How to Conduct a Fly Campaign

by

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March 1914.

The bulletins of the Oregon Agricultural College are sent free to all residents of Oregon who request them.
DEPARTMENT OF ENTOMOLOGY.

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PREFATORY NOTE.

This bulletin has been published in response to the growing demand for instruction on how to conduct a campaign for the eradication of flies. Attention was first directed to the advisability of extended campaigns of this type by members of the travelling school which the College sent last summer on a state-wide tour of the cities of Oregon. As a result of the interest manifested, a comprehensive plan of campaign was outlined last fall by Professor H. F. Wilson, of the department of entomology of the Agricultural College, and prepared in bulletin form for use throughout the state. The bulletin was delayed in process of publication, but it is hoped that it will reach those interested in time to be of service. The first campaign was organized and put into operation in Medford under the direction of Professor Wilson.

These bulletins are sent without cost to the people of the state and the College will give such other assistance as circumstances warrant.

RALPH D. HETZEL.

INTRODUCTION.

The status of the house fly is very clearly defined as follows: Hatched in filth, bred in filth, living on filth, distributing filth, and without doubt the filthiest creature on earth. Knowing the above facts to be true, one may readily see why the house fly is one of the most danger-
ous of all living creatures and the one to be the most feared on account
of its apparent harmlessness. No quarantine, no matter how strict,
can be successful so long as the house fly is permitted to move back and
forth from the houses of the sick to those of the healthy.

A fly drops into the spittoon of the cosumptive, crawls out, reaches
the dinner table and cleanses himself in the milk pitcher. Another one,
having crawled about over the excreta of a typhoid patient, flies into
the window in response to some savory smell and wipes his feet on the
bread, etc. Knowing these things, will you permit the fly to inhabit
your premises?

The use of screens for doors and windows, is a practice which
should continue in every household, unless the fly nuisance is found
to be entirely cleaned up in a neighborhood or locality.

From time to time requests have come in from different cities of
the state requesting information concerning the best method of mak-
ing a fly campaign. We believe that a state campaign can be carried'
on as easily as a city campaign; that the country people should be as
interested as the city people, and that each farmer should carry
on a campaign on his own premises. With this in view, the following
general plan is offered.*

FROM THE VIEWPOINT OF THE BACTERIOLOGIST.

The day when the world believed that even the fly had some good
office to perform, seems to have passed. The fly feeds on filth and
breeds in filth. Filth becomes rotten and stinking because of the
growth and life of filth germs, or bacteria. It naturally follows, there-
fore, that filth germs which are many times associated most closely
with disease bacteria, are constant companions with the fly. They are
carried by the fly wherever the insect lights, and some of them will be
left behind at every foot step, later to cause decay and possibly dis-
 ease. No wonder, then, that by certain authorities, the common fly
has been well termed the "Typhoid Fly."

The question often arises as to the extent of the possibilities of
flies as decay and disease carriers. A series of experiments was car-
ried on at a Connecticut Experiment Station in 1908, using flies caught
in various places of varying degrees of cleanliness. The places selected
were pig pens, stables, swill barrels, and dwelling houses, some neat
and some uncleanly. It was found that the number of germs carried
per fly varied between 47,000 and 6,600,000, averaging 3,000,000.
Germs are so small that many millions may be carried by a single fly
without discommoding the insect in the slightest degree. In case the
filth is infected with disease bacteria, these will be carried by all flies
coming in contact with them to the next spot where the insect lights,
—possibly the baby's lips or our food.

*Detailed plans must necessarily be somewhat different for existing conditions in dif-
ferent cities and communities.
Flies may carry the following diseases: typhoid, dysentery, diarrhoea, tuberculosis, anthrax, ophthalmia, or "pink eye," diphtheria, and possibly small pox, plague, scarlet fever, spinal meningitis and anterior poliomyelitis, which is generally incorrectly called infantile paralysis.

Too much cannot be said, therefore, of the importance of fly fighting and of the various methods tending towards fly eradication.

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GENERAL PLAN OF CAMPAIGN.

