Sub-order XIV.—PLECTOGNATHI

Air-bladder without duct. Opercular bones more or less reduced ; supraoccipital in contact with the frentals; maxillary and prac- maxillary bones often firmly united. Pectoral arch suspended from the skull. No ribs. Ventral fins thoracic and much reduced if present; the pelvic bones, if present, more or less co-ossified. Gill­opening much reduced. Body covered with more or less osseous scales, bony scutes, or spines, or naked.

A highly aberrant group, closely connected with the Acanthopterygii through the Acanthuridae.

Division I. Sclerodermi.—Families: Triacanthidae, Triodontidae, Balistidae, Ostraciontidae.

Division II. Gymnodontes.—Families: Tetrodontidae, Diodon- tidae, Molidae.

The Plectognaths are all marine; the recently discovered Tri- acanthid *Hatimochirurgus,* remarkable for its long, tube-like snout, from the Gulf of Manaar, is the only form of this sub-order which is confined to the deep sea. Although so highly specialized, several forms, such as *Ostracion* (the coffer-fish), *Tetrodon* and *Diodon,* were already represented in the upper Eocene. See File-Fish, Globe-Fish and Sun-Fish.

For bibliographical references to the Teleostomi, see Ichthy­ology. (G. A. B.)

**TELEPATHY** (Gr. τ⅞λe, far, *πάθη,* feelings), or Thought Transference, the conveyance of thoughts and feelings from mind to mind by other than the ordinary channels of sense. Although the word “ telepathy ” was first suggested by F. W. H. Myers in 1882, the suggestion had long before been made that the transmission of ideas, images and sensations could be brought about by other than the normally operative motor and sensory apparatus of the body. More than one writer had explained wraiths at the moment of death, clairvoyance and the phenomena of spiritualism by the theory of “ brain waves.” But it was not until the advent of the Society for Psychical Research that the hypothesis attracted much notice or was backed by carefully collected evidence. As used by the society the term is a mere designation, and implies no hypothesis as to “ action at a distance ” or the operation of any force not recog­nized by physical science.

The earliest recorded systematic experiments in thought transference were made in 1871 by the Rev. P. H. and Mrs. Newnham, and were continued for a period of some eight months with marked success; subsequent attempts showed no results of an evidential nature. A few years later the attention of the British Association was called to the subject by Prof. W. F. Barrett, and from 1881 onwards many experiments were made by members of the S.P.R. and others; in fact, the so-called “willing game” was at one time exceedingly popular; the successes, however, depended largely, if not entirely, upon muscle-reading, and usually ceased when there was no contact between agent (the sender of the idea) and percipient (the receiver). The systematic investigation has followed two main lines: (A) experiments on persons, often in the hypnotic state, in which the aim was to transfer selected images, &c., and compare the guesses with the results which chance would give; (B) the collection and examination of records of phenomena such as apparitions at the moment of death and other spon­taneous cases in which there is a correspondence between the psychical states of two individuals, usually remote in space from one another. The problems raised by the two cases are entirely different: (1) in A there is seldom any hallucinatory element (see Hallucinations), in B, though not essential, it is present in a high percentage of cases; (2) what is trans­ferred is in A an image kept before the mind, in B the phantasm of the dying person when that person has prima facie neither endeavoured to transfer this image nor, it may be, even thought of the percipient; (3) the desideratum in A has usually been to exclude normal methods of perception, in B the problem is to show that coincidence will not account for the facts; for, whereas in A the relation of successes to failures is known, in B it is difficult to get statistics and to be sure that an abnormal number of successful cases do not figure in a census. Side by side with direct experimentation, the S.P.R. collected first­hand records of apparitions at or within twelve hours of the moment of death. These, together with a discussion of the experimental evidence, were issued in 1885 under the title of *Phantasms of the Living.* In order to provide a statistical basis for discussion of coincidental apparitions, a census of hallu­cinations was undertaken by Edmund Gurney, and replies were obtained from over 5000 persons. A defect of the collection in *Phantasms* is that the progressive deterioration of evidence with age is neglected. No narratives are regarded as evidential by the society unless they were reduced to writing less than three years after the event or are based on notes made at the time.

The second systematic attempt to collect material was the census of hallucinations, initiated at the congress of experi­mental psychology of 1889, and entrusted to Professor Henry Sidgwick. The total number of persons who made returns was 17,000, of whom 1684 asserted that they had once or oftener experienced an hallucination. Analysis of the answers showed that in 350 cases the apparition was recognized; the probability that any person will die on a given day is roughly 1 in 19,000: if therefore chance alone operated, one apparition in 19,000 would coincide with a death; after making all allow­ances for error, the census committee found that 30 of the 350 recognized apparitions coincided with a death—in other words, cases prima facie telepathic were 440 times more numerous than chance coincidence would give. The committee reported that between deaths and apparitions of dying persons there exists a connexion which is not due to chance alone.

The experimental evidence for telepathy is made up partly of the results of trials where direct transference of thoughts, images or sensations was attempted, partly of successes in hypnotization at a distance; dreams (*q.v.)* also provide some material; and in a small but important class of cases, transi­tional between wraiths and ordinary experimental cases, the agent has caused his phantasm to appear to the percipient.

Among the chief experimenters may be mentioned Prof. Μ. Dessoir, Mr Guthrie, Sir Oliver Lodge and Prof. Sidgwick. In experiments conducted by the latter and Mrs Sidgwick at Brighton with numbers as the objects to be guessed, 617 trials were made with the agent and percipients in the same room: the numbers were between ten and ninety, and ninety successes were recorded, the probable total, if chance alone had operated, being eight. In a later series, conducted by Mrs Sidgwick, a similarly high proportion of successes was recorded; but when agent and percipients were in different rooms the results were not above what chance would give. These results were criticised by Prof. Lehmann and others, but were not seriously shaken; it was pointed out that the failure of experiments at a distance might be due to psychological causes rather than to the fact that the increase of distance eliminated the possibility of communication by normal means. In subsequent experiments, however, the successes in no series of any length were so far above chance as to give substantial support to a belief in telepathy.

Experiments in hypnotization at a distance provide some of the most conclusive evidence for telepathy. In 1885 trials were made both by Dr Janet and by Prof. Richet with the same subject. Out of twenty-five experiments the former held that nineteen were complete successes; Prof. Richet secured two successes and four partial successes in nine trials. The most striking point was that the hypnotic trance always coincided with or followed at an interval the attempt to hypnotize the patient; this is a feature of much importance in considering the possibility of coincidence or of auto-suggestion.

It is usually impossible to prove that a dying person has been thinking of the percipient; much less can we show that there was any idea of causing his phantasm to appear. There are, however, a small number of cases in which apparitions, of the agent or some other person, prima facie telepathic, have been produced experimentally. A singularly’ interesting instance is recorded by Wesermann, who tried the experiment in the early part of the 19th century; he wished to make the phantasm of a lady appear to a lieutenant, who was residing some miles away; at the time of the experiment he was, owing to an un­foreseen visit, not alone, and his visitor is said to have seen the apparition also. More recently, in cases recorded in *Phantasms*