

## INTEGUMENT DEFINITIONS

**ECDYSIS** - the actual casting off of the old cuticle.

**MOLTING** - the process that leads up to the shedding of the old cuticle and is distinct from final act of shedding.

**EXUVIA** - is the cast skin (already shed).

**STADIUM** - is the interval or stage between ecdyses.

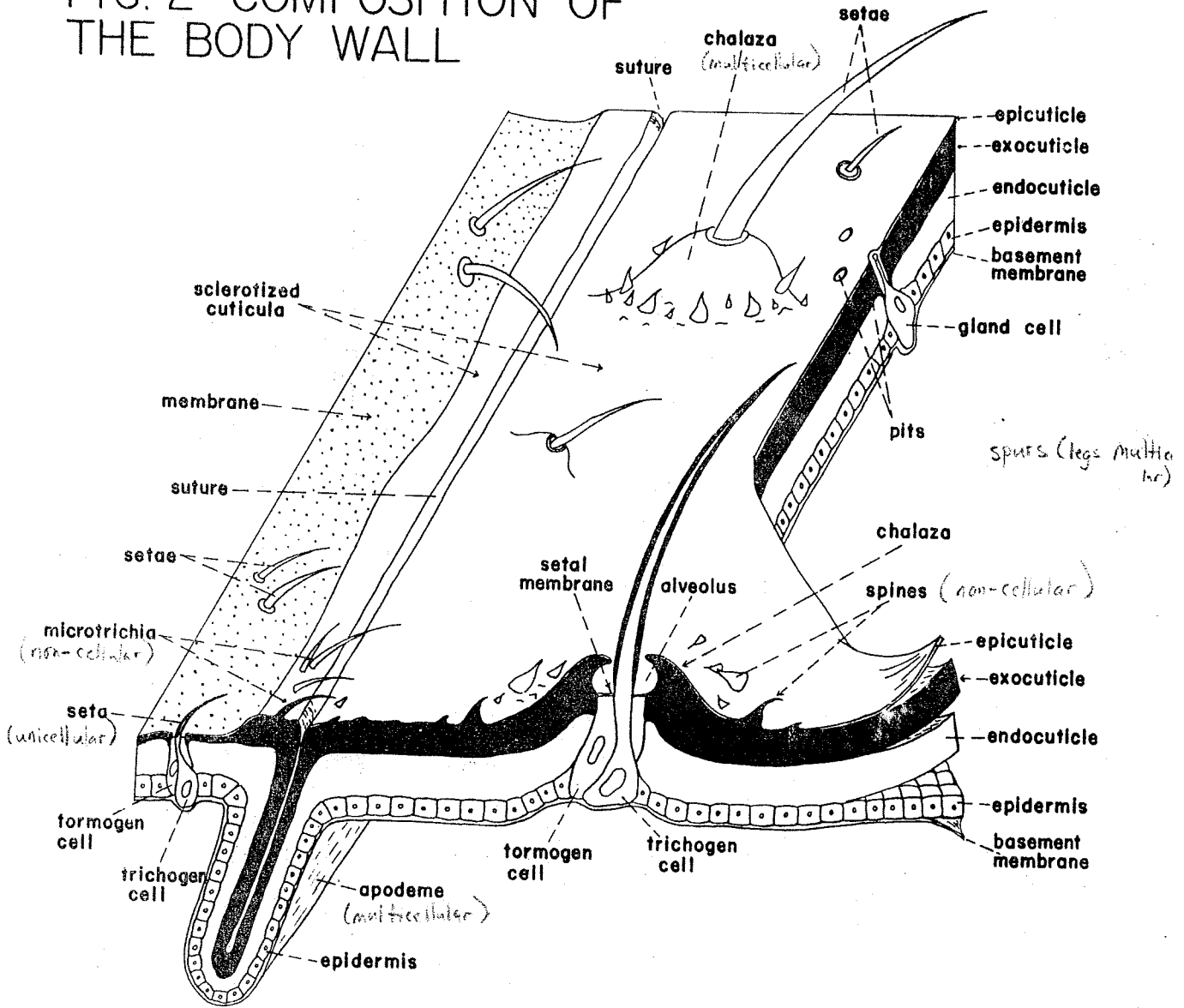
**INSTAR** - the form assumed by an insect during a particular stadium.