At present, outside of the few towns and cities where organized campaigns have been carried on, the handling of the fly situation usually has its beginning and ending with the housekeeper. Windows and doors are screened to keep out as many flies as possible, and various sticky and poisonous preparations, supplemented with fly swatters, are used to destroy the flies after they have gained an entrance.

Our problem is to destroy the fly before it reaches the house at all, and while this may seem to be a gigantic task, it is really a simple matter, if the right forces can be brought together in harmonious cooperation. Two general practical methods of destroying flies have been advanced: First, by doing away with the breeding places. Second, by catching the flies as soon as they emerge and before they have a chance to lay their eggs.

The first, and by far the most important, consists of the immediate disposal of all refuse or other substances in which flies may breed. Where this is not possible, the treatment of refuse with such materials as will destroy or prevent the development of the larvae, must be resorted to.

The second consists in placing fly traps around the house and in places frequented by flies, so as to catch them whenever they appear. This method is based upon the fact that flies are readily attracted to baits of meat, etc., and when these are placed below cages made of wire screen, the flies, after feeding, work upward into the cages, which are so arranged that they cannot easily get out. They may then be destroyed by pouring hot water over them or by burning sulfur under the cage.

Both of the above methods should be used in every campaign.

Two general plans of operation present themselves: First, by educational measures. Second, by city or county regulations concerning the disposal of manure, garbage, etc., wherein flies may breed. This ordinance should also provide for proper sewage connections and the prevention of such nuisances as outhouses unconnected with sewers.

Both of these have been more or less necessary in the fly campaigns conducted in the Eastern and Southern cities. If the educational plan is first developed in such a way as to give all classes of people a thor-
ough understanding of the fly as an actual menace to life, compulsory regulations need be little used. For those who will not be educated or will not aid in the work by ordinary methods of cleanliness, a few city ordinances and regulations will have to be formed.

Education of the masses is usually brought about through posters, placards, newspaper articles, lectures, and moving pictures. The nature of these is in general the same, but may be differently stated or arranged by different writers. Certain facts relating to the life history of the fly and its habits are always the same, and it only remains to place these facts before the people in the best way to arouse them.

Step by step the work may be pursued as follows: First, through your club, form an executive committee, of not more than five or seven, to formulate plans, and to see that no effort is spared in making the campaign a success. Then form a larger organization of all those who may be interested in the work. Now interest your local newspapers and have your library secure and place at your disposal all the available books and magazine articles on this subject. Place the matter before your Chamber of Commerce in a way that will make them realize the value of such a campaign to themselves and to the community at large. Visit the mayor and the members of the city council and get them to pass the laws necessary for making the campaign a success.

Having done these things, the next very important thing will be to formulate plans for securing funds needed in buying campaign literature, etc. Encourage your dealers to handle efficient but cheap fly traps early in the season, so as to get the flies that hibernate through the winter. Each one destroyed at that time will mean thousands less to combat later in the season. Traps, if they are the proper kind, have great value; but they need attention and must be efficiently handled.

In a number of communities the Boy Scouts have been organized for this work, and have done much good in hunting for and causing the abeyance of breeding places. In other cities and towns the school children have been made to see the value of the fly crusade; and by offering them small prizes, they have been induced to destroy millions of flies. Experience has taught us, however, that catching flies may prove a means of developing the commercial instinct in some children, as the champion fly catcher of the world is said to have made traps and bred his flies for the market! The prize was $100 for the greatest number caught in a given time.

The children can be encouraged to serve in a better way by offering prizes for the cleanest blocks, districts, etc. Encourage them to prevent the breeding of flies rather than to catch them. Have the children, for instance, distribute posters or pamphlets of information to the housewives, merchants, etc. The money for such prizes may be secured through the sale of buttons bearing the words "Kill that Fly,"
"A Flyless Arlington," or other statements that may suggest themselves. You may also secure the cooperation of one of your moving picture shows by having the proprietor secure the fly film. Posters may be made up in any number of ways, giving the information desired.

Of the many city campaigns carried on, the Cleveland Fly Campaign is one of the most notably successful, and the principles upon which they work are herein included.

1. Kill all the flies that survive the winter, as soon as they appear in the spring. These are the mother flies, few in number, but responsible for all the generations that infest the summer. One fly killed at this season is equal to killing millions in August or September.

