzzard. *B. lagopus*
Honey Buzzard. *Pernis apivorus*
Marsh Harrier. *Circus aruginosus*
Hen Harrier. *C. cyaneus*
Montagu's Harrier. *C. Montagui*

STRIGIDAE.

Long-eared Owl. *Otus vulgaris*
Short-eared Owl. *O.brachyotos*
White Owl. *Strix fiammea*
*Tawny Owl. *Syrnium stridulum*
Little Owl. *Noctua passerina*
Tengmalm's Owl. *N. Tengmalmi*

DENTIROSTRES.

LANIADAE.

Great Grey Shrike. *Lanius excubitor*
Red-backed Shrike. *L.collurio*
Woodchat Shrike. *L.rutilus*

MUSCICAPIDAE.

Spotted Flycatcher. *Muscicapa grisola*
Pied Flycatcher. M. *atricapilla*

MERULIDAE.

Water Ouzel. *Cinclus aquaticus*
Missel Thrush. *Turdus viscivorus*
Fieldfare. *T. pilaris*
Song Thrush. *T. musicus*
Redwing Thrush. *T. iliacus*
Blackbird. *T. merula*
Ring-ouzel. *T. torquatus*
Golden Oriole. *Oriolus galbula*

SYLVIADAE.

Alpine Accentor. *Accentor alpinus*
Hedge Sparrow. *A. modularis*
Redbreast. *Erythaca rubecula*
Redstart. *Phoenicura rutvcilla*[*]
Black Redstart. *P. Tithys*
Stonechat. *Saxicola rubicola*
Whinchat. *S. rubetra*
Wheatear. *S. aenanthe*
Grasshopper Warbler. *Salicaria locustella*
Sedge Warbler. *S. Phragmitis*
Reed Warbler, *S. arundinacea*
Nightingale. *Philomela luscinia*
Blackcap. *Curruca atricapilla*
Garden Warbler. *C. hortensis*
White-throat. *C. cinerea*
Lesser white-throat. *C. sylviella*
Wood Warbler. *Sylvia sibilatrix*
Willow Warbler. *S. trockilus*
Chiff Chaff. *S. hippolais*
?Dartford Warbler. *Melizophilus proincialis*
Gold-crested Wren. *Regulus auricapillus*

PARIDAE.

Great Titmouse. *Parus major*
Blue Titmouse. *P. caruleus*
Cole Titmouse. *P. ater*
Marsh Titmouse, *P. palustris*
Long-tailed Titmouse. *P. caudatus*
Bearded Titmouse. *Calamophilus biarmicus*

AMPELIDAE.

Bohemian Wax-wing. *Bombycilla garrula*

MOTACILLIDAE.

Pied Wagtail. *Motacilla Yarrellii*
White Wagtail. *M. alba*
Grey Wagtail. *M. boarula*
Grey-headed Wagtail. *M. neglecta*

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[*] Hawk Owl, *Surnia/unerea,* has been recorded since this list was drawn up.

Eay's Wagtail. *M. lava*

ANTHIDAE.

Tree Pipit. *Anthus arboreus*
Meadow Pipit. *A. pratensis*
Rock Pipit. *A. petrosus*
? Richard's Pipit. *A. Richardi*

CONIROSTRES.

ALAUDIDAE.

Shore Lark. *Alauda alpestris*
Sky Lark. *A. arvensis*
Wood Lark. *A. arborea*

EMBERIZIDAE.

Snow Bunting. *Plectrophanes nivalis*
Common Bunting. *Eniberizamiliaria*
Blackheaded Bunting. *E. schamiculus*
Yellow Bunting. *E. citrinella*
Cirl Bunting. *E. cirlus*
Ortolan. *E. hortulana*

FRINGILLIDAE.

Chaffinch. *Fringilla Calebs*
Mountain Finch. *F. montifringilla*
Tree Sparrow. *Passer montanus*
House Sparrow. *P. domesticus*
Greenfinch. *Coccoihraustes chloris*
Hawfinch. *C. vulgaris*
Goldfinch. *Carduelis elegans*
Siskin. *C. spinus*
Common Linnet. *Linota cannabina*
Mealy Redpole. *L. canescens*
Lesser Redpole. *L. linaria*
Mountain Linnet. *L. montium*
Bullfinch. *Pyrrhula vulgaris*
Pine Grosbeak. *P. enucleator*
Common Crossbill. *Loxia curvirostra*
? Parrot Crossbill. *L. pytiopsittacus*

STURNIDAE.

Starling. *Sturnus vulgaris*

CORVIDAE.

Chough. *Fregilus graculus*
Raven. *Corvus corax*
Carrion Crow. *C. corone*
Hooded Crow. *C. comix*
Rook. *C.frugilegus*
Jackdaw. *C monedula*
Magpie. *Pica caudata*
Jay. *Garrulus glandarius*
Nutcracker. *Nucifraga caryocatactes*

SCANSORES.

PICIDAE.

Great Black Woodpecker. *Picus martius*
Green Woodpecker. *P. Viridis*
Greater Spotted Woodpecker. *P. major*
Lesser Spotted Woodpecker. *P. minor*
Wryneck. *Yunx torquilla*

CERTHIADAE.

Creeper. *Certhia familiaris*
Wren. *Troglodytes vulgaris*
Hoopoe. *Upupa epops*
Nuthatch. *Sitta Europma*

CUCULIDAE.

Cuckoo. *Cuculus canorus*

FISSIROSTRES.

HALCYONIDAE.

Kingfisher. *Alcedo ispida*

HIRUNDINIDAE.

Swallow. *Hirundo rustica*
Martin. *H. urbica*
Sand Martin. *H. riparia*
Swift. *Cypselus murarius*
Alpine Swift. *C. alpinus*

CAPRIMULGIDAE.

Nightjar. *Caprimulgus Europceus*

RASORES.

COLUMBIDAE.

Wood Pigeon. *Columba palumbus*
Stock Dove. *C. cenas*
Rock Dove. *C. livia*
Turtle Dove. *C. turtur*

PHASIANIDAE.

Pheasant. *Phasianus Colchicus*

TETRAONIDAE.

Black Grouse. *Tetraotetrix*
Partridge. *Perdix cinerea*

Red-legged Partridge. *P. rubra*
Quail. *Coturnix dactynsonans*

STRUTHIONIDAE.