**IMAGO** - is the final instar or fully mature form (adult).

**PHARATE INSTAR** - instar which contained in the old cuticle during formation of new cuticle.

**ECLOSION** - emergence of imago from pupa, hatching from egg, or escape from the old cuticle.

FIG. 2 - COMPOSITION OF THE BODY WALL



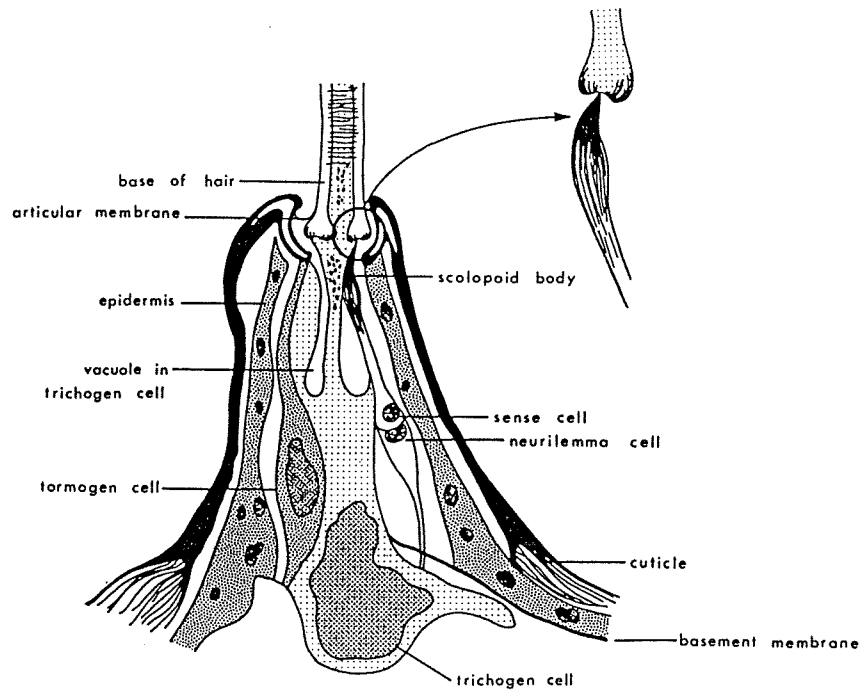


FIGURE 12.1. Section through base of tactile hair. [After F. Hsü, 1938, Étude cytologique et comparée sur les sensilla des insectes, *La Cellule* 47:5-60. By permission of *La Cellule*.]

