the gut and excreted, excess magnesium possibly being removed in the same way. Sodium (chloride, sulphate) and potassium (chloride, sulphate, tartrate) also have no effect at concentrations up to 5 gm.-ion/10^4 gm. wool.

Bromides and iodides of sodium and potassium are toxic to moth larvæ at a concentration of 2 gm.-ion/10^4 gm. wool, but not at 1·5 gm.-ion/10^4 gm. wool. The bromides and iodides of lithium, strontium or barium are more toxic at the same molar concentrations than the corresponding sulphates, chlorides or acetates. Also, cadmium, magnesium or aluminium, which have little or no effect when incorporated in the diet of moth larvæ as sulphates or acetates at a concentration of 0·5 gm.-ion/10^4 gm. wool, are toxic at this concentration when combined with bromine or iodine. The latter are then at a concentration of 1·0–1·5 gm.-ion/10^4 gm. wool, a level which is non-toxic when these anions are combined with sodium or potassium.

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A Method of marking Calliphoridae (Diptera) during Emergence from the Puparium

The practice of marking and releasing insects for subsequent capture has been widely adopted in ecological investigations. Studies on the Calliphoridae have been prominent in this field, the various workers adopting a wide range of marking techniques. However, if liberated adult specimens are intended to simulate naturally emerging insects added to the wild population, it is desirable to avoid the preliminary period of cage-life which most marking methods involve. The incorporation of radiotracers in the larval medium[1] is one method by which pre-release handling of adults can be avoided. A second method has been employed in studies on the Australian sheep blowfly, *Lucilia cuprina* (Wied.). This involves the emergence of the flies from puparia covered by an inch of fine, dry sand intimately mixed with 0·5 per cent of a fluorescent dust. Flies which have emerged from such a preparation may readily be identified under ultra-violet light because they retain a quantity of the fluorescent dust on the ptilinal suture and frontalia. These areas of the head are beset with minute scales[2] which become closely crowded after the ptilinum is retracted, and hold the dust particles between them. The puckering of the frontalia on hardening probably also assists the retention of dust.

Provision should be made for the ready exit of emerging adult flies from the culture vessels, as the film of dust on the pulvilli temporarily reduces their ability to climb on smooth surfaces. Surplus dust largely disappears from the bodies of the flies in the first day or so after emergence; but if any is transferred to 'wild' flies in traps, these accidentally marked specimens may be separated readily from liberated flies by their lack of the characteristic vivid frontal pattern. Many marked flies may be detected during exposure of entire catches to ultra-violet light; but critical examination requires that the flies be faced towards the source of the radiation.

Only three of many fluorescent dusts tested have proved entirely satisfactory ('Lumogen' *L* Yellow Orange, 'Lumogen' *L* Light Yellow and 'Lumogen' *L* White; Badische Anilin und Sodafabrik A.G., Ludwigshafen A/RH, Germany). These dusts have irregular particles, mostly less than 2μ in diameter. They also have cohesive qualities, which make them ball and cake, instead of pouring. On the other hand, most of the unsatisfactory dusts tested poured freely like dry sand, and had rounded particles predominantly larger than 8μ in diameter. The size and smoothness of such particles doubtless prevent their entanglement in the scales of the ptilinal suture and frontalia. Particle size, however, is not the only criterion of suitability for marking, as some extremely finely subdivided dusts were not retained on the heads of flies for significant periods.

Cage tests have shown repeatedly that marked specimens are comparable in longevity, fertility and behaviour with untreated controls. High recoveries have been made in trapping experiments. One marked female was recaptured four weeks after field emergence, and a marked male six weeks after field emergence. There is thus no question as to the ability of marked flies to survive in the wild state, nor the persistency of the marking under field conditions.

The marking technique has also been used successfully by colleagues requiring to separate *L. cuprina* individuals of different strains, or treatment groups in cage experiments.

Limited tests have been made on other species of flies. *Calliphora augur* (F.), *C. stygia* (F.) and *Chrysomyia rufifacies* (Macq.) were all marked satisfactorily. Undoubtedly the method will prove applicable to other species of Calliphoridae.

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Interspecific Competition

In a recent article about interspecific competition, Williamson[1] quotes a definition of this process by Elton and Miller[2] and adds that "it is difficult to distinguish between some cases that they would call competition and, say, predation". But in our paper it is made clear that the term "competition" was being used only in respect of members of the same species, or between species of the same consumer layer, that is, it excludes such biotic relationships as predator–prey and parasite–host.

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