

indicate that the phasiid stocks are much older than the oestrid and cuterebrid stocks.

Other facts point to the same conclusion. The specialization toward partial and complete atrophy of the mouthparts in the oestrid stocks, toward partial atrophy of the same in the cuterebrid and megaprosopid stocks and toward antennal reduction in these and kindred stocks indicates that the extreme shortening and constriction of the facial plate are connected with a more or less complete loss of mouth and antennal functions. Certainly this is comparatively recent specialization, for the primitive stocks must have had highly functional mouthparts as well as high antennal development.

Facial plate reduction has probably followed antennal and mouth reduction. In other words it is a consequence of loss of nutritive and olfactory functions in the fly, and thus marks an extreme stage of parasitism and host-adaptation, particularly one in which the sexes may easily find each other, in which the female may easily find the host, and in which the maggots may easily store a large food-supply. The two muscoid stocks which are apparently of most recent evolution, the Masiceratid and Hystriciid, in which the mouthparts and antennae are both still highly functional and the facial plate in consequence still retains its full development, have much less perfect host-relation, sex-relations and food-supply conditions. They must search assiduously for their hosts; the large fecundity which is necessary to their peculiar host-relations demands extensive feeding in the adult female, especially as she has not an unlimited food-supply during her larval life; and the necessity for feeding and host-searching makes the female a wanderer, whose discovery by the male calls for well-developed olfactory organs.

The comparison of *Cobboldia* with other types shows conclusively that pharyngeal atrophy (atrophy of pharynx and rostrum of proboscis, and not necessarily of haustellum or palpi, with more or less complete closure of pharyngeal cavity) is directly correlated with the evenly receding and gently-convex profile of the facial plate and peristomalium, and the consequent more or less complete recession of the epistoma; further that the great shortening of the clypeus is primarily dependent on and thus directly