2. Be sure that no flies either feed or breed on your premises. This must be our universal rule, for even in the best of homes we have records of garbage cans that have neither top nor bottom.

3. We need to have some kind of a fly trap set in our back yards, so as to catch all the flies on their way from their breeding places to our homes.

4. Realizing the dangers of the house fly, we must cease to trade with dealers who permit flies to swarm in our dairies, restaurants, markets, and bakeries. By withdrawing patronage from the careless dealer we can put our fly campaign on a dollar and cent basis. This will line up all dealers in food stuffs on the defensive. They will in turn demand that all places where flies may breed in their neighborhood be cleaned up. Then we shall have not only a flyless but a really clean Cleveland.

The Indianapolis Board of Health in a campaign in that city prepared the following catechism which, distributed about the city, proved quite effective.

1. Where is the fly hatched? In manure and filth.
2. Where does the fly live? In every kind of filth.
3. Is anything too filthy for the fly to eat? No.
4. (a) Where does he go when he leaves the vault and the manure pile and spittoon? Into the kitchen and dining room. (b) What does he do there? He walks on the bread, fruit, and vegetables; he wipes his feet on the butter and bathes in the buttermilk.
5. Does the fly visit the patient sick with consumption, typhoid fever, and cholera infantum? He does—and may call on you next.
6. Is the fly dangerous? He is man's worst pest, more dangerous than wild beasts or rattlesnakes.
8. Did he ever kill anyone? He killed more American soldiers in the Spanish-American War than the bullets of the Spaniards.
9. Where are the greatest number of cases of typhoid fever, consumption, and summer complaint? Where there are the most flies.
10. Where are the most flies? Where there is the most filth.
11. Why should we kill the fly? Because he may kill us.
12. How shall we kill the fly? (a) Destroy all the filth about the house and yard; (b) pour lime into the vault and on the manure; (c) kill the fly with a wire-screen paddle, or sticky paper, or kerosene oil.
13. Kill the fly in any way, but KILL THE FLY.
14. If there is filth anywhere that you cannot remove, call on the Board of Health, and ask for relief before you are stricken with disease and, perhaps, death.

TRAPS.

Practically all traps are made upon the same general plan. The bait is placed below the trap, and the fly, in leaving, works upward into the cage through a small opening in the inner cone. The accompanying diagram will explain the methods of constructing home-made traps at a small cost.

Trap No. 1 is made by taking two circular pieces of board of the same diameter. The top piece is solid while the bottom piece is cut out as indicated in the figure. Make a cone of wire screen and fasten it to the inner side of the bottom piece (leave a small opening one-quarter inch in diameter at the top of the cone for the entrance of the flies). Then make a cylindrical cage with the top board, and on the inside, fasten two thin strips in such a way that they will rest on the bottom piece so as to make it fly tight. Having the two parts made, fasten four small nails or screws into the bottom board so that they will hold the cage from one-fourth to one-half inch above the surface upon which it rests. This space will be sufficient to permit the entrance of the flies. If it is desirable to hang the trap on the outside of the barn or outhouse, another board can be fastened to the bottom to hold the bait, and with sufficient space left to permit the entrance of the flies. This cage can be made as large as desirable. Cages two feet high by one foot in diameter work quite well.

No. 2 is a smaller cage built upon exactly the same plan as No. 1, but with two cones, and is a handy one to place in the kitchen or dairy. Cages so used are of most service when all attractive substances outside the cage are put away in the pantry or fly proof cupboard.

No. 3 is a stable window trap. A very satisfactory trap for stables and outhouses can be made to fit in a window, so arranged that the flies can be removed without moving the trap. If the window is of the usual size the trap can be made to fill the entire window. Otherwise, it can be made any size desired (width ten to twelve inches).