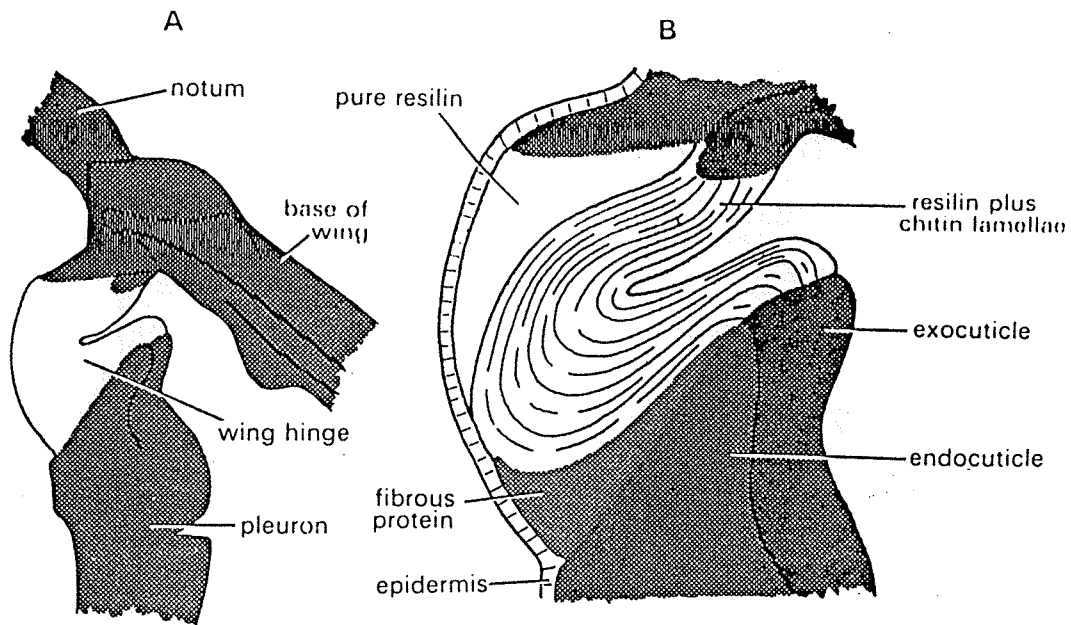


Fig. 328 A. Transverse section through the thoracic wall of *Schistocerca* showing the base of the wing and the wing hinge. B. Section through the wing hinge enlarged (modified after Andersen and Weis-Fogh, 1964)

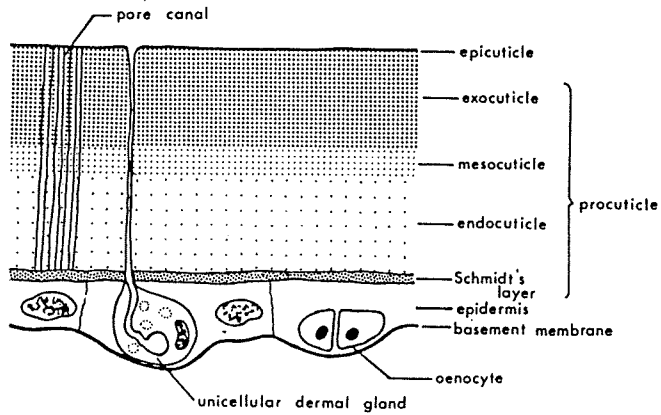
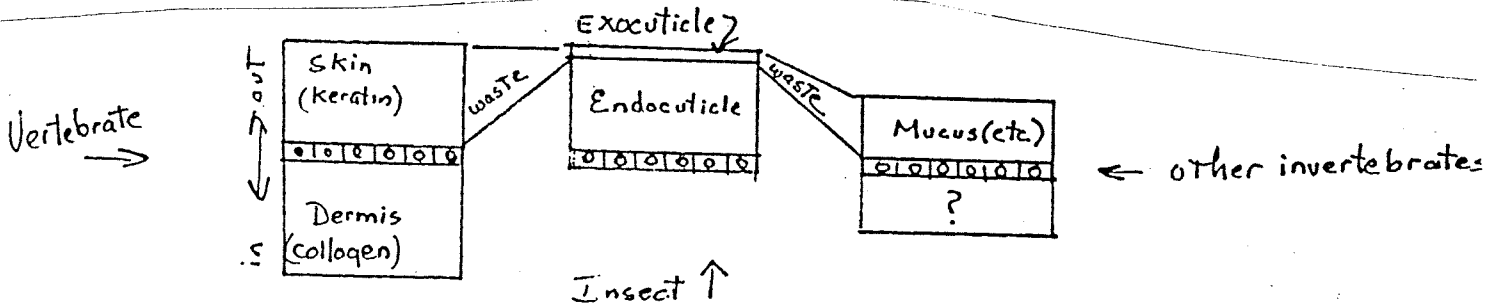
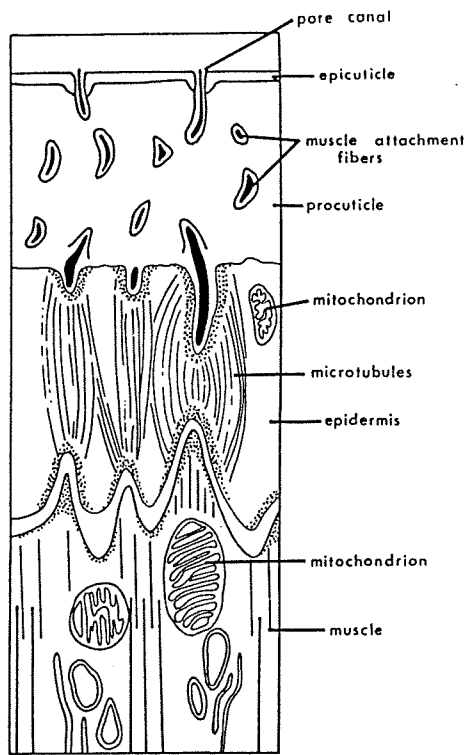


FIGURE 11.1. Diagrammatic cross section of mature integument.