Little Bustard. *Otis tetrax*

GRALLATORES.

CHARADRIADAE.

Great Plover. *Edicnemus crepitans*
Golden Plover. *Charadrius pluvialis*
Dotterel. *C. morinellus*
Ringed Dotterel. *C. hiaticula*
Grey Plover. *C. Squatarola cinerea*
Lapwing. *Vanellus cristatus*
Turnstone. *Strepsilas interpres*
Sanderling. *Calidris arenaria*
Oystercatcher. *Hoematopus ostralegus*

ARDEADAE.

Heron. *Ardea cinerea*
Squacco Heron. *A. comata*
Little Bittern. *Botaurus minutus*
Common Bittern. *B. stellaris*
Night Heron. *Nyctkarax Europaeus*
White Stork. *Ciconia alba*
Black Stork. *C. nigra*
White Spoonbill. *Platalea leucorodia*
Glossy Ibis. *Ibis falcinellus*

SCOLOPACIDAE.

Curlew. *Numenius arquata*
Whimbrel. *N. phaeopus*
Spotted Redshank. *Totanus fuscus*
Common Redshank. *T. calidris*
Green Sandpiper *T. ochropus*
Common Sandpiper. *T. Hypoleucos*
Greenshank. *T. glottis*
Black-tailed Godwit. *Limosa melanura.*
Bartailed Godwit. *L. rufa*
Ruff. *Machetes pugnax*
Woodcock. *Scolopax rusticola*
Great Snipe. *S. major.*
Common Snipe. *S.gallinago*
Jack Snipe, *S. gallinula*
Knot. *Tringa subarquota*
Little Stint. *T. minuta*
Dunlin. *T. variabilis*
Purple Sandpiper. *T. maritima*

EALLIDAE.

Landrail. *Crex pratensis*
Spotted Crake. *C. Porzana*
Little Crake. *C. pusilla*
Baillon's Crake, *C. Baillonii*
Water Rail. *Rallus aquaticus*
Moorhen. *Gallinula chloropus*

LOBIPEDIDAE.

Coot. *Fulica atra*
Grey Phalerope. *Phalaropus lobatus*

NATATORES.

ANATIDAE.

Grey-legged Goose. *Anser ferus*
Bean Goose. *A. segetum*
White-fronted Goose. *A.albifrons*
Bernicle Goose. *A. leucopsis*
Brent Goose. *A. Brenta*
Red-breasted Goose. *A. ruficollis*
Egyptian Goose. *A. Egyptiacus*
Hooper. *Cygnus ferus*
Mute Swan. *C. olor*
Shieldrake. *Tadorna vulpanser*
Shoveller Duck. *Anas clypeata*
Gadwall. *A. strepera*
Pintail Duck. *A. acuta*
Wild Duck. *A. boschas*
Garganey. *A. querquedula*
Teal. *A. crecca*
Wigeon. *A. Penelope*
Eider Duck. *Somateria mollissima*
Velvet Scoter. *Oidemia fusca*
Common Scoter. *O. nigra*
Pochard. *Fuligula ferina*
Scaup Duck. *F. marila*
Tufted Duck. *F. cristata*
Golden Eye. *F. chrysophthalmos*
Smew. *Mergus albellus*
Hooded Merganser. *M. cucullalus*
Red-breasted Merganser. *M. serrator*
Goosander. *M. merganser*

COLYMBIDAE.

Great-crested Grebe. *Podiceps cristatus*
Red-necked Grebe. *P. rubricollis*
Sclavonian Grebe. *P. cornutus*
Dabchick. *P. minor*
Great Northern Diver. *Colymbus Glacialis*
Black-throated Diver. *C. arcticus*
Red-throated Diver. *C. septentrionalis*

ALCADAE.

Guillemot. *Uriatroile*
Brunnick's Guillemot *U. Brunnichii*
Little Auk. *Mergulus melanoleucos*
Puffin. *Fratercula arctlca*
Razor Bill. *Alca torda*

PELECANIDAE.

Cormorant. *Phalacrocorax carbo*
Shag. *P. cristatus*
Gannet or Solan Goose. *Sula bassana*

LARIDAE.

Sandwich Tern. *Sterna cantiaca*
Common Tern. *S. hirundo*
Arctic Tern. *S. arctica*
Lesser Tern. *S. minuta*
Black Tern. *S. nigra*
Sabine's Gull. Xema *Sabinii*
Black-headed Gull. *L. ridibundus*
Kittiwake. *L. Rissa.*
Ivory Gull. *L. eberneus*
Common Gull. *L. canus*
Iceland Gull. *L. Islandicus*
Lesser Black-backed Gull. *L. fuscus*
Herring Gull. *L. argentatus*
Great Black-backed Gull. *L. marinus*
Glaucus Gull. *L. glaucus*
Common Skua. *Lestris cataractes*
Pomarine Skua. *L. pomarinus*
Richardson's Skua. *L. Richardsonii*
Fulmar Petrel. *Procellaria glacialis*
Fork-tailed Petrel. *Thalassidroma Bullockii*
Storm Petrel. *T. pelagica*

REPTILES

TESTUDINATA.

CHELONIADAE.

Hawk's Bill Turtle. *Chelonia imbricata*

SAURIA.

LACERTADAE.

Viviparous Lizard. *Zootoca vivipara*

SQUAMATA.

SAUBOPHIDIA.

ANGUIDAE.

Slow-Worm. *Anguisfragilis*

OPHIDIA.

COLUBRIDAE.

Ringed Snake. *Natrix torquata*

VIPERADAE.

Viper, or Adder. *Pelius Berus*

AMPHIBIA.

ANOURA. RANADAE.

Frog. *Rana temporaria*

BUFONIDAE.

Toad. *Bufo vulgaris*

URODELA.

SALAMANDRADAE.

Warty Newt. *Triton cristatus*
Smooth Newt. *Lissotriton punctatus*
Palmated smooth Newt. *L. palmipes*

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BY MR. W. BAKER.

FISHES

ACANTHOPTERYGII
PERCIDAE.

Perch. *Perca fluviatilis*
Basse. *Labrax lupus*
Couch's Polyprion. *Potyprion cernium*
Great Weever. *Trachinus draco*
Lesser Weever. *T. vipera*
Striped Red Mullet. *Mullus surmuletus*

FISHES WITH HARD CHEEKS.

