

INSECT AND FUNGUS PARASITES OF THE COMMON HOUSEFLY *MUSCA DOMESTICA* LINN.

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In the course of work on the breeding of houseflies for the insecticidal tests carried out at these laboratories it has been noted that they are attacked by three chalcidoid (order Hymenoptera) parasites and one fungus parasite.

Of the three chalcidoid parasites two have been identified as *Spalangia* sp. (family Pteromalidae)^{1,2} and *Dirhinus* sp. (family Chalcididae).³ The third awaits identification. *Spalangia* sp. has frequently been reported as parasitising housefly pupae in different countries of the world but, so far as the author knows, no species belonging to the genus *Dirhinus* appears to have been previously reported as a parasite of housefly pupae. Various *Dirhinus* spp. have, however, been noted as parasites of the genera *Ceratitis*, *Dacus*, *Glossina*, *Lucilia*, *Sarcophaga* and *Wohlfahrtia* etc.¹

Life cycles of these parasites have now been studied in the laboratory. *Spalangia* sp. takes 20-25 days, *Dirhinus* sp. 25 to 30 days and the unidentified parasite 30-34 days for completion of the life cycle when the temperature varies between 78°F. to 90°F. and relative humidity between 69% to 79%.

Of these three *Spalangia* is the most active parasite. *Dirhinus* sp. will successfully parasitize and emerge out of almost all pupae if very young pupae (fresh to a few hours old) are parasitized. In case where older pupae are attacked by *Dirhinus* sp. the pupae develop to an advanced stage but the adult flies fail to emerge out and later on shrivel inside the pupal shell. The development of *Dirhinus* also seems to be greatly affected by temperature. When the minimum temperature falls below 76°F. *Dirhinus* takes about 60-70 days as against the normal of 25-30 days for the completion of its life cycle, and a number of parasites fail to emerge.

Houseflies in the laboratory have also been attacked by a fungus which has been identified as *Empusa muscae* (order: Entomophthorales),⁴ Figs. 1 and 2. This fungus attacks the flies during the months of February and March in Karachi. The temperature in the laboratory varies, during these months, between 85°F. to 73°F. and humidity between 70% to 60%. DDT resistant strains of houseflies seem to be much more susceptible to the attack of the fungus than the non-resistant ones and in March, 1958, the

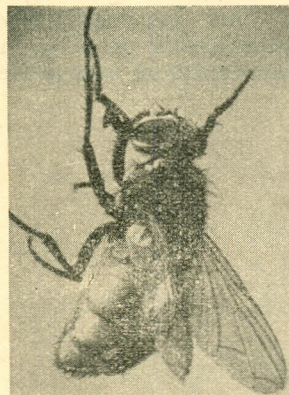


Fig. 1.—A housefly killed by *Empusa muscae*, showing the fungus spores on the wing and abdomen.



Fig. 2.—Houseflies killed by *Empusa muscae* sticking to the net wall.

DDT resistant strains of houseflies were thereby completely lost.

References

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3. Hem Singh Pruthi and M. S. Mani, *Biological Notes on Indian Chalcidoidea*, Misc. Bull. No. 30, (The Imperial Council of Agricultural Research, Manager of Publications, Delhi, 1940).
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