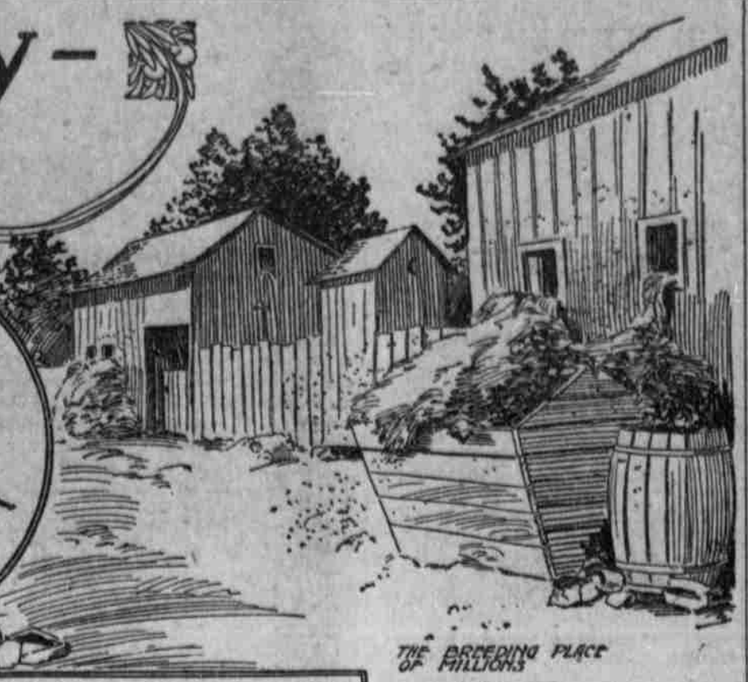
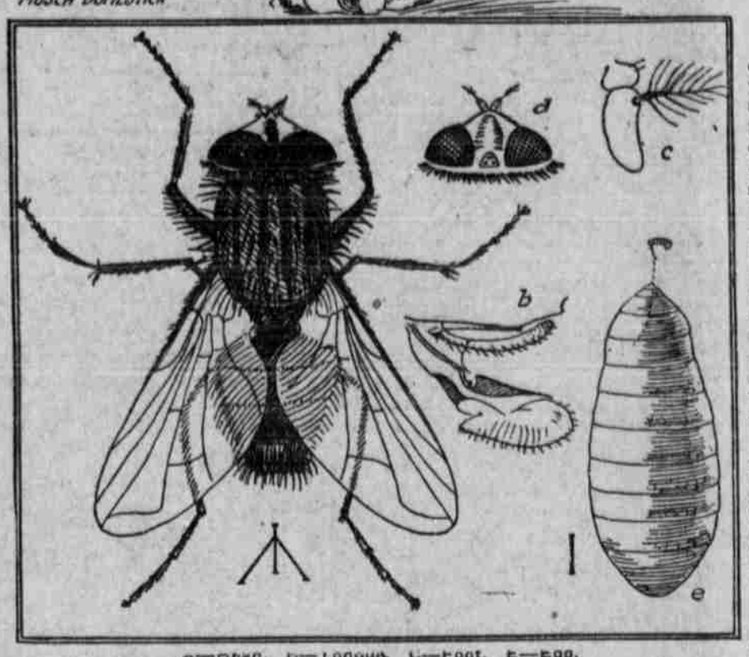
The House Fly—Man Killer

BY FRED A CHAPPELL

THE HOUSE FLY PROPER. MUSCA DOMESTICA



THE BREEDING PLACE OF MILLIONS



a—Head. b—Tongue. c—Foot. e—Egg.

THE HOUSE FLY, projecting his impertinent personality into the national ointment, has started a fine scurrying for spoons, screens, air-slaked lime, lassoes, and whatever other weapons are likely to prove effectual in his discouragement. There is no malice in the uprising. It is simply the manifestation of a scientific yearning to hand him his dues, full-measure and brimming over, for a past chockful of all manner of criminality and a desire to chop short a future hopeless of reform. "His tricks and his manners," long regarded at the worst as petty annoyances for the discipline of our souls, have in recent years assumed an aspect so menacing that we are more and more determined to do without the chastening qualties of his presence altogether.

