assayed by gas-liquid chromatography. The results are shown graphically in Fig. 1. Increasing doses of dieldrin were topically applied to the resistant strain and the animals left for 24 h before the insecticide in the nerve cord was assayed (Fig. 3). None of these insects was showing any signs of poisoning. Penetration into the whole insect was studied in both strains, Fig. 2.

From Figs. 1 and 2 it will be seen that there were no differences between the amounts of unchanged dieldrin recoverable from the tissues either of the whole animal or the nerve cord in the resistant or susceptible cockroach.

Fig. 3 shows that in the resistant animal the concentration of dieldrin in the nerve cord increased with increased topical application of insecticide.

These results are not consistent with the existence of a dieldrin-impermeable membrane around the nerve cord of the resistant animal.

These and earlier investigations therefore suggest that resistance is not due to metabolism or to lack of penetration of the insecticide, but rather to the ability of the resistant insect to withstand higher concentrations of unchanged dieldrin within the central nervous system itself without showing any signs of poisoning.

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Differential Growth Response of the Male and Female Rice Moth to Antibiotic Supplements

DURING the course of the nutritional studies[1] on the rice moth, *Corcyra cephalonica* Staint., to determine the comparative value of several commercially available antibiotic feed supplements, it was observed that in some cases male moths of *Corcyra cephalonica* Staint. exhibited a higher growth response than the females receiving dietary antibiotics in their larval stages. A survey of the literature failed to disclose specific observations on this phenomenon among insects, although Palafox and Rosenberg[2] observed that male chicks respond in a more satisfactory manner to antibiotic feed supplements than the female.

The culture of *Corcyra* was maintained as described earlier[3]. For experimental purposes 10 in. × 2 in. glass vials were filled with 120 g of crushed 'juar' (*Sorghum vulgare*). Weighed quantities of the antibiotics penicillin, oleandomycin and terramycin were mixed in the diet at the rate of 100 p.p.m. by thoroughly distributing the premix in the vials, containing the food. Premix was prepared in glucose in convenient amounts for efficient mixing. The control groups received an equal amount of glucose only in the diet. Fifty freshly laid eggs (24-h layings) were introduced in the experimental vials containing different antibiotic-feed supplements. Six replications were used for each treatment. Moths emerging from the different treatments, after completing their development in the different antibiotic-feed supplements, were sorted out for males and females. Ten males and an equal number of females were weighed individually from each replication to assess the growth response in the sexes. Results are summarized in Table 1. The growth indexes shown in Table 1 were obtained by dividing the average body-weights of either males or females in each experimental group by the mean body-weight of the respective control group.

Table 1. COMPARATIVE GROWTH INDEXES OF MALE AND FEMALE AS INFLUENCED BY ANTIBIOTIC FEED SUPPLEMENTS

Supplement	Growth indexes (%) Male	Female
Penicillin	112·2	106·4
Oleandomycin	99·5	100·7
Terramycin	108·3	103·2
Control	100·00	100·00

FROM these results it is seen that the males fed on penicillin-feed supplements grew 12·2 per cent heavier than their controls, and those fed terramycin grew 8·3 per cent heavier, whereas the females grew only 6·4 per cent and 3·2 per cent heavier than their respective controls. On analysis, F value between sex growth indexes was highly significant ($P < 0{\cdot}01$). Oleandomycin proved ineffective in enhancing the growth of either male or female.

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A Modified Window-trap for Assessment of Fumigant Insecticides in Experimental Trap-huts

WE are assessing the toxicities of new insecticidal compounds as part of a World Health Organization programme to evaluate possible substitutes for the chlorinated hydrocarbons to which anopheline mosquitoes in many countries have become resistant. The experimental trap-hut of the Muirhead-Thomson type[1] is used for this assessment as it is a research tool of proved value. There are, nevertheless, a number of weaknesses in its design that lead to errors in assessing insecticide-toxicity:

(1) Nearly all resting is on the roof so that the toxicity of the roof-substrate has an over-riding effect on overall mortality.

(2) In the presence of a fumigant insecticide an unassessed proportion of mosquitoes die simply due to confinement in the atmosphere of the insecticide in the window-trap, whereas under natural conditions they would have escaped from the hut and survived.

(3) An unassessed proportion of hut-entering mosquitoes leave through the eaves.

Investigations of these three points are in progress in our outstations at Magugu in Tanganyika, and at Taveta in Kenya. Errors due to the first point have been largely overcome by assessing mortalities in huts with different types of roof-surfaces[2]. Errors due to the second point have been greatly reduced by a simple technique which is the subject of this communication. The third point is still unresolved, but is receiving attention.

Table 1. MORTALITY OF BLOOD-FED MOSQUITOES IN WINDOW-TRAPS (W.T.) WITH FUNNELS OF COTTON MOSQUITO NETTING AND OF SHEET POLYTHENE

Age of dispenser (days)	Exposure period (h)	Species of mosquito	Percentage mortality with number studied in parentheses W.T. with netting funnel	W.T. with polythene funnel
72	4	*Aedes aegypti*	0 (55)	2 (62)
2	2	,,	59 (51)	0 (59)
2	2	,,	14 (61)	0 (57)
64	4	*A. gambiae*	85 (68)	0 (71)
16	2	,,	16 (33)	21 (34)
16	2	,,	11 (52)	0 (53)
24	4	,,	97 (38)	0 (37)
28	4	,,	76 (39)	0 (36)
32	4		0 (42)	2 (40)