

REPORT

OF THE

SIXTEENTH MEETING

OF THE



BRITISH ASSOCIATION

FOR THE

ADVANCEMENT OF SCIENCE;

HELD AT SOUTHAMPTON IN SEPTEMBER 1846.

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

1847.

a superior kind of trout, which he thinks has not been described by naturalists: he calls it the "Estuary Trout," brackish waters being the locality it prefers. Its food differs from all others he has examined. Should it prove, on future inquiry, that the brackish water is the limit to its usual, or natural range, it may furnish a means of deciding on some difficult legal questions. As regards the celebrated questions raised by the Drumlanrig experiments, to which his first memoir gave, as he believes, the exciting cause, Dr. Knox thinks it not proved that the salmon smolt, that is the young salmon, ever remains longer in the river than a few weeks after rising from the gravel; and thinks that the opinions founded on the Drumlanrig experiments are in this respect erroneous. 2nd. As regards the question of the parr, no new fact was added to its previous history by these experiments; the *parr markings*, which may be again made visible on scraping off the scales of the smolt, was a fact well-known to anglers; who at the close of the day found it difficult to say which were true parr and which salmon smolts. Mr. Scrope first gave a beautiful drawing of this fact. 3d. For at least a hundred years the opinion that the parr was the young of the salmon prevailed universally in Annandale. 4th. Willoughby had proved that the salmon-egg may be impregnated by the milt of the parr; an experiment curious enough physiologically, but otherwise of no practical importance. 5th. Mr. Hogg and a great many others had marked the spring parr, and found that they returned to the rivers full-grown salmon. Thus no new fact was added to the natural history of the salmon by the Drumlanrig experiments. The author declined giving a decided opinion as to the real nature of the true parr; but, so far as his observations had yet gone, he believes that there is a fish which may be called the *true parr*, hitherto confounded with many other species having *parr markings*; and that this *true parr* may ultimately prove a hybrid between the salmon or salmon trout and certain species of river trout.

On the Application of the Method, discovered by the late Dr. Thibert, of Modelling and Colouring after Nature all kinds of Fishes. By R. KNOX, M.D.

These models were shown. They consisted of the Vendace, the mackerel, the red-spotted trout of England, and the Lochmaben trout. This method of modelling will ultimately be preferred to all others; even to that in wax.

On the Egg-purse and Embryo of a Species of Myliobatus. By J. COUCH, F.L.S.

The author commenced by stating that the egg-purse was found in August 1845, in the refuse of a trawl-boat by Mr. Peach; and was obtained a few miles south of Fowey, in Cornwall. After mentioning how little is known of the egg-cases of the rays and sharks, he minutely described it; and showed the difference between it and others, particularly dwelling on the structure of the surface, it being reticulated, whereas all the other egg-purses are smooth. In the egg-purse was a living young fish, which proves to belong to the genus *Myliobatus* of Cuvier, characterized by having the pectoral expansion separated from the head. These, from the direction of the wings, have been fancifully called sea-eagles. Ruysch, whose figures are for the most part copies from preceding authors without being improvements on the originals, but who, at plate 9. fig. 9, has given one tolerably characteristic, remarks that it has been called "Sea Toad," from the form of the head resembling that creature; and the comparison seems appropriate, from the elevated head with a protuberant and lateral eye. The same author says that this fish is viviparous; an assertion which the foregoing account shows to be incorrect.

On the Crustacea found by Prof. E. Forbes and Mr. M^cAndrew in their Cruises round the coast. By Prof. THOMAS BELL, F.R.S., F.L.S. &c.

Having been requested by my friends Prof. Forbes and Mr. M^cAndrew to communicate to the Section some observations on the contributions to carcinology made by those gentlemen in their recent cruises, I gladly comply with their wish; and although I have not to record many actual novelties in the species collected, yet

several interesting facts have been established which may be of future importance in their collateral bearing upon matters of more general interest and importance than the mere discovery of isolated species or forms. In regard however to one entirely new form, there are some points of peculiar interest to which I shall presently take an opportunity of referring.

