Chapter 4

THE HEAD AND CERVIX

The insect head presents many morphological problems but it is convenient here to give a descriptive account of the head-capsule and cephalic appendages before discussing the more important theories of the segmental composition of this region.

The Head-Capsule

The exoskeleton of the head is composed of several sclerites more or less intimately associated to form a hard, compact case or head-capsule, general works on which include those of Duporte (1957), Gouin (1968), Manton (1964), Matsuda (1965), Snodgrass (1947, 1960) and Strenger (1952). In the more generalized insects the wall of the head-capsule is reinforced by a number of inflected ridges or sulci which occupy relatively constant positions and delimit to some extent the morphological areas into which the wall of the head can be divided (Figs. 5, 6). In addition, the dorsal and facial surface of the head of immature insects is crossed by a so-called ecdysial cleavage line, often having the form of an inverted Y (Fig. 5). Here the sclerotized exocuticle is absent and the head-capsule splits open along the cleavage line when the insect moults. The course of the split varies from one species to another; in some its lateral arms run dorsal to the antennal insertions, in others it runs to them or below them. In some insects the ecdysial cleavage line lies concealed along the infolded portion of a sulcus, thus obscuring its real nature. The cleavage line is only rarely retained in adult insects but some species have a similarly situated sulcus of different morphological and functional significance. In older accounts the term 'epicranial suture' sometimes referred to the ecdysial cleavage line, sometimes to comparably placed sulci; it is therefore best avoided.

The frons is the unpaired upper facial part of the head which often lies between the lateral arms of the ecdysial cleavage line when this is present. It has been defined more precisely as the region of the head-capsule on which arise the pharyngeal dilator muscles, but even this criterion is not entirely satisfactory. It usually bears the median ocellus and is often delimited laterally by the frontotopal sulci and distally by the epistomal or frontoclypeal sulcus (Fig. 5), associated with which are the anterior tentorial invaginations.

The clypeus, on which arise the cibarial dilator muscles, lies immediately
anterior to the frons and the two sclerites are often fused owing to the obliteration of the *fronto-clypeal sulcus*. In other insects the clypeus is partially or completely divided by a transverse suture into two sclerites – the *postclypeus* and the *anteclypeus* (Fig. 304). The former sclerite carries on either side a convex process serving for articulation with the ginglymus of the mandible. Laterally the clypeus may be delimited from the sides of the head by the *clypeogena sulci*.

The *labrum* is an unpaired sclerite usually movably articulated with the clypeus by means of the *clypeolabral* suture. On its pharyngeal surface it bears lateral sclerotized pieces known as *tormae*.

The *epicranium* is the upper region of the head from the frons to the neck and may be divided longitudinally into two *epicranial plates* by the ecdsial cleavage line or median sulcus. That portion of the epicranium which lies immediately behind the frons and between the compound eyes is termed the *vertex*. It sometimes carries the paired ocelli, but is not differentiated as a separate sclerite. The *occiput* is the hinder part of the epicranium between the vertex and the neck; it is rarely present as a distinct sclerite.

The *gena* (Fig. 5) forms the whole of the lateral area below and posterior to the eyes on each side; near its junction with the clypeus is a facet for articulation with the ginglymus of the mandible and proximally it bears a cavity which receives the mandibular condyle. Crossing the hind part of the cranium there is in some insects an *occipital suture*. When fully developed it extends on either side to end between the two points of articulation of the mandible. The areas posterior to this suture are the *occiput* dorsally and the *postgenae* laterally. The postgenae bear the condylar articulations for the