an enormous gape which extends backwards beyond the base of the pectoral fins. On the other hand, the gill-cover is still more reduced than in the other Stomiatids, and quite rudimentary.

A perfectly unique structure is a thin, cylindrical, muscular band which connects the back part of the mandibulary symphysis with the extremity of the hyoid bone. It is probably the homologue of a muscular band which in other Stomiatids stretches on each side from the mandible to the side of the hyoid, the two bands coalescing into an unpaired one in *Malacosteus*. It is, in the present state of preservation, much elongate, like a barbel, but during life it is probably contractile and serves to give to the extremity of the mandible the requisite power of resistance when the fish has seized its prey, as without such a contrivance, so long and slender a bone would yield to the force of its struggling victim. This structure is so unique, and the band so similar to a barbel that, before having become acquainted with it by autopsy, I imagined that its original describer, Dr. Ayres, had misunderstood its character, and that he had only seen a barbel like that of *Stomias* or *Echiostoma*. Dr. Ayres had not made any suggestion as to its probable function.

Being provided with a mouth which allows of the passage of fishes much exceeding in size its own bulk, *Malacosteus* must have as distensible a stomach as *Chiasmodus* or *Omosudis*. Both the specimens which are known had the stomach empty, but in our example the integuments of the abdomen are so distinctly longitudinally folded that there can be no doubt on this point; and probably *Stomias* and *Pachystomias* are likewise able to swallow large fishes, though this peculiarity is less developed in them than in *Malacosteus*.

The eye is comparatively large; and it would be quite inconceivable that a fish living at a depth to which no ray of the sun can penetrate, should be provided with an organ of sight so much developed, unless light be produced from some other source or by the fish itself. In *Malacosteus* the subocular luminous organ[1] is broken up into two bodies imbedded in the muscular substance; the anterior is the larger, pear-shaped, with the narrow end directed forwards and wedged into the narrow space between the eye and intermaxillary; the posterior is situated somewhat further back, above the maxillary, smaller and of a more rounded form. Both are now of the colour of a crystalline lens after immersion in spirit, and surrounded by a very narrow pearly ring.

Small eye-like organs are arranged in longitudinal series along the lower part of the side, and scattered between the series; others are scattered over the upper parts, but owing to the state of the specimen I am unable to trace the series in their whole course or to ascertain their number.

The gills are four in number with very short laminæ, and without gill-rakers; of branchiostegals I counted eight, all extremely short, rod-like and cartilaginous.

[1] Its histological structure will be described in Appendix B.