I have thought it best to consider the species procured under three heads. Of the species found in the northern cruises of Mr. M'Andrew, in the first instance alone, and afterwards accompanied by Prof. Forbes, I will enumerate those found in water under twenty fathoms; and secondly, those in water above that depth; and thirdly, those which have been found in the excursion which these gentlemen have recently concluded along the south-western coast. The following is the list of the more interesting species found principally in Loch Fyne, in water under twenty fathoms. Of the natatorial type of the Brachyura we have only two species, *Portunus corrugatus* and *depurator*; and amongst the Macrura, *Pandalus annulicornis*, and a new species of Hippolyte, to which I propose to give the name of *H. MacAndrewæ*. In deeper water the forms are more interesting. In Loch Fyne we have *Ebalia Pennantii*; off Zetland *Ebalia Cranchii*, a species first discovered on the south-west coast; *Eurynome aspera* occurs off the Isle of Man; *Atelecyclus heterodon*, *Lithodes arcticus* in Loch Fyne, off the Isle of Man, and off the coast of Zetland; *Galathea nexa* and its near ally *Munida Rondeletii* (*G. rugosa* of authors), both in deep water off Zetland and in Loch Fyne; and here I would make a remark or two on these two species. The localities in which they were found upon this occasion prove them both to be deep sea species, which other observations have also shown. I would also remark that the possession of a new species closely allied to our native species of Leach's genus *Munida*, procured by my friend Mr. Darwin in his voyage, clearly shows the propriety of Leach's having separated generically the *Galathea rugosa* from the other species of that Fabrician genus; and as the latter is absolutely more rugose than the species originally so designated, I have thought it proper to assign to it a new specific appellation, and have given it that of *Rondeletii*, after the first naturalist who distinguished and figured it. Of *Galathea nexa* I have only to remark, that there is no one character to indicate any difference in its habits from its immediate congeners, *G. squamifera* and *strigosa*, and yet both the latter are shore species, where, as far as I know, *G. nexa* is always found in deep water. On the latter species was found a parasite of the genus *Bopyrus*, which will probably prove to be a new species. *Crangon Cataphractus* (*Pontophilus spinosus* of Leach) was found off Zetland, and to these I have to add *Leachia lacertosa* of Johnston. But by far the most interesting of all the acquisitions of my friends in their northern cruises, is the discovery of an entirely new genus of the fossorial type of the Macroura, belonging to the family of the Thalassinidæ, but differing in many important characters from all known genera of that group. In the first place, instead of the monstrous and abnormal character of the first pair of thoracic members, we find them here of nearly the normal construction of the higher and more typical macrourous forms. But the most remarkable circumstance connected with this animal has yet to be mentioned. It was found in one instance at the depth of no less than 180 fathoms, and as at this great depth it is also fossorial amongst sandy mud, we can scarcely imagine of what use any organs of vision could be to an animal so situated. I find accordingly, that although it possesses eyes, they are of no avail as organs of distinct vision, as they possess no pigment, nor, as far as I have observed, have they corneæ; and I presume that the other parts essential for high powers of sight are also wholly wanting. Amongst a collection of the crustacea of the coasts of Ireland, formed by Mr. Thompson, and which he has obligingly placed in my hands, I found a pair of peculiar claws of some species of crustacea with which I was wholly unacquainted; they were taken from the stomach of some deep-water ground-feeding fish, and I now discover that they belong to the species in question. Mr. M'Andrew took it alive in Loch Fyne and the Mull of Galloway, by the dredge; and that gentleman and Prof. Forbes afterwards obtained it off Zetland.

The recent cruise of my friends round the western coast has been fruitful in the acquisition of species of interest, although only one addition has been made by it to the list of English crustacea. The more usual species, *Stenorhynchus tenuirostris*, *Atelecyclus heterodon*, *Portunus depurator* and *pusillus*, *Gonoploæ angulata*, *Eurynome*

aspera, and *Ebalia Pennantii*, require only to be enumerated. *Xantho rivulosa*, recently discovered to be a British species, is also included. In addition to *Pagurus Prideauxii*, I find also two of the new species of *Pagurus*, which I have recently described; of these two, *P. lævis* was first discovered by Mr. Thompson on the Irish coast; the other was found off Plymouth by Mr. Cokes, and first described by me under the name of *P. Forbesii*. *Lithodes arctica*, a northern form, is also in the present collection; but the most interesting amongst the fruits of this little expedition is a fine specimen of a species of the natatory type of the *Brachyura*, a *Portunus* entirely new to our fauna, and which appears to me to be *P. longipes* of Risso, a Mediterranean species. It differs from the only specimen I have in my collection of the latter species, but this may arise from my Mediterranean specimen being very young.

On the Structure of the Pycnogonideæ. By Dr. CARPENTER.

The President exhibited a specimen of a beetle (*Blaps mortisaga*), which has been found imbedded in some artificial concrete, where it must have been at least sixteen years; and yet, when the animal was brought to him, it was alive, and lived for six weeks after.

Dr. Carpenter gave an account of his researches on the microscopic character of shells, and also the results of his attempts at representing natural history objects by means of photography.

On the Dissimilarity in the Calcifying Functions of Mollusks, whose organization is in other respects similar. By L. REEVE, F.L.S. &c.

Each of the four shell-secreting kinds of Cephalopods—the Cuttle-fish, the Paper Nautilus, the Pearly Nautilus, and the Spirule or Ram's Horn—exhibits a different method of forming its shell, (this shell differing in microscopic structure, and secreted from different parts of the system,) although strictly allied in all those elements of anatomical detail which constitute the soft parts or animal frame. Whilst the calcareous portion of the Cuttle-fish is merely represented by an internal bony plate, consisting mainly of carbonate of lime, the shell of the Pearly Nautilus constitutes a huge mechanical apparatus, secreted from the mantle enveloping the visceral mass, and consisting of two separate deposits—an outer crust, and an inner nacre—for the purpose of buoying up its inhabitant under the different mutations of pressure to which it is subjected in its deep region of habitation. The shell of the Paper Nautilus, on the other hand, is a light elastic boat, transparent and permeable to light, secreted only by the female for the purpose of oviposition; and in this animal the office of calcification is transferred, by some mysterious order, from the mantle to the hinder pair of arms. The Spirule is again totally different, it being contained within the mantle of an animal, far larger, in proportion, than that of the other Cephalopods, under circumstances which are at present unknown. The drawing exhibited was taken from a living specimen, recently collected at New Zealand, by Mr. Earl, for the first time in perfect condition; but, as the proprietor is unwilling that it should be dissected, Mr. Reeve could only state that it enclosed a problem in the physiological history of the Cephalopods, which it was extremely desirable to solve. The next point to which he directed the attention of the Section was the curious difference which occurs in the growth of the Cowry and the Olive; but this he had already more fully communicated to the Linnean Society.

On certain Peculiarities in the Anatomy of Limax Sowerbii.
By Prof. ALLMAN, M.R.I.A.

The peculiarities of structure in this animal are chiefly to be found in the reproductive system, which in several respects presents a remarkable similarity to that of *Helix*. There are well-developed *multifid vesicles*, and an elongated sac containing a singular organ in the form of a curved cylinder beset with numerous palmate spines.