Sapphirine Gurnard. *Trigla hirundo*
Piper. *T. lyra*
Grey Gurnard. *T.gurnardus*
Shining Gurnard. *T.lucerna*
Miller's Thumb. *Cottus gobio*
Short-spined Cottus. *C. scorpius*
Long-spined Cottus.*C. bubalis*
Armed Bullhead. *C. cataphractus*
Rough-tailed Stickleback. *Gasterosteus trachurus*
Half-armed Stickleback. *G. semiarmatus*
Smooth-tailed Stickleback. *G. leiurus*
Ten-spined Stickleback. *G. pungitius*
Fifteen-spined Stickleback. *G. spinachia*

SPARIDAE.

Braize. *Pagrus vulgaris*
Sea Bream. *Pagelluscentrodontus*

SCOMBERIDAE.

Mackerel. *Scomber scomber*
Sword-Fish. *X'phias gladius*
Scad. *Caranx trachurus*
Dory. *Zeus faber*
Boar-Fish. *Capros aper*

RIBAND-SHAPED FISH.

Red Bandfish. *Cepola rubescens*

MUGILIDAE.

Grey Mullet. *Mugil capito*
Thick-lipped Grey Mullet.*M. chelo*
Atherine. *Aiherina presbyter*

GOBIOIDAE.

Gattoruginous Blenny. *Blennius gattorugineus*
Double-spotted Goby. *Gobius bipunctatus*
Spotted Goby. *G. minutus*
Gemmeous Dragonet. *Callionymus lyra*

FISHES WITH PECTORAL FINS, FEET-LIKE.

Angler. *Lophius piscatorius.*

LABRIDAE.

Ballan Wrasse. *Labrus maculatus.*
Green-streaked Wrasse. *L. lineatus.*
Blue-striped Wrasse. *L. variegatus*
Three-spotted Wrasse. *L. carneus*
Comber Wrasse. *L. comber*
Gilt-Head. *Crenilabrus tinea*
Goldfinny. *C. cornubicus*
Gibbous Wrasse. *C. gibbus*

ABDOMINAL.
MALACOPTERYGII.
CYPRINIDAE.

Common Carp. *Cyprinus carpio*
Crusian Carp. *C. gibelio*
Gold Carp. *C. auratus*
Gudgeon. *Gobio Fluviatilis*
Tench. *Tinea vulgaris*
Roach. *Leuciscus rutilus*
Dace. *L. vulgaris*
Bleak. *L. alburnus*
Minnow. *L. phoxinus*
Loach. *Cobitis barbatula*

ESOCIDAE.

Pike. *Esox lucius*
Sea-Pike. *Belone vulgaris*
Sawry Pike. *Scomberesox saurus*
Flying-Fish. *Jexocetus volitans*

SALMONIDAE.

Salmon. *Salmo solar*
Bull Trout. *S. eriox*
Parr. *S. salmulus*

Common Trout. *S.fario*

CLUPEIDAE.

Pilchard. *Clupea pilchardus*
Herring. *C. harengus*
Sprat. *C. sprattus*
Shad. *Alosafinta*
Allice Shad. *A. communis*
Anchovy. *Engraulis encrasicolus*

SUBBRACHIAL MALACOPTERYGII

GADIADE.

Cod. *Morrhua vulgaris*
Haddock. *M.aeglefinus*
Whiting Pout. *M. lusca*
Power Cod. *M. minuta*
Speckled Cod. *M. punctata*
Whiting. *Merlangus vulgaris*
Whiting Pollack. *M. pollachius*
Hake. *Merlucius vulgaris*
Lyng. *Lota molva*
Three-bearded Rockling. *Motella vulgaris*
Five-bearded Rockling. *M. quinquecirrata*
Great Forked Beard. *Phycis furcatus*
Lesser Forked Beard. *Raniceps trifurcatus*

PLEURONECTIDAE.

Plaice. *Platessa vulgaris*
Flounder. *P.flesus*
Dab. *P. limanda*
Lemon Dab. *P. microcephalus*
Long Flounder. *P. elongata*
Holibut. *Hippoglossus vulris*
Turbot. *Rhombus maximus*
Brill. *R. vulgaris*
Muller's Topknot. *R. hirtus*
Whiffe. *R. megastoma*
Scaldfish. *R. arnoglossus*
Sole. *Solea vulgaris*
Lemon Sole. *S. pegusa*
Variegated Sole. *Monochirus variegatus*
Little Sole. *M. linguatulus*

CYCLOPTERIDAE.

Lump Sucker. *Cyclopterus lumpus*
Unctuous Sucker. *Liparis vulgaris.*
Montagu's Sucker. *L. Montagui*

APODAL. MALACOPTERYGII.

MURAENIDAE.

Sharp-nosed Eel. *Anguilla acutirostris*
Broad-nosed Eel. *A.latirostris*
Conger. *Conger vulgaris*
Anglesey Morris. *Leptocephalus Morrisii*
Beardless Ophidium. *Ophidium imberbe*

ANGUILLIDAE.

Sand Eel. *Ammodytes tobianus*
Sand Launce. *A. lancea*

LOPHOBRANCHII.

SYNGNATHIDAE.

Deep-nosed Pipe-Fish. *Syngnathus Typhle*
Aequoreal Pipe Fish. *S. cequoreus.*
Great Pipe Fish. *S. acus*

PLECTOGNATHI.

GYMNODONTIDAE.

Oblong Sun Fish. *Orthagoriscus oblongus*

CHONDROPTERYGII.

STURIONIDAE.

Sturgeon. *Acipencer sturio*
Broad-nosed Sturgeon. *A. latirostris*

SQUALIDAE.

Small-spotted Dog-Fish. *Scyllium canicula*
Common Tope. *Galeus vulgaris*
Picked Dog Fish. *Spinax acanthias.*

RAIIDAE.

Skate. *Raia batis.*
Thornback. *R. clavata.*
Flapper Skate. *R. intermedia.*

PETROMIZIDAE.

Lamprey. *Petromyzon marinus.*
Lampern. *P. jluviatilis.*
Pride. *Ammocaetes branchialis*

Notes on the foregoing List of fishes

FISHES of many kinds, which are taken in considerable quantities in some parts of the kingdom, at almost any time of the year, and other species which approach the shores at regular seasons in innumerable multitudes, occur on the coast of Somerset rarely, or pay their periodical visits in small parties.

