

Table 1.—Insecticides evaluated for control of bollworm moths on cotton. (9 or 10 moths exposed in each of 3 replicates in each test.)

Treatment	Toxi- cant (lb/acre)	Mean mortality of moths exposed to insecticide residue at indicated hours after application (%) <sup>a</sup>		
		1	24	48
Carbaryl WP	2.0	86.7 a	77.8 a	66.7
	1.5	80.0 b	63.0 b	66.7
DDT	1.5	53.3 c	40.8 c	30.0
Methyl parathion	1.0	46.7 d	22.2 d	26.7
Untreated		16.7 e	3.7 e	20.0

<sup>a</sup> Significance is shown at the 1% level. Means followed by the same letters are not significantly different. No letters indicate non-significance at the 5% level.

RESULTS.—Carbaryl at 2 lb/acre was more effective against the bollworm moth than the other materials; however, all compounds tested gave a significant reduction in the moth population at 1 and 24 hr after application when compared with the results in the untreated control. There was no significant difference among treatments after the insecticide residues had aged for 48 hr. All materials tested are known to be good bollworm larvacides. Present results show these materials also to be quite toxic to the adults of the species. Therefore, a portion of the control of bollworms on cotton by applications of carbaryl, DDT, or methyl parathion might properly be attributed to the effectiveness of these insecticides in killing adults as well as larvae.

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### *Atractotomus mali* and *Campylomma verbasci* (Heteroptera: Miridae) on Apples in Connecticut<sup>1</sup>

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In 1963 and 1964, *Atractotomus mali* (Meyer)<sup>2</sup> and *Campylomma verbasci* (Meyer) were collected on apple trees in the Experiment Station farm at Mt. Carmel, Conn. The occurrence of *A. mali* is of considerable interest for it is the 1st known record of this insect in the United States.

*A. mali* was 1st found in North America in Nova Scotia. It was thought eggs may have been introduced in nursery stock from Europe (Knight 1924). In Europe, this insect occurs on apples and pears. Although some authors consider *A. mali* beneficial as a predator of aphids, mites, and lepidopterans, others consider their importance as predators secondary to their damage to fruit (Kullenberg 1944).<sup>3</sup> This small (3.2 mm) reddish-brown mirid has 2 generations/year. According to Zschokke (1922), the nymphs and adults of the 2nd generation cause little damage. In

Connecticut, 1st-generation adults are found in mid-June. A related species, *A. crataegi* Knight, is known from *Crataegus* in Iowa (Knight 1931). The specimens of *A. mali* did not fit the description of *A. crataegi*.

It is curious that the 1st United States record of *A. mali* is from southern New England. *A. mali* may have been overlooked for many years, it may be rapidly extending its range, or possibly it may have been reintroduced from the Old World.

*Campylomma verbasci*, the mullein plant bug, is widely distributed in the Palearctic Region. It was introduced into North America where, according to Knight (1941), it has long been established in the Eastern United States and Canada and is quite common almost everywhere that mullein grows. Mullein (*Verbascum* spp.) is a common host but *C. verbasci* inhabits also apple and pear trees, where it is both phytophagous and predaceous on aphids and mites. This mirid also disseminates the causative organism of fire blight, *Bacillus amylovorus* (Burr.) Trev. (Stewart and Leonard 1915). Reports of damage to fruit are numerous. This damage, illustrated by Ross and Caesar (1920), was evident in samples of fruit from unsprayed trees in Mt. Carmel in 1963 and 1964.

*C. verbasci* has 2 generations a year. In Mt. Carmel, adults of the 1st generation are first noted in early June. Leonard (1915) describes and gives figures of all stages.

Both of these mirids are commonly found with colonies of *Aphis pomi* De Geer and *Anuraphis rosea* Baker. However, they are found on new terminal growth irrespective of whether these terminals contain aphid colonies. The coiled new growth may be sought for concealment as well as for food.

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### A Modified Aspirator for Collecting Small Arthropods<sup>1</sup>

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Collecting and preserving small arthropods may be difficult because of their size and fragility. A simplified pro-

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<sup>2</sup> The confirmation of identification by Dr. James A. Slater, University of Connecticut, Storrs, is gratefully acknowledged.

<sup>3</sup> Noted after this manuscript was submitted was the recent account of *A. mali* by K. H. Sanford, 1964. Life history and control of *Atractotomus mali*, a new pest of apple in Nova Scotia (Miridae: Hemiptera). *J. Econ. Entomol.* 57: 921-5.

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