Dr. Daniel D. Jackson, formally denouncing this enemy before a joint convention of the American Civic Association and the National Municipal League, put the case in unequivocal terms: "Regarded in the light of recent knowledge, the fly is more dangerous than the tiger or the cobra. Worse than that, he is, at least in our climate, much more to be feared than the mosquito, and may easily be classed the world over as the most dangerous animal on earth."

When Dr. Jackson thus arraigns the fly the last word has been said. The details can only bolster up the generalization—provided the details are true.

Are they true?

They have at least one point in their favor which is characteristic perhaps of no set of facts ever predicated of anything out side of an exact science, and that is that they have never been disputed. There is a unanimity of sentiment surrounding the onslaught on the house fly which ought either to receive our highest indorsement or arouse our darkest suspicion, just as the spirit is apt to incline us.

The house fly proper, Musca domestica, of the order of the Diptera, is a grayish fly with a mouth formed for sucking up liquid substances.

It has a proboscis something like the trunk of an elephant in miniature, and its feet are terminated each by a pair of claws, between which are more or less membranous arolia or plantulae which climb polished surfaces, and also a pulvillus or cushion. It does not bite, for that function is reserved for a stable fly which resembles it so closely as to deceive anybody but an entomologist. Neither does it die upon the window pane surrounded by the fungous efflorescence so familiar to the disgusted housewife. That is the habit of the cluster fly, which is somewhat larger than the house fly, with a dark-colored, smooth abdomen, and a sluggish disposition.

Several other species bear a superficial likeness to the true house fly and are more or less mistaken for it. All are so inconsiderate in number in comparison to the common pest, however, that they may safely be disregarded in the discussion.

The great breeding place of the house fly is horse manure. It will, it is true, thrive to some extent in other sorts of decaying animal and vegetable matter, but its partiality for the stable refuse is so great that the vast proportion of its offspring may be considered as originating in that substance.

The fly lays its eggs upon the manure, which is its favorite larval flood, and a generation may be bred in from ten to fourteen days, according to the climate. There may be a dozen generations in a summer. An individual fly will average 120 eggs, and when the prevalence of horse manure is taken into consideration, its widespread application to farm lands in the way of a fertilizer, its presence in piles in or near city stables, its use upon lawns and suburban gardens, the possibilities in the propagation of the fly will be readily seen to be past computation. It is even calculated that a single fly, laying 120 eggs, will produce a progeny amounting to sextillions in one season. This probably does not take into consideration accidents which operate greatly to reduce the supply.

Some experiments have been made with a view to calculating the number in which house-fly larvae occur in manure, but no general average can be struck. Twelve hundred house flies to the pound of manure is the result of one observation. Another showed 200 puparia in less than one cubic inch. Yet perhaps no larvae can be found in the greater part of manure piles.

Because of his habits the house fly is a walking arsenal of bacilli. The old notion that he was valuable as a scavenger is untrue. He will prey on garbage and carry it away as part and parcel of his tissue, but he does not kill the germ he absorbes. It has been proved that the bacteria are not only taken into the fly and pass through its body without any loss of their active properties but also that in all probability they multiply during their sojourn there.

These germs are deposited upon foodstuffs, and eating utensils, pass into the human economy in spite of ordinary care, and if they are of a malevolent type and the system which takes them in is not strong enough to resist their action, distress, disease and death are apt to follow in their wake. In addition, the fly also disseminates germs by carrying them upon his body, the cushions of his feet and his wings.

Through the researches of W. M. Eaton and C. J. Mason it has been found that "the numbers of bacteria on a single fly may range all the way from 550 to 6,600,000." No general average can be struck. A few million more or less will make no difference in the general result.