The turbid condition of the water of the Bristol Channel, no doubt is unfavourable to fishes which live much in the deep and clear sea.

The well known PERCH, is a beautiful fish both in form and colour, and is very abundant in fresh water rivers, canals, and large ponds. This species has been taken in some parts of the kingdom more than six pounds in weight; in this county it seldom exceeds two pounds.

The BASSE is often taken on the Somersetshire coast. I have seen specimens weighing twelve pounds, brought from the estuary of the Parret, but the general size in the market is from half a pound to three pounds. It is a handsome fish, but not brilliantly coloured, of a chaste silvery hue, becoming gradually lighter and brighter from the back to the belly. This is the Lupus of the Roman poets.

COUCH'S POLYPRION was imperfectly known as a British species when Mr. Yarrell published his *History of British Fishes,* but the supplement to the work cleared up the obscure parts of its history. It is not uncommon on the Devon and Cornish coast, and it occurs on ours nearly three feet long. I found in the stomach of one from the estuary of the Parret, a perfect and good sized s*epia officinalis*. In the Mediterranean this fish is common, and is sometimes taken one hundred pounds in weight. The colour is plain and dull.

The two species of TRACHINUS are taken on our coast, but are never abundant there. *T. vipera* is the rarer.

STRIPED RED MULLET is sometimes taken at the mouth of the Parret, but very seldom, and not large.

Of GURNARDS, we have several species on our coast, but none of them in any considerable numbers. I have met with the Shining Gurnard in Bridgwater market, but am not quite certain that it was taken on our coast.

We have four of the five British species of COTTUS. The Short-spined Cottus and the Armed Bull-head are often brought to market with shrimps, and the Long-spined Cottus with sprats.

We have all the STICKLEBACKS described in the *History of British Fishes,* except the Short-spined Stickle, but it is doubtful whether they are all distinct species. The Fifteen-spined Stickleback is often brought to market with fish from Stolford, especially at the end of April, when I have found them full of roe and milt.

The SPARIDAE are rare on the Somersetshire coast, we have only the Braize and the Sea Bream.

MACKEREL. Amongst the many species of fish that are taken in multitudes on the shores of the open sea, and occur here only as rarities, I have to mention the Mackerel, which is of so great importance at some of our fishing stations. It is recorded that a catch of Mackerel, by sixteen boats from Lowestoffe on one day at the end of June, realized £5252; and it was supposed that no less than £14,000 altogether was realized by the owners and men concerned in the fishery of the Suffolk coast at that time.

THE SWORD-FISH has been found at the mouth of the Parret. I have particulars of the capture of three specimens there, from my departed friend Mr. Robert Anstice. Two other specimens have come under my examination. I found one on the sands at Burnham in the summer of 1850, but it was so putrid that I could take only a hasty view of it; its length was more than eight feet.

The DORY is occasionally brought to market from Stolford, with other fish.

THE BOAR-FISH is very rare, but I have met with specimens in Taunton market from the south coast, and in Bridgwater market from Stolford. The figure of this fish, in Yarrell's work, is from a specimen found on a fish-stall at Taunton. The specimen in the Society's museum, was presented by F. F. Luttrell, Esq. Through Mr. John Govett, of Stringstone.

RED BANDFISH is rare; a few have been taken in the estuary of the Parret. I once met with

two specimens on the first of February, one sixteen inches long, with ripe roe, the other eight inches long, a male, with full milt. A few days later another female was brought to me, the ovarium of which was empty. The season of spawning is marked by this circumstance, and is probably the cause of their visiting our coast.

GREY MULLET is plentiful on the Somersetshire coast in summer. Many ascend the Parret beyond the reach of tide water, probably to spawn, as the fry of this species are found in the tributaries of the river in autumn.

GATTORUGINOUS BLENNY is often taken in the estuary of the Parret, in February and March. It probably comes to spawn, as the roe is then ripe. It is beautifully coloured and an interesting fish.

SPOTTED GOBY is sometimes plentiful in the clay pits about Bridgwater, Tide water occasionally enters these pits.

GEMMEOUS DRAGONET. Not uncommon. The brilliant colours which so curiously adorn these fish, I have found transferred to damp cloths in which I have wrapt them for a few hours, until I could deliberately examine them.

The ANGLER is not uncommon in Bridgwater Bay. Specimens of small size are often brought to market with other fish, but unintentionally, for at any age they are anything but tempting subjects for the fish-stall. The repulsive form of the Angler is expressed by some of its local names. I have had it brought from the estuary of the Parret weighing eighty pounds, with the ovarium empty. The curious apparatus on the head, which gives it its most amiable name, is described in Yarrell's *History of British Fishes;* and the nervous system of these appendages, and other interesting and animated remarks on the fish, are given by Mr. Couch, in his *Cornish Fauna*.

The WRASSES are not numerous on our coast at any time. A few occur in May and June.

The BALLAN WRASSE is subject to great variation of colour, from a plain dull green, to a bright blue green, reticulated with vermillion and orange, and sometimes a rich red-brown, marked with blue and green. The females have been described as plain in colour; but I have seen them of bright and varied colours, when full of roe. They are sometimes taken with mature ova in February, and in March without ova. The CARP, eight or nine pounds in weight, is sometimes taken in the clay-pits near Bridgwater, and from the culverts under the Taunton and Bridgwater canal.

The CRUSIAN CARP has been taken in the Parret

The TENCH is abundant and fine in most of the slow drains of the marshes, and in large ponds. It is generally full of roe in June.

The ROACH flourishes in purer water. It is abundant in fresh water rivers and canals. The *Argulus foliacius*, a very interesting parasite, is often found on this fish.

The BLEAK is not common in the western part of the county coast in summer.

The MINNOW is plentiful in many of our brooks and rivers. I have found it in the tide-water of the Parret

The JACK or PIKE, formerly abounded in the upper parts of the Parret, and in the large drains of the county, but not so now; still; it affords sport to anglers in the Avon and some of our other rivers.

The SEA-PIKE sometimes occurs in the Parret, nearly up to Bridgwater. It is often taken on our coast in Summer.

SAWRY PIKE is rare. I have seen only one specimen, which was taken at Stolford at the end of July. It was sixteen inches long.

