LETTERS TO THE EDITORS

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A Virus Attacking Lettuce and Dandelion

During th last three years lettuces have been seen in different parts of Britain suffering from a severe disease, the symptoms suggesting infection with a virus. The cause has now been found to be a virus that is also responsible for the chlorotic rings and spots so commonly seen in dandelion (*Taraxacum officinale*).

Symptoms in lettuce appear 1–2 weeks after infection; the young leaves become bronzed as a result of fine brown necroses that form along the veins and in the interveinal areas. In the glasshouse, this is usually only a primary symptom and is followed by chlorosis, with dwarfing and malformation of the whole plants. In the open, necrosis is the major symptom; whole leaves become black and shrivelled and the plants are worthless. The disease is more severe than the common lettuce mosaic and is readily distinguished from it.

The virus is only transmitted by inoculation if some abrasive, such as carborundum, is incorporated in the inoculum. It has been transmitted by the aphides *Myzus ornatus* Laing and *Myzus pseudosolani* Theob., but not by *Myzus persicæ* Sulz., the vector of lettuce mosaic virus. The behaviour of the insect vectors seems to differ from any previously described. No infections are obtained unless aphides feed for at least three hours on the source of infection, and the number of aphides that become infective increases with increased feeding time. This is characteristic of the viruses called persistent by Watson and Roberts[1], but even after feeding for as long as three days on the source of infection the vectors cease to be infective within an hour.

As the perennial host is likely to be the source of infection for the lettuce crop, the name dandelion yellow mosaic virus is suggested.

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[1] *Proc. Roy. Soc.*, B., **127**, 543 (1939).

Activation of Pyrethrins by Sesame Oil

In an article on "Activation of Pyrethrins in Fly-Sprays", David and Bracey[1] state that the test insect used in their work was the mosquito, *Aedes ægypti*, and point out that their findings may not hold for other insects. Nevertheless, the use of the term "fly-sprays" in the title is perhaps unfortunate, for we have found that many of their conclusions drawn from work on Aedes do not hold when the house-fly, *Musca domestica*, is the test insect. As shown below, the substitution of lubricating oil, etc., for sesame oil in fly sprays, or in dual-purpose sprays intended for fly and mosquito control, would be unjustified, since such substances do not increase the toxicity of pyrethrins to flies.

Tests on the house-fly are carried out at the Pest Infestation Laboratory in a glass-fronted wooden chamber of 18 cub. ft. capacity. The insecticide is atomized into the chamber by means of an Aerograph artist's brush Type *AE* supplied with air at 50 cm. free mercury pressure. The flies are reared at 27·5° C. and 55–60 per cent relative humidity, and are kept under these conditions before, during and after test. The flies, four–six days old, are liberated into the chamber before spraying and are exposed to the insecticidal mist for 10 min., after which they are returned to their cage for observation of the percentage kill 24 hr. later. The percentage knock-down is counted during and at the end of the 10-min. exposure period.

Earlier work with seventeen samples of sesame oil of various origins showed that the oils caused markedly different degrees of activation of pyrethrins. One oil (sample *TA*.3) caused a slight reduction in both knock-down and kill when incorporated with pyrethrins. This oil was tested again with three other substances of low volatility with the following results. (All percentage kills are corrected for control deaths.)

Pyrethrins (% w./v.)	Adjuvant (v./v.)	Av. kill (per cent)
0·05	—	41·5
0·05	5% sesame oil *TA*.3	35·2
0·05	5% oleic acid	48·2
0·05	5% med. paraffin	30·6
0·05	5% lubricating oil	36·2

It was concluded that adjuvants of low volatility do not as a general rule increase the toxicity of pyrethrins to house-flies, and that those tested have little or no inherent toxic effect when used at 5 per cent. This experiment gave no significant information upon the rate of knock-down of the flies, so several sprays were tested at a reduced dosage.

Pyrethrins (% w./v.)	Adjuvant (v./v.)	Av. per cent knock-down at 2 min.	4 min.	6 min.	10 min.
0·05	—	54·7	83·2	93·8	96·7
0·05	5% sesame oil *TA*.3	29·6	62·8	74·4	86·6
0·05	5% sesame oil *TA*.4	59·1	86·1	95·0	99·2
0·05	5% med. paraffin	42·5	77·4	86·2	91·6
0·05	0·05% w./v. sesamin	60·5	87·2	95·6	99·3

Sesame oil *TA*.3 and medicinal paraffin reduced the rate of knock-down. Sesame oil *TA*.4, which in several earlier tests has been shown to cause a marked increase in kill of flies by pyrethrins, produced a small increase in the rate of knock-down, as also did sesamin incorporated at a concentration approximately equivalent to that contained in 5 per cent of *TA*.4. With our method of test using flies, therefore, activation for kill is not dependent upon reduction of the rate of knock-down.

The effect of sesamin on kill is shown by the data below.

Expt. No.	Pyrethrins (% w./v.)	Adjuvant (v./v.)	Av. kill (per cent)
72	0·05	5% sesame oil *TA*.43	72·9
72	0·05	5% *TA*.43 desesaminized	53·6
74	0·05	—	22·8
74	0·05	5% sesame oil *TA*.44	48·0
74	0·05	5% *TA*.44 desesaminized	29·7
73	0·05	—	36·6
73	0·05	0·05% w./v. sesamin	72·8

At the time of these experiments the flies were passing through a period of fluctuating resistance. Nevertheless, the following conclusions are valid because the flies for each experiment were obtained from batches of puparia drawn from randomized popula-