CONTROL OF HOUSEHOLD INSECTS, EDUCATION DEPARTMENT BULLETIN, NO. 446, MAY 1, 1909; ALBANY, N. Y., MUSEUM BULLETIN 129

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EPHRAIM PORTER FELT

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New York State Education Department
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MY DEAR SIR: The State Entomologist has prepared a short bulletin on the *Control of Household Insects*. I believe this would prove of usefulness to our housekeepers, an aid to public comfort and health and I beg to submit the document to you herewith, with the recommendation that it be printed as a bulletin of the State Museum.

Very respectfully
JOHN M. CLARKE
Director

State of New York
Education Department
COMMISSIONER'S ROOM

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Commissioner of Education

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New York State Museum

JOHN M. CLARKE, Director

EPHRAIM PORTER FELT, State Entomologist

Museum bulletin 129

CONTROL OF HOUSEHOLD INSECTS

BY

EPHRAIM PORTER FELT D.Sc.

INTRODUCTION

One need not go back a decade to note a marked change in sentiment toward certain insects commonly found in homes. There have been great additions to our knowledge respecting the economic mportance of some of these insects during recent years. This bulletin aims to present in concise form the status of the principal spec.es and gives special attention to methods of controlling the pests.

There is no denying the beneficial influence of a pleasant home. It should be a place where such material benefits as protection from diseases, cleanliness and personal comfort predominate. There is deep pathos in the present situation. Many a widow protects cherished garments from "moth and rust," while the insect primarily responsible for the disruption of the home, through the introduction of the germs of typhoid fever, flies about he house unchallenged and ready, under favorable circumstances, to play its part in another tragedy.

Doubtless such deplorable conditions are preventable and our descendants of another century will stand amazed at our blind toleration of such a menace to life and happiness.

Let us seek to control the ordinary household pests; let us recast our estimation of the house fly and the malarial mosquito and gage our actions accordingly. The malevolent house fly is a constant menace to the integrity of the home. Those who have not suffered from disease germs introduced by this pest, should recognize the danger and adopt adequate precautionary measures.

Recent discoveries respecting the part played by insects in the dissemination of malaria, yellow fever and typhoid fever, read like a romance. Mosquitos as distributing agents of malaria have been suspected for many years. An active impetus was given to this suspicion through the discovery by Ross that certain Indian mosquitos harbored a malarial parasite affecting birds. It was only a step from this to human malaria. The mosquito-malarial theory took such firm hold that in 1900 Drs Low and Sambon spent the summer on the fever-ridden Roman campagna, relying entirely for protection from malaria upon flimsy mosquito netting. Their field test was further confirmed by the shipment of malarial-infected mosquitos to London, where they were allowed to bite Dr Patrick Manson's son, who in due time came down with the disease though residing in a nonmalarious section.

The deadly, justly dreaded "yellow jack" has likewise been traced to its lair through the heroism of a few devoted scientists. Volunteers lived in a fever stricken locality with no protection from infection other than the frail mosquito bar. They even slept in beds soiled by fever patients for the sake of demonstrating beyond question that the disease was not infectious. Drs Carroll and Lazear went further and allowed themselves to be bitten by infected mosquitos. Both contracted the disease, the latter losing his life on the altar of scientific investigation. This was true heroism. All honor to these martyrs. Theirs was not a useless sacrifice. Before their time, a yellow fever outbreak meant the loss of hundreds or thousands of lives, simply because there was no known adequate method of preventing the disease. Prolonged arbitrary and wasteful quarantines were maintained. Thousands fled from infected districts. The horrors of the shotgun quarantine prevailed. The control of the yellow fever epidemic of 1905 in New Orleans is a most striking testimony to the value of the recent discoveries regarding this disease. This outbreak was handled as a mosquito-borne infection and for the first time

the disease was stamped out before cold weather and with comparatively little loss in either life or property.