FLYING FISH. Two or three have been found at Burnham; perhaps driven on shore by rough winds. I copy the following from Dr. Fleming's *History of British Animals* – "A single example of *Exocetus Volitans*, or Flying Fish, was caught at a small distance below Caermarthen, in the river Towy, in June, 1765. . . . Another in July, 1823, ten miles from Bridgwater, in the Bristol Channel, a notice of which was communicated to the Linneian Society, by the Rev. S. L. Jacob, of Woolavington."

SALMON ascend many of the rivers of the county to spawn. They visit the Parret in May,

June, and a few in July and August, but perhaps not for this purpose; the condition of their roe, and the time of the year, seem to imply that some other instinct brings them into this muddy river at this season. We make the same complaint that is heard in the vicinity of other salmon rivers, namely, that salmon were formerly much more plentiful than now.

SALMON PEEL, SALMON TROUT, and BULL TROUT OF AUTHORS, are also taken in the Parret, in its estuary, and along the coast; and the PARR and COMMON TROUT are in most of our fresh water rivers and streams. Very many books have been written on the genus Salmo, and of late years much has been done, through careful investigation, to lessen the confusion of supposed species and varieties of this genus ; but there is still much more to be done to make the subject intelligible to inquisitive naturalists. The number of species in our books is reduced, and how many more will be found only varieties, is yet to be learned.

The PILCHARD, which is of such incalculable value in Devon, Cornwall, and other parts, is out of its proper element in the Bristol Channel, and only a few stragglers are found on our coast. The cause is perhaps the same as that which keeps away the multitudes of mackerel and other fish. Full and very interesting information on the laws made in the reigns of several sovereigns for regulating pilchard fishing, and the consequent trade, is to be obtained from Couch's *Cornish Fauna;* and accounts of the astonishing quantities sometimes taken, and their great value, are given in Yarrell's *British Fishes*.

The HERRING does not visit our shores regularly in shoals; but sometimes, from September to January, large quantities are taken by drift and stake nets, along the whole line of coast westward, from the mouth of the Parret. A few are taken every autumn; and the herrings of the Bristol Channel are always delicious.

The SPRAT. This little fish affords the most valuable fishing that we have on the Somerset-shire coast. Multitudes come here almost every October, and remain until January. They are caught by stake nets, chiefly at the Gore, and brought to the markets every day, and sometimes after every tide. A paragraph in the *Taunton Courier,* a few years ago, says that a ton of sprats was retailed in Taunton Market in one day; and from information which I have collected with great care, I learn that the sprat fishing, from the western extremity of the Gore to Weston-Super-Mare, will produce in a good season more than £10,000, at the retail prices.

The annual shoals of HERRINGS and SPRATS are great blessings to the poor, supplying abundance of good, fresh, and exceedingly cheap food for two or three months in early winter; the fish salted and dried, are much valued. Herrings and Sprats, strung and suspended in lines in cottage kitchens, are to be seen for months after the fishing season is over.

SHADS quit the sea in summer, and ascend rivers to spawn in fresh water; they are common in the Parret.

ANCHOVIES are very fine at the mouth of the Parret, and are taken at Stolford in considerable numbers in May and June, when the roe is mature.

CODFISHES are taken nearly in every month at Stolford, but they are generally small, except in the last three months of the year, when considerable numbers of fine large fish are taken on the Gore, by hooks suspended from floated lines.

The WHITING is seldom large, but great quantities of small ones are brought to market almost constantly through the year.

The HADDOCK, WHITING, POLLOCK, HAKE, and the LING, are taken occasionally, but they are not abundant.

The GREAT and LESSER FORKED BEARD, are found only as rareties.

The PLAICE is common, but seldom large.

The FLOUNDER or FLOOK is very abundant, and is taken at sea, in tide rivers, and in the fresh water, above the flow of tide. It is sometimes taken in clear streams far from tide rivers.

The DAB is common, but does not inhabit fresh water, like the Flounder. It feeds much on the small Mollusk, *Bulla retusa.*

The LEMON DAB is rare.

LONG FLOUNDER. Two specimens only are recorded, which were taken at Stolford, and which I sent to Mr. Yarrell, who says in his *Supplement to the History of British Fishes,* 'I have reason to believe that it is not only undescribed as a British Fish, but is altogether new to Ichthyology.'

The HOLIBUT is not uncommon on our coast; it is generally small, but sometimes a large one is taken; a specimen of thirty or forty pounds is considered large, although this fish has been brought to Bridgwater from other parts weighing more than 200 lbs.

The TURBOT is not uncommon, but it is almost always small; the same may be said of the BRILL and others of this family of fishes.

MULLER'S TOPKNOT is often taken in spring.

The SOLE is always abundant and delicious from Stolford and other fishing stations of our channel, but generally much smaller than the usual size of this fish from the shores of the open sea.

LEMON SOLE, the VARIEGATED, and the LITTLE SOLE, are rare.

LUMP SUCKER is common; the roe is mature in April; I have found it weigh one pound, thirteen ounces, from a fish of six pounds, three ounces.

EELS are abundant on the sandy parts of the coast of our channel, and in our rivers, streams, ponds, and ditches; it is our most widely diffused species of fish. ELVERS ascend the rivers in spring, they go up the Parret in March, April, and May, with the high tides, and myriads are skimmed up with fine nets at the ebbing of the tide, by the cottagers above Bridgwater.

These innumerable multitudes of little creatures, soon leave the salt and brackish water, against every obstacle, entering rivulets, brooks and drains, and occupying all the inland waters, thus providing for the constant waste of the species. Mature Eels leave the fresh water with the first floods of Autumn, and go to sea; probably they afterwards remain on the shore, for they are found inhabiting the sands and mud between high and low water mark.

The CONGER on our coast is abundant, but seldom large. It was considered by distinguished naturalists not twenty years ago, specifically the same as the common Eel, changed in size and color by living constantly in the sea; but it is now well known that specific differences are striking and numerous; above all, that the Conger has thirty vertebras more than the Eel. Both are now known to be oviparous, and not viviparous, as until lately believed.

ANGLESEY MORRIS. This curious and rare little fish has been often brought to me from Stolford in summer. The late Mr. Anstice met with two specimens taken in the Parret, which he sent to Col. Montagu, and an account of them was published in the Wernerian Transactions.