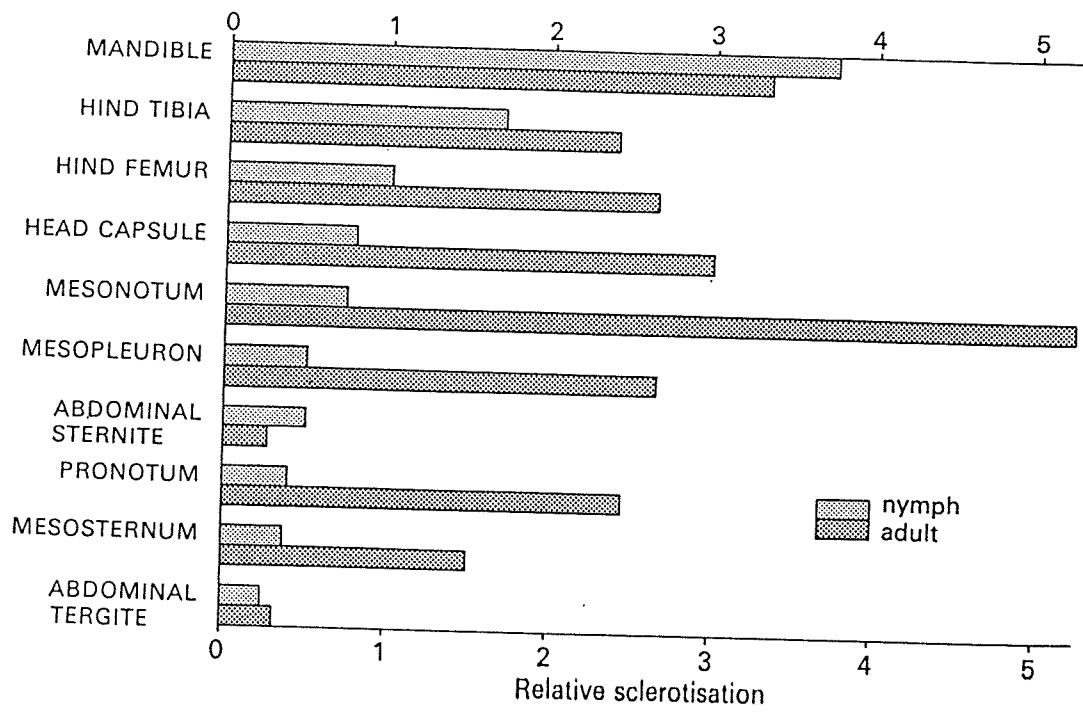


Fig. 324 Amounts of sclerotisation of cuticle from different parts of the body of a mid-fifth instar nymph and a 10-day-old adult locust. Sclerotisation is based on the amounts of ketocatechols released when the cuticle is hydrolysed (based on Andersen, 1974)

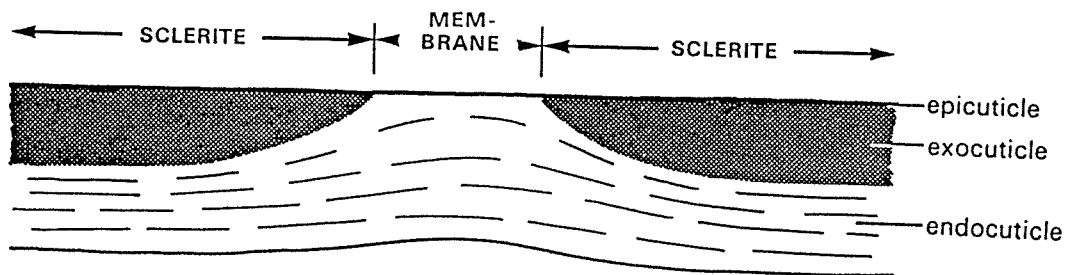


Fig. 325 Diagrammatic section through the cuticle showing a flexible membranous region between two rigid sclerites