The trap can be made as follows: Construct a box frame open on both sides. Now make two pieces as long as the box and two inches wide, these to be fastened along the lower edge of the box, one on each side, so that they can easily be removed and the dead flies taken out. Then make two frames, one for each side of the box, to cover the open space remaining. In each of these, fasten two cross pieces two inches
wide, slanting inward and upward (Fig. a). Working from the outside, cover the frames with wire window screen and make a fold of it under each cross piece so that the top of the fold reaches to the upper inside edge. The outline of a cross section of the wire screen, as it should be on the frames, is shown in Fig. b. Along the top of the groove make a row of holes one-fourth inch in diameter and about one inch apart. When the trap is in place, darken all other openings to
the stable and the flies that try to leave or enter the stable will find their way into the trap and be held there. A few pieces of fish head or other attractive baits may be placed in the bottom of the trap to attract the flies.

TO RID THE HOUSE OF FLIES.

1. Heat a shovel or similar implement and drop therein twenty drops of carbolic acid. The vapor will destroy the flies in an ordinary room.

2. Burn some pyrethrum powder (insect powder) in each room. This will stupefy the flies, which may then be swept up and burned.

3. Dissolve one dram of chromate of potash in two ounces of water and add a little sugar. Put in shallow dishes and place about the house.

4. A few drops of formaldehyde placed in a small quantity of sweet milk is very effective, and may be placed about the house in shallow dishes.

LIST OF THE MORE IMPORTANT REFERENCES GIVING INFORMATION ON HOUSE FLIES.


A Carrier of Disease—H. D. Pease, M. D., Good Housekeeping, Aug. 1913.

How to Make a Flyless Town—World’s Work, June 1912, p. 177.
The Cleveland Fly Campaign—Scientific American Supplement, Feb. 15, 1913.

How to Conduct a Fly-Fighting Campaign—American City, March 1913. p. 254.

The House Fly: How it Spreads Disease—Scientific American Supplement, April 5, 1913.

How to Get Rid of Flies—F. P. Stockbridge, World's Work, April 1912.

The Role of the House Fly and Certain Other Insects in the Spread of Human Disease—Popular Science Monthly, July 1912.

The upper view shows no fly traps, or other sanitary precautions, but the place needs them. The lower view shows populous fly traps, doing good service.
A MODEL ORDINANCE TO GUARD AGAINST THE DISSEMINATION OF DISEASE GERMS BY THE FLY.

Prepared by the Indiana State Board of Health and Recommended to All Cities in that State for Adoption.

WHEREAS, It is commonly known that flies are very dangerous carriers of filth, filth poisons, and disease germs; that they are born in filth, and are a constant threat against the health, happiness and prosperity of the people; therefore,

SECTION 1. Be it ordained by the Mayor and Council of the City of ................., that it shall be unlawful for any person, firm or corporation to suffer or permit or have upon their premises, whether owned or leased by them, any one or more of the following unsanitary fly-producing, disease-causing conditions, to-wit: (1) Animal manure in any quantity which is not securely protected from flies; (2) privies, vaults, cesspools, pits or like places, which are not securely protected from flies; (3) garbage in any quantity which is not securely protected from flies; (4) trash, litter, rags or anything whatsoever in which flies may breed or multiply.

SECTION 2. It shall be the duty of the chief of police or city marshal and health officers, upon learning in any way whatsoever of the existence of one or more of the unlawful conditions described in Section 1 of this ordinance, to notify the offender in writing upon order blanks provided by the city clerk, to remove or abate said unlawful conditions, stating the shortest reasonable time for such removal or abatement. In the event of the refusal or neglect on the part of the notified offender to obey such order, the chief of police or health officer shall inform the street commissioner upon a blank provided by the city clerk, and it shall then be the duty of said street commissioner, and he shall have the power and authority, to remove and abate the reported unlawful conditions; and he shall keep an accurate account of the cost and expenses thereof, which shall be paid from the city treasury upon the sworn vouchers of the street commissioner, and said cost and expenses shall be a lien upon the property and shall be collected by law as taxes are collected and duly paid into the city treasury.

SECTION 3. Any person, firm or corporation found guilty of having created or suffered to exist on premises either owned or, leased by them any one or more of the unlawful conditions named in Section 1 of this ordinance shall be punished by a fine of not less than five nor more than fifty dollars.

SECTION 4. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed; and whereas an emergency exists, this ordinance shall be in effect on and immediately after its passage.