BEARDLESS OPHIDIUM. One specimen only has come to my hands, which was taken at Stolford, in September 1838, and I sent it to Mr. Yarrell, with two of the last named species, who wrote to me as follows: "I have your obliging letter and box with the interesting contents, – the two examples of the Anglesea Morris and the Beardless Ophidium, which I had never seen before, and as there is an example of a Bearded Ophidium in the British Museum, I shall be able to do well with this genus, in the second edition of British Fishes."

SAND EELS are found in the mud and sand between high and low water at Stolford, but not in great numbers.

The PIPE FISHES are found as curiosities; the Great Pipe Fish is most frequently taken.

The OBLONG SUN FISH has occurred in the Bristol Channel off our coast. One was washed ashore at Swansea, in 1843, which weighed 180 Ibs.

The STURGEON. Very large Sturgeons come up the Parret, sometimes almost to Bridgwater, several have been taken in the river and its estuary, from 250 lbs. to 280 lbs. weight; one was taken in 1850, ten feet long, and weighed 300 lbs. These large fish are females full of roe, and generally taken in June and July. Small specimens from six to twenty pounds are not uncommon.

The DOG FISHES, SHARKS, SKATES, RAYS, &c. are only casual visitors; the thick water of the Channel is no doubt unfavourable to this tribe of fishes; the Common Skate and Thornback are the most abundant.

The FLAPPER SKATE was sent to me from Minehead, in April, 1838, by our lamented Vice President, the late Mr. Standert.

The LAMPREY and the LAMPERN, are taken in the Parret; and the PRIDE is very common in our brooks.

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Somerset Fauna, Reptiles,

BY MR. W. BAKER.

THE number of British species of reptiles is very limited. Professor Bell, in his recent edition of the *History of British Reptiles*, records only fourteen, and this small number is made up by the addition of several species unknown as British until of late years. Of these we can claim only ten or eleven for our Somersetshire Fauna.

Most people are averse to close acquaintance with these creatures, therefore little is generally known about them; but they are all, except the Viper or Adder, *Pelias Berus*, quite harmless, and very interesting to those persons who can observe and study them complacently. The amphibia are all easily reared in confinement from the ova, through all their changes, and in a clear and roomy glass vessel they are lively and amusing little things, and their development will furnish subjects of deep contemplation to the philosophical naturalist.

TESTUDINATA. CHELONIDAE.

The HAWK'S-BILL TURTLE, *Chelonia imbricata*, has been taken alive in the river Parret. Professor Bell, in his *British Reptiles*, says that "the single and purely accidental occurrence of a bird or a fish, within the range of our guns or our nets, had always constituted the wanderer fair game to our Faunists; I have therefore determined to avail myself of the means thus offered me, of adding to our Fauna the Hawk's-bill Turtle and the Trunk Turtle, the two stray species which have been accidentally found on our coast." My inducements for claiming the Hawk's-bill Turtle for our Fauna of Somersetshire are irresistible; namely, Professor Bell's example; the following letter from my departed friend, Mr. Anstice, written to me many years ago; and the interesting and very apposite observations on this subject by Sir Charles Lyell, in the second volume of his *Principles of Geology*.

Mr. Anstice says: "I know the circumstance of the Turtle being caught in the river Parret. It is not very probable I think, that it was assisted hither by our trading vessels from abroad. I should think they may sometimes accompany the intertropical seed-vessels and shell-fish that are yearly brought to our channel, and to the coasts of Scotland and Ireland, by the gulf stream. I have seen the species in question on the coast of Portugal, and once, I remember, in a winter month and a gale of wind; and why should they not, therefore, take an excursion across the Bay of Biscay occasionally in summer time ?"

The following are Mr. Lyell's coincident remarks: "Turtles migrate in large droves from one part of the ocean to another, during the ovipositing season. Dr. Fleming mentions that an individual of the Hawk's-bill Turtle has been taken on one of the West Zetland islands; and according to Sebbald, the same animal came into Orkney; another was taken in the Severn, in 1774, according to Turton."

Thus we have good authority for enriching our list with the Hawk's-bill Turtle of the Parret, which came alive into my possession.

SQUAMATA. LACERTADAE. (SAURIA.)

VIVIPAROUS LIZARD – *Zootoca vivipara*.

This is the *Lacerta agilis* of former authors, which name seems to have been misapplied, and to have belonged to another species of this genus, which is not uncommon in the neighbourhood of Poole, in Dorsetshire, and to which it is now given. Our active little lizard is common in many parts of our county. I have seen many apparently sleeping on the sunny sides of dry hedge-row banks about Bridgwater, on Quantock and Mendip, &c. and almost always in sunshine. They are readily disturbed ; are very agile, and difficult to catch. If a person's curiosity should lead him to capture

one of these pretty little reptiles, he must not seize it by the tail, for it values its liberty more than this appendage, and will run away, leaving it wriggling in the hand of the captor.

SAUROPHIDIA. ANGUIDAE.

BLIND WORM or SLOW WORM – *Anguis fragilis*.

This inactive and harmless creature is common all over the county, except in marshy places. This will also part from its tail when handled roughly. Its bony structure is intermediate between the lizard and the snake.

OPHIDIA. COLUBRIDAE.

COMMON SNAKE – *Natrix torquata, Coluber Natrix.* – Linn.

This beautifully marked and harmless reptile is common. The eggs of snakes are well known, clusters of them being often dug out of manure heaps and warm banks. I have kept some of them for weeks together, opening one or two occasionally for my friends' amusement, or my own, when the young reptiles readily crawled out of their envelope, and roved about very prettily when placed on the carpet or an unpolished table-cover. Although they were probably rather prematurely liberated, their colours and markings were nearly perfect, being only a little paler than maturer specimens. The snake is easily tamed, and brought to come daily for its food, and to notice those who are attentive to it, but will shun strangers.

OPHIDIA. VIPERADAE.

VIPER or ADDER – *Pelias Berus, Coluber Berus*. – Linn.

This is the only poisonous British reptile. It is common throughout our county, but not so numerous as the ringed snake. The form of the viper is not so elegantly tapered, nor are the colours so bright and lively as those of the snake. The Red Viper and the Black Viper are now considered as varieties only of the common species.

The AMPHIBIA, like the true reptilia, constitute a small group, which has been considered by authors a class of the order reptilia; but Professor Bell makes it a distinct class.

ANOURA. RANADAE.

COMMON FROG – *Rana temporaries*.