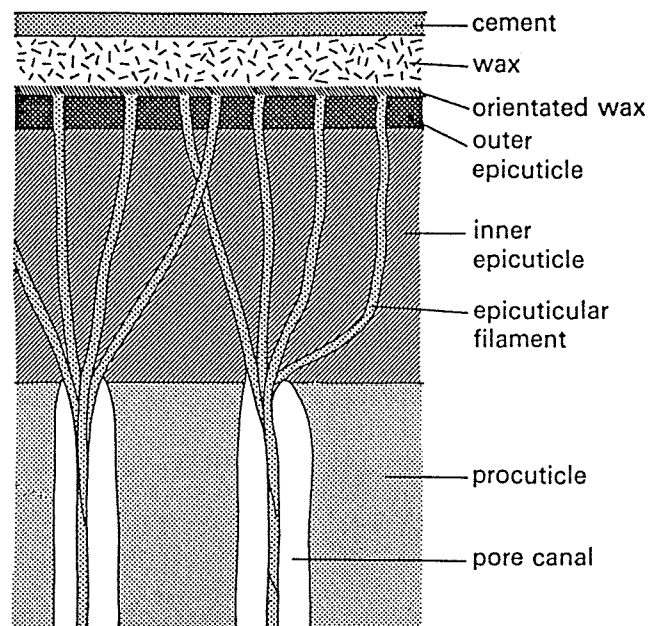


Fig. 322 Diagrammatic representation of a section through the epicuticle

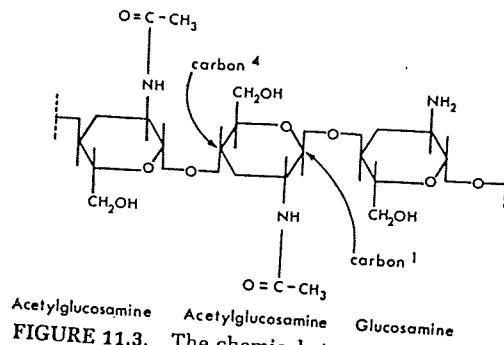


FIGURE 11.3. The chemical structure of chitin.

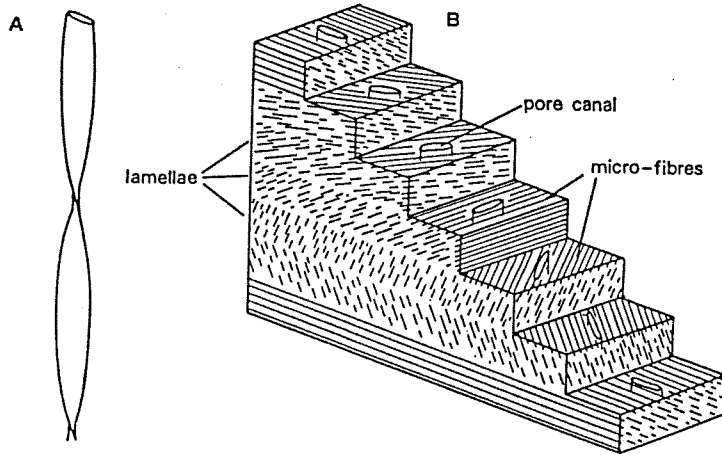
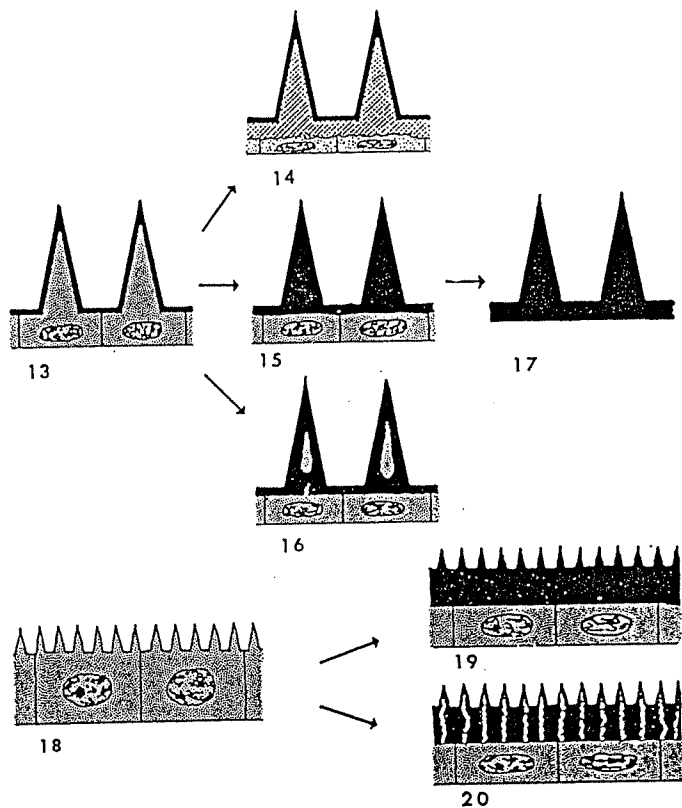


