



Howard, 1900

HOWARD

1900

v. Tschirnhaus
A-C 8330 S.D

PROCEEDINGS

OF THE

WASHINGTON ACADEMY OF SCIENCES

VOL. II, PP. 541-604. *incl. Tschirnhaus* DECEMBER 28, 1900.

A CONTRIBUTION TO THE STUDY OF THE IN-
SECT FAUNA OF HUMAN EXCREMENT.

[WITH ESPECIAL REFERENCE TO THE SPREAD OF TYPHOID
FEVER BY FLIES.]

BY L. O. HOWARD, PH.D.

[PLATES XXX, XXXI, FIGS. 17-38.]

CONTENTS:

Introductory	541
General Results of Investigation	547
List of Diptera Reared or Captured	548
Insects other than Flies found on Excrement	555
Details Concerning the Excrement Flies Studied	557

INTRODUCTORY.

IN 1895 the writer became interested in the study of the common house fly (*Musca domestica*). Breeding-cage experiments described with some detail later on in this paper early convinced him that horse manure is the favorite food of this species. Even in the presence of kitchen garbage, cow dung, and human excrement, flies in confinement oviposited exclusively on horse manure. In the absence of the latter substance but in the presence of the others, he noted egg-laying on decaying fruit and on cow dung but the resultant larvæ failed to develop. He considered himself warranted in the statement that probably 95 percent of the flies found in cities come from the piles of horse manure everywhere so prevalent, especially in the vicinity of stables.

After the outbreak of the war with Spain, in the spring of 1898, a mild form of typhoid fever soon became prevalent in

Proc. Wash. Acad. Sci., December 1900.

(541)

plants by forming burrows and mines in various parts of them but principally in the leaves.

Ceratomyza dorsalis Loew.

The transformations of one species of this genus are known in Europe and its larvæ mine the leaves of *Sonchus oleraceus*. *C. dorsalis* has been reared at this office from a puparium found in a mine in a leaf of timothy and similar rearings have been made by Mr. F. M. Webster. The previous rearings have been breeding habits render the rearing of this species from human faeces something of a surprise, yet it was unquestionably reared on June 24, 1899, at Washington, from miscellaneous deposits collected in a low part of the city on June 13.

Desmometopa latipes Meig.

This insect, which occurs both in Europe and North America, and which would hardly be expected to breed in human excreta was reared, September 6, 1899, from a miscellaneous lot of deposits collected in Washington August 18.

Family EPHYDRIDÆ.

This family includes a number of insects of curious structure and strange habits. The larvæ as a rule are aquatic or sub-aquatic and are found in waters strongly impregnated with salts. They occur near salt wells, are found in the strongly alkaline lakes of the Western States, some species breed in pools of water strongly impregnated with manure and one form is found breeding commonly in the pissoirs of European cities. *Brachydeutera argentata* Walker, a handsome little species belonging to this family, has been reared by the writer from larvæ found in a small pool, on the grounds of the Department of Agriculture, which was strongly impregnated with horse manure from an adjoining manure heap.

Discocerina parva Loew.

This species, found only in America and the breeding habits of which are not known, was captured at Travilah, Maryland, May 29, and June 1, 1899, on human faeces. It is a very small, black, dull-colored and somewhat hairy species.