This is a prettily coloured and active creature, therefore less repulsive than its congeners. It abounds in early spring, the season of depositing its ova, in slowly running ditches and stagnant ponds; and in summer in moist and marshy meadows. Sometimes in early autumn, multitudes of young frogs and toads are seen migrating from the borders of their native ponds to more convenient habitations.

It has been believed that the young of the amphibia could not be developed to the perfect form in darkness; but it is has been lately proved by Higginbottom, "that absence of light has no influence in retarding their development."

The TOAD – *Rana Bufo*. – Linn. *Bufo vulgis*. – Laurent.

This is also very common. In general opinion the Toad bears the same relation to the Frog, as the Viper does to the Snake. Its form is clumsy, its colours dull, and its movements slow; and to most persons it is disagreeable or loathsome; others who are accustomed to study these creatures, look on them not only without disgust, but with much agreeable interest.

URODELA. SALAMANDRADAE.

The WARTY NEWT or WATER EFT – *Triton cristatus.*
EVET, of Somersetshire.

This is the largest of the British Newts. It is common in ponds and ditches, from early spring to the end of summer; and in old shrubby banks, hollow trees, and rubbish, all the winter.

SMOOTH NEWT, EFT, or EVET – *Lissotriton; Lacertaaquatica*. – Linn.

This also is very common in still water in summer, and in grass banks, &c. in autumn and winter.

FRINGE-FOOTED SMOOTH NEWT.

This is also common, with habits like those of the last mentioned, and perhaps is only a more perfectly developed form of the same.

WEBB-FOOTED SMOOTH NEWT. – *Lissotriton Palmipes.*

This, the prettiest of the Newts, was first found, as British, on Clay Hill Farm, at Cannington, in our county. It has been since found near Edinburgh, and both occurrences are published in. the *Zoologist*," and in the second edition of Bell's *British Reptiles*. I had long possessed specimens of the new British Newt, when in April, 1843, I received a note from the Dean of Westminster, who was then giving lectures on reptiles to the Ashmolean Society. I extract the following from Dr. Buckland's characteristic note :—

"Have you ever noticed how many species of Water Newts live in your stagnant ponds? We have three near Oxford, as plentiful in ponds remote from ducks, as once the Saurians were in the mud of the nascent lias." In reply, I informed the Dean that I had paid a good deal of attention to these creatures, and that I had a new species, which I described to him. My note was handed over to Professor Bell, and it produced an immediate communication from that gentleman, of which the following is an extract: –

"I shall be particularly glad to have some of the little Newts, as I think it exceedingly probable that it may prove to be a new species." Without delay I sent four specimens in a letter. What a privilege to be able to send to a friend four living four-footed beasts in a post letter! These soon caused the following acknowledgment, written at Selborne, and I believe in the very house in which the universally admired *History of Selborne*, by Gilbert White," was written: "I thank you very sincerely for sending the Newts, three of which are living and in good health, in a glass globe. The species is undoubtedly distinct, and I believe undoubtedly new, not only to this country, but to science. I shall have an opportunity of figuring them before long in my second edition of the *Reptiles.*" "THOMAS BELL."

Soon after I received the above, I had another highly characteristic note on the subject from Dr. Buckland, from which I copy the following : – "I am glad to find your Salamanders are new species, and that you are in communication with Mr. Bell. Your neighbourhood, before the days of drainage, must have been a perfect paradise for such creatures, and some rare species may still survive." W. BUCKLAND."

In 1848, Mr. Wolley discovered this Newt near Edinburgh, and published an account of it in the *Zoologist*" for July of the same year; ultimately it proved to be known on the Continent, although quite new to Britain. The second edition of the *British Reptiles* contains many particulars relating to this species, and to its capture in Somersetshire.

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Cannington Park Limestone,

BY MR. W. BAKER.

THE Limestone of Cannington Park has always been a geological puzzle; and, long since geology has become a science worthy the attention of learned men, it has been considered nonfossiliferous.

Nearly forty years ago, the well known Geologist, Leonard Horner, explored Cannington Park very carefully, and his observations on it are published in one of the early numbers of the *Geological Transactions*, in a paper entitled, " Sketch of the Geology of the Western part of Somersetshire."

In this interesting and valuable report, Mr. Horner says:" I examined this Limestone with very great care, in order to discover whether it contained any organic remains, and particularly at the decomposed surfaces, and at those places where the stone was bruised by the blow of the hammer, but I could not find the slightest trace ; and some of the quarry men, who had worked there for several years, told me they had never found anything of the kind." Notwithstanding Mr. Horner failed to discover fossils in this rock, he records the following opinion, in the paper above quoted : " It is very probable that by a more minute examination, madripores and shells will be found in this Limestone, for there are laminae of calcareous spar dispersed through it, which are strong indications of organic remains."

In 1837, the late Rev. D. Williams read a paper, to the Geological Section of the British Association at Liverpool, on the Geology of parts of Cornwall, Devon, and West Somerset, wherein he says: " The Exmoor and Quantock group is of such perfectly simple structure, as to be briefly explained by a series of emergencies, the key to unlocking it being found in the fact that the lowest and most ancient emerged at, and towards, the north-east; thus, in the ascending order, the Cannington Park Limestone, near Bridgwater, is the lowest rock of all." In a subsequent part of this paper, Mr. Williams intimates that he had found organic remains in this rock, but he does not particularize any. In 1839 the Report of the Ordnance Survey of Cornwall, Devon, and West Somerset, was published under the direction of Sir Henry De la Beche, and I copy the following remarks from p. 55 of this important work : " To determine the place which the Cannington Park Limestone, near Bridgwater, occupies in the Grauwacke series of North Devon and West Somerset, is difficult. The Limestone is so surrounded by Red Sandstone, that its near connection with the rocks of the Quantock Hills cannot be traced satisfactorily."

Soon after the publication of Mr. Horner's paper, when I was a young geologist, my attention was called to the author's prediction—that madripores and corals would be found in the Cannington Park rock. I commenced a keen search for them on the old walls that bound the park, and I was soon rewarded with many good examples of weatherworn corals, and fragments of encrinites; and subsequently, the loose stones, formerly the defences of the hill, and the quarries, also furnished me with many good specimens. At the first general meeting of this society, I had the pleasure of exhibiting several large and handsome polished slabs, full of corals ; and some of them are still in our Museum. No discovery of a fossil shell was made known until within the last three or four months ; indeed this is the first public notice of such a discovery.

