

be added to the list as time goes on; much has been done by Spencer and Griffiths during the past 14 years. It is certain that there is still scope for the student taking the trouble to rear *Agromyzids* from mined plants and work out their life-histories.

The family presents some very varied types. In *Phytomyza*, features which will catch the eye are the absence of the posterior cross-vein and the weakening of the posterior veins, which throws up the anterior veins in contrast (Pl. 38, 12). The wings of *Napomyza* and *Pseudonapomyza* are very similar, but a posterior cross-vein is present, very close to the base of the wing, forming a very short discal cell. In the wings of other genera, the posterior cross-vein is more normally situated, but is almost invariably close to the anterior cross-vein. There are two types of sub-costa: one pursuing an independent course, albeit faintly, more or less parallel to Vein 1 (Pl. 38, 13), and the other coalescing with Vein 1 just before its apex (Pl. 38, 14).

The observer will doubtless have noticed certain Holly-leaves in which the normal dark green colour is broken up by a blotch of yellowish or paler green. On examination, such lighter patches will sometimes be found to consist of shallow blisters between the upper and lower surfaces of the leaf, perhaps with a small hole, or appearing to contain a small, seed-like object, which can be seen more easily by holding the leaf against the light. This little object is quite likely to be the larva or pupa of the Holly-leaf Miner, *Phytomyza ilicis* Curt. If a small hole be present, it will mark the exit from which the adult fly has emerged. From leaves without an exit-hole, preserved at home under suitable conditions, the adults may often be bred out. The life-history of this species has been studied in detail by Miall and Taylor.²

A number of the larger species of *Agromyza* can be reared from mines on nettle and Boraginaceae such as Hound's Tongue, Viper's Bugloss and Comfrey.

The species of *Cerodontha* s.s. are noteworthy for the curious

shape of the third antennal segment, which is pointed apically and bears a short spine-like process (Pl. 38, 15); the larvae mine the leaves of various grasses.

The family has been monographed by Hendel³ and the papers of Spencer¹¹ and Griffiths¹² deal with British species.

MILICHIIDAE.

7 genera. 26 species. Very small to small, greyish-black or shining black flies; 3rd antennal segment short, rounded, sometimes greatly dilated or enlarged (e.g. *Phyllomyza*); postverticals convergent or parallel; ocellar triangle strongly developed, considerably prolonged anteriorly (Carninae) or normal; anterior orbital incurved; sometimes pairs of small, crossed inter-frontals present between orbitals; vibrissae present, often indistinct; proboscis often long, jointed in middle, i.e. labella fold back like blade of pocket-knife, or short and thick, adapted for piercing (*Carnus*); wings large; costa broken twice, once near humeral cross-vein, once near apex of Vein 1; costa extended to apex of Vein 4, or Vein 3 (Carninae); *sc* visible throughout (e.g. *Milichia*), or faint apically, more or less confused with Vein 1 (e.g. *Phyllomyza*); Vein 4 fades apically (Carninae) or normal; second basal and anal cells very small, or absent (Carninae); posterior cross-vein very close to anterior (*Meoneura*) or absent (*Carnus*); Vein 6 present as a shadowy fold. (Pl. 39, 1, 3, 4.)

The family consists of three sub-families, Milichiinae, Madizinae and Carninae.

MILICHIINAE.

Represented by the single species, *Milichia ludens* Whlbg., a little greyish-black fly, about 2½–3 mm. long, which, according to Donisthorpe,⁴ is associated with the Ant, *Lasius fuliginosus* Latr.

MADIZINAE.

Species of *Phyllomyza* are also recorded by Donisthorpe as guests of ants. An interesting representative of this genus is *P. securicornis* Fall., in which the third antennal segment (Pl. 39, 1) is enormously developed. *Leptometopa latipes* Mg.

has an extraordinary modification of the hind tibiae (Pl. 39, 4); it develops in human and other excrement. *Madiza glabra* Fall., a shining black fly about 2½ mm. long, has similar propensities, often occurring in country areas where sanitary arrangements are still of a primitive nature.

According to Séguy,¹ species of *Desmometopa* and *Phyllomyza* are veritable jackals of the insect world; they attach themselves to predatory Diptera, such as Asilids, or even to Reduviid bugs and spiders, by which they are transported until prey is captured; whereupon they proceed, in company with the predator, to sup the exudations from the wounds of the victim.

CARNINAE.

The two genera, *Meoneura* and *Carnus*, are characterised by their wing-venation, in which Vein 4 fades apically (Pl. 39, 3); the species of both are very minute, about 1-1½ mm. in length. In *Meoneura*, a posterior cross-vein is present, close to the anterior cross-vein; the adults are attracted to decomposing substances, in which the larvae develop. *Carnus hemapterus* Nitzsch, the sole species of the genus, has no posterior cross-vein (Pl. 39, 3). In the adult stage, it is parasitic upon birds, sucking their blood; the proboscis is much chitinised and strengthened for the purpose. After attachment to a host, these flies shed their wings, their abdomens, meantime, becoming greatly distended; the larvae develop in refuse in the nests. *C. hemapterus* is recorded in association with a number of birds, including the Kestrel, Great Spotted Woodpecker, Blackcap and Starling.

The family has been monographed by Hennig;⁵ a paper by Collin⁶ on the genus *Meoneura* will be found very useful.

ODINIIDAE.

1 genus. 4 species. Very small to small, greyish-black flies, with broad wings, in which the cross-veins and apex of Vein 1 are clouded, and with dark patches on the abdo-

men; 3rd antennal segment short, squarish in profile; arista practically bare; postverticals divergent; vibrissae present; tibiae with preapical bristle; costa broken close to point where upper margin of Vein 1 merges with it; costa extends as far as apex of Vein 3; sc visible basally, fading apically; cross-veins approximated; second basal and anal cells present; Vein 6 extended almost to margin. (Pl. 39, 2.)

The two British species of this family are very uncommon. In the adult stage, they are attracted to the suppurations of tree-wounds; we have swept a male *Odinia boletina* Zett. from a rotten beech-stump in the New Forest. The larva is recorded from a *Polyporus* fungus.

The family is monographed by Hennig.⁷ Collin¹³ keys the British species.

CHLOROPIDAE.

28 genera. over 80 species. Very small to small, smooth, almost bristleless flies, often black, yellow-and-black, or green-and-black, with characteristically large plate-like ocellar triangle, and reduced wing-venation; antennae of variable shape; arista pubescent or bare, sometimes appearing greatly thickened by dense pubescence; head bristles weakly developed or absent; eyes often brilliantly coloured in life; proboscis usually short, or long, thin, folded back from middle (*Siphonella*); tibiae without preapical bristle; costa broken, usually close to point where upper margin of Vein 1 merges, but sometimes a little distant (e.g. *Dicraeus*, *Oscinella*); sc vestigial, only perceptible at base, or absent; 2nd basal cell confluent with discal cell; anal cell absent; Vein 6 weak or absent. (Pl. 39, 6-11.)

Chloropid larvae are mainly plant-feeders, some species constituting agricultural pests of some importance. Those of *Chloropisca glabra* Mg., however, are said to be predatory upon aphids; certain species abroad have been recorded as developing in the egg-cases of locusts or egg-cocoons of spiders.

As regards the adults, certain foreign species are attracted to the eye-secretions of human beings and are thought to introduce disease organisms mechanically by means of the