

9. *Pristiurus*, Bonaparte, (one species) *Scyllium melanostomum*, Bonap.

Some drawings were exhibited by Dr. Smith, of the forms presented by the teeth of the species composing several of the above sections, and he remarked that on a future evening it was his intention to lay before the Society some further observations upon other groups of the cartilaginous fishes.

Professor Müller of Berlin being present confirmed the views entertained by Dr. Smith as to the number of divisions which might properly be made of the family *Scyllium*, several of which he had already published, as mentioned by Dr. Smith. As to the rank which these groups should hold in a systematic arrangement, he considered this a point upon which we are hardly in possession of sufficient evidence to justify a decided opinion.

#### ROYAL SOCIETY OF EDINBURGH.

Dec. 4, 1837.—Sir Thomas Brisbane, Bart., President, in the Chair.

*On the Food of the Vendace, Herring, and Salmon.* By JOHN STARK.

1. *Food of the Vendace* (*Coregonus Marænula*, Jardine). The author observed, that fishes in lakes, and feeding on animal food, must necessarily subsist on the small aquatic animals found in these lakes; that there is no reasonable analogy between the vendace and herring, because they live in different mediums, the one in salt the other in fresh water, and that their food cannot therefore be the same, none of the animals upon which fishes feed being common to both; that writers on Natural History state the animalcules which are found in the stomach of the vendace, and other minute animals found in lakes, to be the food of freshwater fishes generally; and that Leuwenhoek had even figured the identical animal lately found in the stomach of the vendace more than 130 years before, stating that it and the other minute animals in similar localities formed the food of the larger fishes.

2. *Food of the Herring* (*Clupea Harengus*, Linn.). The author stated that the food of the herring was better known than that of any other fish: that the food of the herring was, in particular, known to and described from personal observation by Paul Neucrantz previous to the year 1654, by Leuwenhoek in 1696, by Muller in 1785, by Bloch about the same period, by Fabricius in 1781, by Latreille and Lacépède in 1798, by the Rev. Dr. Scoresby in 1820, by Pennant and others, and in fact is mentioned by every writer who treats of the natural history of fishes; and that what had been stated by all writers on



the subject, is corroborated by the examination of the stomach and intestinal canal of the herring, and the stomachs laid on the table of the Society.

3. *Food and Reproduction of the Salmon* (*Salmo Salar*, Linn.). The author stated on this head what had been remarked by the most esteemed authors on natural history to form the food of the salmon; and exhibited preparations by Dr. Pownell confirming the statements of these writers. He next noticed the valuable evidence taken before a Committee of Parliament in 1824-25, regarding the food and natural history of the salmon, which also corroborated the statements of systematic writers; and remarked, that when these fishes prey upon animals in roe, such as the *Asterias*, the ova often remain in the stomach and intestinal canal after the other portions of the food are wholly digested. He next gave an abstract of the evidence laid before the Parliamentary Committee as to the periods of the ascent of the salmon in the different rivers for the purpose of spawning and the descent of the fry to the sea; and pointed out the experiments made on the development of the ova by Mr. John Hogarth, jun., in the Appendix to the Report of the Committee, and those detailed by Mr. Schonberg in Sir David Brewster's Journal of Science.

Dec. 18, 1837.—Dr. Hope, Vice-President, in the Chair.

*Experiments on the Growth of the Fry of the Salmon, from the exclusion of the Ova to the age of seven months.* By Mr. JOHN SHAW. Communicated by Mr. Stark.

The author of this paper had formerly made experiments on the growth of the salmon fry, by procuring spawn from the river bed where it had been deposited by the salmon. Not considering these experiments, however, as entirely unobjectionable, he procured two fishes from the river Nith in the act of spawning; and having expressed the ova of the female in a convenient place, the milt of the male fish was made to impregnate them as nearly as possible in imitation of the natural process. The ova were then placed in ponds prepared for the purpose, and so arranged as to exclude all chances of error as to the species or the nature of the progeny. The ponds were two in number; one twenty-five by eighteen feet, the other fifty by thirty feet, and two feet deep. The bottom was thickly imbedded with gravel; and a small stream of spring water entered the ponds at the upper corner, and escaped by an opening at the other end. Both apertures were covered by a wire grating. The ova in one experiment were deposited on the 20th of January 1737. On the 10th of March (fifty days after deposition) the embryo fish were visible.