Third instar larvae of the Syrphidae occurring in Br... ...n be distinguished from all other cyclorrhaphan larvae by the contiguous and fused posterior respiratory tubes that form the posterior respiratory process; and by the presence of segmentally arranged specialised hairs that constitute the segmental ornamentation.

An American species, *Mesogramma polita* Say, is the only species known in which the posterior respiratory tubes are fully separated in the third instar (Heiss, 1938). In first and second instar syrphid larvae the tubes are generally separate, but may be partly or completely fused in saprophagous species.

The segmental ornamentation consists of short conical hairs (most aphidophagous species), strongly sclerotized spines (*Rhingia campestris*), or branched or tufted hairs (many aquatic species). The number of specialised hairs on the abdominal or body segments is not always twelve, as stated by Metcalf (1913*a*) and Heiss (1938), although this is commonly true in aphidophagous species, except on the last segment where there was a maximum of four hairs, and often two, in the species examined. For example, in *Rhingia campestris* there are up to 16 spines, according to the segment; in *Volucella zonaria* and *V. pellucens*, 16, 18, 14, or 10 hairs; in *Merodon equestris*, 14 or 8. The number on each segment, respectively, is constant for a species.

In the following key and descriptions the nomenclature follows that given by Parmenter (1954), which is based on Coe's interpretation of the group (1953). The descriptive terms adopted by Heiss (1938) are used. The list of published descriptions given by Hennig (1952) for each of the species in the following key has been brought up to date.

II. Key

1 Larva with internal mouth hooks; false head absent; posteriorly, body rounded, truncate, cuspidate or sloping postero-ventrally; posterior respiratory process terminal or postero-dorsal, entirely sclerotized. *Larva phytophagous in bulbs, aphidophagous, or found in nests of Hymenoptera* . 2

– Larva lacking internal mouth hooks; first four segments usually forming a false head, often marked with longitudinal furrows; posteriorly, body tapering and ending in an entirely sclerotized respiratory process (figs. 7*D*, 8*A*) or body constricted and ending in a long telescopic respiratory process (fig. 8*L*) of two fleshy segments and a third distal sclerotized segment. *Larva filter-feeding, aquatic, semi-aquatic or phytophagous in bulbs* . . . 44

2 Body oval in outline from above and hemispherical in cross-section; segmentation not apparent; segmental ornamentation absent; dorsal surface patterned with ridges or papillae; a fringe of spinules surrounding ventral sole (figs. 1*G*, 1*J*). 3

– If body oval in outline from above, not hemispherical in cross-section; segmentation indicated by transverse wrinkles and segmental ornamentation (figs. 3*D*, 3*G*, 4*A*, 5*D*, 6*D*); body lacking a fringe of spinules surrounding ventral sole 5

3 Larva white . . . . . (1) **Microdon mutabilis** (L.)

– Larva brown 4

4 Numerous spiracular openings situated on a large oval prominence on each spiracular plate (fig. 1*H*) . . . . . (2) **Microdon eggeri** Mik

– Numerous spiracular openings situated on an area surrounded by lobular patterns but not raised above the level of the remainder of spiracular plates (fig. 1*K*) . . . . . (3) **Microdon devius** (L.)

5 Prolegs with claws present (figs. 1*A*, 1*B*) 6

– Prolegs absent, or if present, lacking claws 9

6 Fleshy projections absent; posterior respiratory process terminal (fig. 1*D*); prolegs with one row of claws . . . . . (4) **Volucella inanis** (L.)

– Fleshy projections present (fig. 1*E*); posterior respiratory process postero-dorsal; prolegs with two rows of claws 7

7 A circlet of ...ay six fleshy projections present posteriorly (5) **Volucella bombylans** (L.)

– Fleshy projections present laterally and posteriorly 8

8 Larva over 1·5 cm. in length . . . . . (6) **Volucella zonaria** (Poda)

– Larva less than 1·5 cm. in length . . . . . (7) **Volucella pellucens** (L.)

9 Body cylindrical, rounded anteriorly and posteriorly; a small tubercle present on either side of posterior respiratory process; external mouth hooks enlarged, toothed, fused along the median line, and directed ventrally (fig. 1*F*); larva with integumental vestiture of fine colourless spinules . . . . . (8) **Merodon equestris** (Fabricius)

– Body cylindrical, subcylindrical or flattened, attenuated anteriorly, rounded or cuspidate posteriorly; external mouth hooks (fig. 3*B*) not visible to naked eye and separate; integumental vestiture present or absent . . 10

10 Body cylindrical, tapering anteriorly, rounded or truncate posteriorly; uniform white or pale cream in colour 11

— Body oval in cross-section or markedly dorsoventrally flattened; uniformly pale yellow, green or black, or with colour patterns due to underlying fat body (fig. 5*B*) or internal organs; spiracles straight or sinuous; median groove present between spiracular plates (figs. 2*A*, 2*B*, 2*C*, 3*A*, 4*B*, 4*C*, 4*D*) 12

11 Spiracles convoluted; spiracular plates not separated by a median groove (9) **Xanthogramma pedissequum** (Harris)

— Spiracles straight; spiracular plates separated by a distinct median groove (fig. 1*C*) . . . . . (10) **Chrysotoxum verralli** Collin

12 Integumental vestiture when present differentiated into segmentally arranged aggregates of spinules differing in form (except in *Syrphus latilunulatus*) from the remainder of integumental vestiture 13

— Integumental vestiture of uniform length and uniformly distributed except sometimes on segment 12 20

13 Spiracles short, elongate-oval, not extending over sides of posterior respiratory process when viewed from above (figs. 2*A*, 2*B*, 2*C*) 14

— Spiracles narrow, elongate, slit-like, extending over sides of posterior respiratory process when viewed from above (figs. 3*A*, 5*A*) 19

14 Larva with dorsal pattern of chevrons due to adipose tissue 15

— Larva with two broad dorsal stripes, or symmetrical arrangement of adipose tissue absent 18

15 Larva green with purple or pink chevrons; spiracles I, II and III equidistant; interspiracular ornamentation of single setae (11) **Platycheirus scutatus** (Meigen)

— Larva light brown; spiracles equidistant on each spiracular plate or spiracles II nearer to III than to I; interspiracular ornamentation of single, or paired setae 16

16 Spiracles II nearer to III than to I; interspiracular ornamentation of paired setae; median groove with a smooth surface (fig. 2*A*) (12) **Platycheirus albimanus** (Fabricius)

— Spiracles equidistant or II nearer to III than to I; interspiracular ornamentation of single setae; median groove rugose or with longitudinal grooves 17

17 Spiracles II nearer to III; interspiracular setae as long as width of a spiracle (fig. 2*B*) . . . . . (13) **Platycheirus manicatus** (Meigen)

— Spiracles equidistant on each spiracular plate; interspiracular setae about half as long as the width of a spiracle (fig. 2*C*) (14) **Platycheirus clypeatus** (Meigen)

18 Larva buff pink with two dorsal cream stripes; spiracles three times as long as wide . . . . . (15) **Baccha elongata** (Fabricius)

— Larva bright green, shining; spiracles twice as long as wide (16) **Melanostoma scalare** (Fabricius)