In October last, Mr. J. H. Payne, one of our early members, in searching for corals and madripores on Cannington Park, cracked a stone containing a beautiful valve of a bivalve shell. The external surface only is exposed, and one side of the beak is concealed; the other side is slightly winged, and the whole shell is marked with fine, but well defined, longitudinal ridges—it is much like Cardium Aliforme. I had the pleasure of showing this interesting specimen to our Vice-President, the Earl of Cavan, and his lordship took an early opportunity of going to the hill in search of fossil shells, and succeeded in finding three distinct species, different from Mr. Payne's, viz., a

large Productus, an Orthis, and a Terebratula. On the 17th of November I met his lordship on the hill by appointment, and spent, in diligent research, a cold but bright and cheerful morning, on its sheltered southern side. We found a large Productus, and several other species of bivalves, which I believe agree with fossils in the Mountain Limestone of Mendip. When Dr. Pring, Mr. Moore, and myself, examined the Williams' Collection, at Bleadon, at the request of this society, we were surprised at finding in one of the cabinets two or three imperfect bivalves, labelled Cannington Park. These fossils were no doubt found by the late Mr. Williams, after he had read his paper to the British Association, in 1837, and are probably recorded in his manuscript book, which is now the property of the society.

It might be asked, how was it that fossils in the Cannington Park Limestone were so long hid from the observation of good geologists? I answer, the highly crystalline nature of the stone was the cause. The organic remains are unusually concealed in these beds; but now the eye has detected these objects, although they are so obscure, we shall in future find them abundant. The crystalline character of the stone, is no doubt to be attributed to the volcanic action which uplifted the rock, for trappean Red Stone fills up many fissures in the hill; and volcanic cinders, connecting trap and altered Limestone, are not uncommon on different parts of the hill.

Cannington Park has been marked on one or two geological maps as Mountain Limestone, but without fossil evidence; and for many years it has been doubtful in what series of strata it should be arranged. In different parts of the Quantock Hills are beds of Limestone, almost composed of madripores, corals, and encrinital fragments; but hitherto no moluscous shells are recorded to have been found in these beds; therefore they may be of a very different geological age, perhaps much older than the Cannington Park Limestone. Humboldt in his great work, *The Cosmos*, says:" Some strata furnish only the impression of a shell, but if it be one of a characteristic kind, we are able on its production, to recognize the formation in which it was found, and to state other organic remains which were buried with it. Thus the shell brought home by the distant traveller, acquaints us with the geological character of the country which he has visited."

We now know more than one characteristic shell; we have many shells, corals, etc., from Cannington Park, agreeing with fossils common in the Mountain Limestone of Mendip, to guide us, besides the oolitic structure and general resemblance of the stones. Is it not likely therefore that the Cannington Limestone is an outlyer of the Mendip strata, the southwest side of which dips towards the Quantocks, and probably passes deep under the intervening valley, and is uplifted at this eastern branch of the Grauwacke Hills?

Since I had the pleasure of reading the above short paper at our conversazione, in March, I have met with some observations on the Cannington Park Limestone, in the late Rev. D. Williams's manuscript work, from which I make the following extracts: –

" The fact of the Cannington Limestone being an outlying mass, and altogether insulated in the New Red Sandstone, caused me for a time some doubt and embarrassment, as to its true position and relations. On a review of all its circumstances, however, I entertain little doubt that it is a purer variety of the Withycombe, Doddington, and Stowey Limestones, or, inversely, that the latter indicate the Cannington Limestone to be passing out to the westward, among the Old Bed Sandstone, by a less pure – by coarse arenaceous and carbonaceous beds. It is on the direct roll of the Old Red, from the Quantocks towards the Mendips It commonly exhibits a very minute, concretionary-looking structure, consisting of little pale grey oviform and spheroidal granules, closely packed together. . . . Organic remains are at times abundant in this Limestone, but usually so minute, almost microscopic, that most of them, I believe, have hitherto eluded observation. They consist of minute plates and facets of plates of encrinites, and, on a close inspection of the weathered surfaces, I procured several remarkably small and delicate spines, papilla? and plates of an Echinus, a little turbinated univalve, and several fine corals. The late Mr. Anstice, of Bridgwater, informed me that a trusty agent brought him a Productus from this Limestone, and Mr. Baker, of that town, obligingly showed me some beautiful corals, which he had found in it."

In a note to the above, Mr. Williams mentions that Mr. Anstice had accompanied Professor

Buckland and Mr. Conybeare in the survey of this Limestone, and supposes that he was urged by these gentlemen to search it diligently for fossils, in future. He also informs us that Mountain Limestone was, about that time, shipped from Brean Down to Bridgwater, for the repair of roads, and suggests the probability that the Productus was found in these stones, not in Cannington Park stone, and brought by the "trusty agent" to Mr. Anstice, for reward. It appears that when Mr. Williams wrote the above, he not only did not know of any fossils in the Cannington stone, except corals, fragments of very minute encrinites, and echini, and a little turbinated univalve, but doubted the discovery of the Productus in it; therefore it appears likely that the two or three bivalves seen by Dr. Pring, Mr. Moore, and myself, in the cabinet at Bleadon, must have been found after the above remarks were written. I have not the slightest thought that Mr. Anstice was imposed upon by the " trusty agent."

Since I read my paper at Taunton, and the discovery of molluscous shells in this Limestone has been otherwise mentioned, the Rev. W. A. Jones, of Taunton, and Mr. Moore, of Ilminster, in a brief search amongst some heaps of this stone, by the roadside near Bridgwater, cracked out three or four tolerably good specimens of distinct species of bivalve shells. Mr. Morle, of Cannington Park Farm, who is alive to the interest that geologists take in the strata close to his door, and is competent to explore them, has met with others ; and Mr. W. Tucker, of Cannington, a good practical naturalist, has brought me dozens of specimens, and many different species.

I fear that I have lengthened this paper to a tedious extent; but I have trespassed so far, because I am desirous of making use of the information which I have obtained on this subject, believing that a knowledge of the geological position of the Cannington rock will elucidate much that is obscure in our geological views of the Quantocks, and the strata westward; and that this obscurity will, before long, occasion another survey from the Ordnance Staff, in the western district, as they contain views different from those quoted from the Paper read to the Geological section of the British Association.