The Spanish-American War has resulted in a material addition to our knowledge respecting the part flies may play in the spread of typhoid fever, an infection costing the country $350,000,000 annually, it is estimated. The conditions in the army camps were such as to result in the unquestioned indictment of the ordinary house fly as the chief agent, under such conditions, in spreading the deadly germs of typhoid fever and other grave intestinal diseases. These conclusions have been supported by thoroughly competent investigators working under quite varied conditions. There is no questioning the deadly potentialities of the hitherto supposedly harmless house fly, if it has access to disease-infected discharges, a condition altogether too frequent in country districts.

DISEASE CARRIERS

Typhoid or house fly[1]

Known and tolerated from time immemorial, this insect is more than a nuisance. It is a menace to life under certain conditions. It is far from being a necessary evil, since the adoption of comparatively inexpensive methods is all that is essential to bring about an enormous reduction in its numbers.

The fly as a disease carrier. The experience of recent years, particularly that of the Spanish-American War, has called attention in a most forcible manner to the part flies may play in conveying typhoid fever and other affections of the digestive system. Typhoid fever affects about 250,000 Americans annually, 35,000 of the cases proving fatal. There is no denying the important part played by water in carrying this infection, nevertheless the common house fly is a most efficient agent in this work. Virulent typhoid bacilli have been found on the legs and within the body of this insect, persisting in the latter case, for 23 days. A number of serious outbreaks have been observed by competent physicians in various parts of the country, and in each instance the infection through a common water or food supply did not afford a satisfactory explanation. Similarly, the cholera bacillus has been found in large numbers on flies, has been recognized in fly specks 17 hours after feeding and as late as four days, and infected flies have carried the disease germs to milk. It is equally certain that flies may convey the germs responsible for certain forms of diarrhoea and

[1] **Musca domestica Linn.**

other intestinal disorders. It is more than probable that flies play an important part in causing the heavy mortality among bottle-fed babies, the proportion of deaths between these and breast-fed babies being as 25 to 1. It has been shown that flies may ingest, carry and discharge tubercular bacilli, thus aiding materially in spreading tuberculosis. Furthermore, it is held that flies may, under certain conditions, convey plague, trachoma, septicemia, erysipelas, leprosy, and there are reasons for thinking that this insect may possibly be responsible for the more frequent

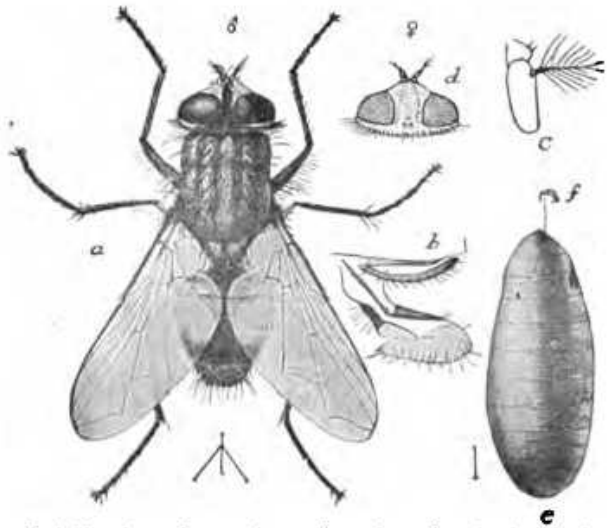

Fig. 1 Typhoid or house fly: *a*, male, seen from above; *b* proboscis and palpus from the side; *c*, tip of the antenna; *d*, head of female; *e*, puparium; *f*, the anterior breathing-pore or spiracle, all enlarged. (After Howard & Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

new cases of smallpox occurring in the near vicinity of a hospital. The eggs of certain intestinal parasites, such as those of the tapeworm, may be swallowed by the fly and passed uninjured.

Methods of carrying diseases. The most common and dangerous infections conveyed by the house fly are typhoid fever, other intestinal disorders, including those affecting young children, and tuberculosis. Typhoid germs may be discharged from the human system several weeks before diagnosis is possible, continue in numbers 6 to 8 weeks after apparent recovery, and in exceptional cases may persist during a period of several years. There are authentic