Because of its prevalence and its familiar association with man, Musca domestica has exceptional opportunities to distribute disease-breeding bacteria where they will do the most harm. A certain genus of mosquito disseminates malaria, but the mosquito thrives only in localities especially favorable to his propagation. There is good reason to suppose that the germs of the bubonic plague may be transferred by fleas, and of typhus fever by the body louse, but the discouragement of the flea and the louse is by no means difficult. Only the fly, because we treat him as a friend and brother, is in a position to reward us at his will by the presentation of a package of destruction that makes Pandora's box look like a collection of assorted chocolates and bonbons. He will transmit in virulent form typhoid fever, Asiatic cholera, summer dysentery and other intestinal diseases, and even tuberculosis, all by the ingestion of fly-specks on food. Therein lies almost all the danger. It will also transmit, it is true, such diseases as small-pox, scarlet-fever, measles, chicken-pox, erysipelas, and even carbuncles, but practically only by inoculation, that is, by depositing the germs on a sore surface or on mucous membrane.

But it is not from contact with horse manure or ordinary refuse that the fly becomes so dangerous to the health of man. By far the greater peril lies in the fact that it will breed in human excreta. Because of this habit it carries the living germs of typhoid, cholera and other intestinal diseases to exposed food supplies, and thousands of unfortunates, partaking of these, are laid low to suffer incalculable anguish of mind and body until natural resistance enables them to overcome the poison or death intervenes.

When the sum total of misery and loss which must be laid in this connection at the door of the house fly is taken into account, it will readily be believed that no remedy, however drastic, to remove the cause, can justly be regarded as superfluous.

Dr. G. N. Kober, at the governors' conference at the White House in 1908, presented figures showing that the decrease in the vital assets of the country through typhoid fever alone in a single year is more than $350,000,000. The house fly, while not the sole carrier of the typhoid germ, takes such an unenviable part in its distribution that he may rightfully be charged with a very considerable part of the loss. Add to this the dreadful toll exacted by intestinal disorders, and the tiny agent, like the Djinn of the fisherman's jar, set free through man's indiscretion, looms more and more menacingly until his terrifying shadow fills and darkens the heavens.

These are the popular charges against the fly. In principle they are true, and the violent enthusiasm which greets the proposal for his extermination must be viewed with an approving eye. The smoke and the effervescence will inevitably pass, but the solid impetus which distinguished the movement will remain. At the same time it is well to remember that a clear, calm understanding of the actual truth, shorn of decorative hyperbole, is more essential to the success of the crusade than all the unreasoning zeal which distinguishes the first rush upon the breastworks.

How easily the inquirer may be led astray from the scientific aspect of the affair is readily illustrated. Several years ago a writer in the Boston Medical and Surgical Journal declared that certain experiments seemed to offer an explanation of the sporadic cases of cholera occurring in New York city in 1892. In spite of the most careful quarantine. Maddox and Simmonds fed flies with cholera spirilla and obtained cultures of the bacterium from the insects so fed. We have seen before that bacteria suffer no diminution of their virulence in passing through the fly. In 1892 11 cases of cholera developed in New York, the disease being first brought in by steamship. The patients lived in widely-separated parts of the city and had no personal association with each other. The only striking fact common to all the cases was that the victims were engaged in some form of the food trade. The bacillus, when examined, proved to be identical with that discovered on shipboard. The physicians investigating the method of infection were forced to exclude the water supply. They also declared, after much experimentation and thought, that it was incredible that the wind had carried the germs over so great an area in so short a time. By a careful process of elimination the guilt was brought down to the fly, which by excreting cholera bacilli upon food exposed in various localities, was thought to have spread the dreaded disease.

Now mark the scientific caution of the physicians, who, though certain almost beyond the shadow of a doubt of the truth of their conclusions, felt it only fair to say: "Many links in the chain of absolute proof are wanting." They condemned the fly, but the verdict specifically declared it was largely on circumstantial evidence. As a cold matter of fact, very little is known as to how far flies travel or how much they move from place to place. Professor Packard says their rate of speed is 5.35 meters a second, which means a mile in five or six minutes, or ten miles an hour. He says further that they could scent food on decaying bodies for several miles and might fly over 20 or 30 miles a day, especially if aided by a wind. All this, it is to be observed, is carefully qualified. Like the other investigators, he is by no means certain of his ground, and in this manner aids in setting that example of scientific caution which must reap the best result in the long battle only just begun.

The first and greatest step against the fly is to do away with the exposed manure pile, and this is feasible through intelligent co-operation and police supervision. Some trouble and expense will be involved, it is true, but not to a prohibitory degree.