Fig. 323 A. Diagrammatic representation of a twisted ribbon pore canal. B. Diagrammatic section through a segment of cuticle showing microfibrils of successive lamellae running in different directions and pore canals orientated parallel to the fibres (based on Neville *et al.*, 1969)



FIGS. 13-20. Diagrams of unicellular and smaller projections. Cuticle solid black, cytoplasm stippled.

FIGS. 13-17. Sequences for development of acanthae.

FIG. 13. Early stage of acantha. Usually modified later in development.

FIG. 14. Cell processes withdrawn from lumens of acanthae and space filled with acid mucopolysaccharide (cross-hatched) as in *Panorpa*.

FIG. 15. Cell processes withdrawn, lumens filled with cuticle and processes underlaid with cuticle as in "cornuti" in reproductive system of moths. See Fig. 37.

FIG. 16. Cell processes cut off by secretion of underlying cuticle as in proventriculi of certain staphylinid beetles. See Figs. 35 and 38.

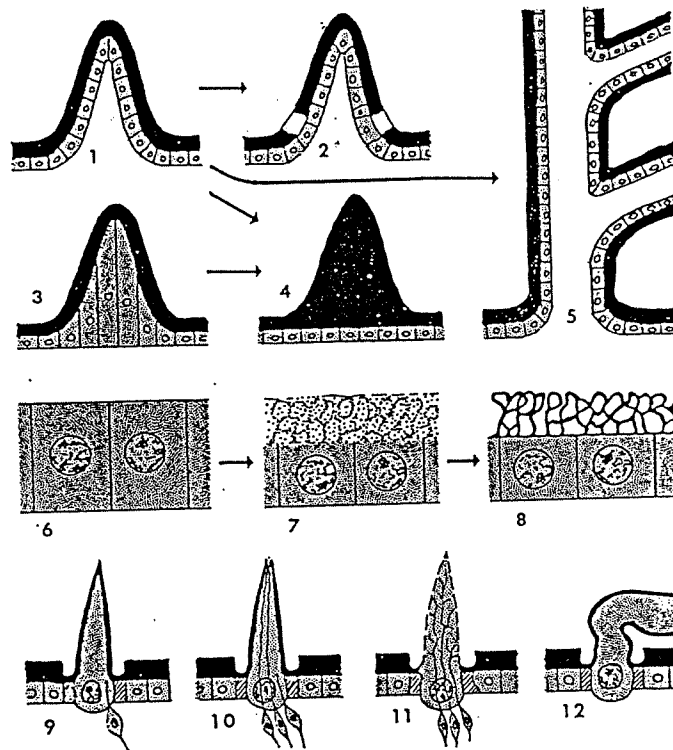
FIG. 17. Cell processes withdrawn, lumens filled and underlaid with cuticle, then secreting cells phagocytized by hemocytes as in tenent hairs of flies.

FIGS. 18-20. Sequences for development of microtrichia.

FIG. 18. Early stage with cytoplasmic filaments extending into each microtrichium. See Fig. 30.

FIG. 19. Solidified microtrichia underlaid by cuticle.

FIG. 20. Microtrichia with relationship to pore canals. See Fig. 31.



FIGS. 1-12. Diagrams of multicellular projections. Secreted cuticle solid black, cytoplasm stippled.

FIG. 1. A simple multicellular spine.

FIG. 2. Modification of a simple spine with membranous ring at base.

FIGS. 3-4. Unusual solid spine termed Brunner's organ.

FIG. 5. A more elaborate projection such as an antenna.

FIGS. 6-8. Developmental sequence for formation of the "felt chamber" of larval spiracular discs of higher Diptera.

FIGS. 9-12. Major types of protruding trichoid sensilla. For clarity, tormogen cells are lined rather than stippled.