All manure in stables or barns should be deposited at frequent intervals either in a pit or vault or screened inclosure. Each layer should be sprinkled with chloride of lime. This is the cheapest and most efficacious discourager of the fly, gives it almost no chance to breed, and thins its numbers almost to the vanishing point. Other disinfectants may also be used, such as kerosene, or a solution of paris green or arsenate of lead. The bin or pit should be kept covered carefully and not allowed to overflow. The manure may be kept tightly rammed in barrels for purposes of removal. Its transportation and deposit should also be under the strictest regulation. Always it should be borne in mind that an ounce of prevention in destroying the chief breeding place of the insect is far less expensive than the pound of cure when the mischief has been done.

The next precaution to be taken is the abolition, or at least the strictest regulation, of outhouses, in which flies are disposed to breed. In the great cities this care is lessened by the perfection of sewerage systems, but in the suburbs and country the danger is always present. The chief peril here lies in the absorption by the fly of typhoid and intestinal bacilli and their subsequent deposit upon food. In this way pronounced epidemics are spread. The remedy consists in doing away altogether with the old-fashioned outhouse and the substitution of some form of earth closet, the use of lime and decent precautions consistently and persistently observed even at considerable expense and care.

Eqhally important is the screening of food supplies, whether displayed in the open market or in the private larder, the disinfection and screening of refuse in hospitals, the regulation of abattoirs, garbage deposits and ashpits and all accumulations of fermenting and decaying matter.

Lastly, the close screening of all dwellings, to the absolute exclusion of our ancient and pestiferous friend, will greatly circumscribe his ability to work harm.

The fly is also only a minor factor in the spread of tuberculosis. The bedbug, the flea and other household pests must also be charged with some measure of guilt in conveying noxious bacilli.

Again, while it has been proposed by Dr. Howard that the house fly be known henceforward as the "typhoid" fly, he himself says that, "strictly speaking, the term is open to some objection, as conveying the erroneous idea that this fly is solely responsible for the spread of typhoid." "Perhaps" (continues the same authority) "even under city conditions it (the fly) must assume third rank—next to water and milk." Even human beings have been found to be personal carriers of the disease, infecting whole families with whom they are brought in contact.

Without desiring for an instant to minimize the pernicious activity of the fly in the great conspiracy of natural forces against the continuation of the human species, one need only walk at random through the streets of New York, or any other city, large or small, to realize that it is not alone by the extinction of one particular species of insect that man's health is to be conserved. East side or West side, in thousands of stores that cater to the well-to-do or in noisome shops where the impoverished many buy their supplies, the same careless and unsanitary customs prevail in varying degrees. The dust that blows in clouds through every unsprinkled thoroughfare deposits germs upon the food of rich and poor alike. The wares exposed upon the counter in the elegant bakery at which madam orders her rolls and macaroons are as open to contamination as the soggy pies and sinkers in the cheapest restaurant or bake-shop of the Ghetto. The fruit lying unscreened upon the tastily decorated stand of Upper Broadway is as dangerous to health as that pushed about in the handcart of the intinerant peddler. In expensive groceries, meat-shops, and confectionery stores the same lax methods prevail.

A scientific warfare against diswase-bearing insects is not sufficient to enable us to win the contest for health, happiness and increased length of days. We must fight equally against our own indifference to civic regulation, which seems to be the abiding sin of a people who love individual liberty very much to the exclusion of the collective good.

For the LITTLE ONES

BOXING AS SPORT FOR BOYS

Entails Little Expense and Does Not Present Same Dangers as Many Popular Pastimes.

"Why is it," Billy Edwards the famous retired pugilist, was asked, "that American boys do so little boxing?"

"For the simple reason that the average boy lacks nerve to stand up before an opponent and allow his face to become a target for the other's padded fist. This, to the best of my knowledge, is the only explanation, for certainly boxing entails little expense, and does not present the same dangers as football and other popular pastimes."

"Is it possible for every boy to become a good boxer?"

"Certainly. Of course some lads are better adapted to self-defense than others. All the great fighters have been endowed with a natural talent for it. During their boyhood they had a propensity for fighting and practiced continually with and without gloves, until the ability to dodge and return a quick blow at a critical moment became second nature to them. The tall

Long-Armed Boy Has Advantage.

boy has a great advantage over a short boy, in the length of reach. No one point gives so much advantage, however, as quickness. Putting all other things equal, reach, hard-hitting, gameness, cleverness, and wind, the one that possesses the most activity and quickness is going to win. For fat boys boxing is a capital flesh reducer."

"Should boys with a weak heart box?"

"Well, they may, if they go at it easy. Taken by stages, it will probably mend a fellow's heart; practiced violently, it will surely ruin it.

"Boxing, in my opinion, does away

Punching the Bag.

with the knife and the pistol. Were it nurtured more, the ugly stabbing and shooting affrays we read of daily would soon diminish."

"How should a boy start out to become proficient in sparring?"

"The object at first is to get your body muscles in good condition, especially the arm and shoulder muscles. The best apparatus for this is a punching bag, either one that flies up against a drum on the ceiling, or is fastened from ceiling to floor with an elastic. The punching, guarding, and dodging, gives just the necessary exercise. If a punching bag is not available, let a boy get light dumb-bells and shove out his fists in all directions without quite straightening out his arm. In addition to this, he should, of course, be sparring frequently with boys of all caliber, so that he learns to tell by his opponent's eye where he is going to strike. The lad who has even an incomplete knowledge of boxing tactics possesses an incalculable advantage over one who knows nothing whatever of the science.

"An important point for beginners to observe is to take off the gloves the moment you begin to feel tired. Beyond this point the nerves are worried and the boxer is of no use, for he loses quickness."

BICYCLE INVENTED LONG AGO

Frenchman First Hit Upon Idea of Two-Wheeled Vehicle in 1690—Known as Celerifere.

Mr. Frank H. Vizetelly tells "The Story of the Wheel" in the St. Nicholas. Mr. Vizetelly says:

In the year 1690, M. de Sivrac, a Frenchman, hit upon the notion of making a vehicle upon two wheels, while its rider sat astride a saddle on a wooden beam to which two cross-pieces were firmly fixed. At the end of these cross pieces there were wheels, kept in position by a lath-like connecting rod. The frame represented some animal. This primitive bicycle, known as the Celerifere, was never fitted with hande bars, and was steered only by the feet of the rider, which also had to keep his balance. In mounting, he had to run alongside and vault into the saddle. Once the machine had been set going by a push upon the ground with the feet, the man upon it would draw them up, bending his knees, and without further effort could travel some distance. When the pace slackened the rider had to repeat the pushing, and so continue his journey. Much ground was covered in this way on level roads, and especially downhill, in a short space of time; but it was hard to go uphill.

It has been claimed by some that the Celerifere was the invention of another Frenchman named Blanchard, whom Louis XVI. once commanded to perform before him on this vehicle, in July, 1779. Beyond the fact that such a performance took place, on that and other occasions in public, there is nothing to support this claim. In fact, it was not until Blanchard had crossed over to England that he excited interest; once there, however, he was favored by the duke of York, and began to attract attention. Under the fostering care of royalty the Celerifere, then known as the "Dandy-horse," became popular among the English, who took to it with enthusiasm, but were soon laughed out of their fancy by jokers and cartoonists.

LIVELY GAME FOR EXERCISE

Interesting Pastime Made Possible With Ball and Racquet—Two or More May Play.

An interesting ball game for outdoor play is possible with the curious racquet shown in this illustration. Two or more people may play, and the soft rubber ball used is just of a size to fit securely into the cup-like receptacle

Ball and Racquet.

on one side of the racquet. This cup is of elastic rubber. A sharp jerk dislodges the ball from it. Then the player reverses the side of the racquet and knocks the ball in the direction of one of the other players, who catches it in the rubber cup, if he can, and projects it back again.

Japanese Maxim.

Not every one knows that the group of three monkeys so often seen in photographs from Japan represents a favorite maxim of the Japanese. One monkey holds his hand over his ear that he may "hear no evil," the center one covers his mouth with his hand that he may "speak no evil," and the third covers both eyes with his hands that he may "see no evil." This group is found above one of the temples of Nikko and was carved by a famous left-handed sculptor.