

## THE CHEESE-FLY.

BY X. A. WILLARD.

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Most dairymen understand pretty well the habits of the cheese-fly. Many, however, do not know how to provide against its depredations. Some people profess to be fond of skipper cheese, and regard it as an index of what the English understand as "a cheese full of meat," that is, rich in butter. And it must be confessed that the cheese-fly has great partiality for the best goods in the curing house. They do not so readily attack your "White Oak," and skim-milk varieties, hence the notion that cheese affected with the fly is rich in butter is not so far out of the way.

It is an old adage that "there is no accounting for tastes," and whatever may be the merits of skipper cheeses the demand for them is exceedingly small. Indeed, they usually go to the pig-pen or the ducks as food for a lower order of creatures than man. Immense losses are sustained every year on account of skipper cheese. Sometimes thousands of pounds in factories are tainted in this way, and the cheese has to be sold for what it will bring, while a portion is not unfrequently so badly affected that it has to be thrown away at the factory.

The primary cause of skipper cheese, of course, is want of care. Cheese in hot weather should be closely examined every day. They require to be turned once a day in order to facilitate the curing process. The bandages and sides are to be rubbed at the time of turning in order to brush off or destroy any nits of the fly which may happen to be deposited about the cheese. If there are cracks in the rind, or if the edges of the bandage do not fit snugly, they should at once be attended to, since it is at these points that the fly is most likely to make a safe deposit of its eggs. The cracks and checks in the cheese should be filled up with particles of cheese that have been crushed under a knife to make them mellow and plastic. When once filled, a strip of thin tough paper oiled and laid over the repaired surface will serve as a further protection of the parts. The cheese in the checks soon hardens and forms a new rind. Deep and bad looking checks may be repaired in this way so as to form a smooth surface scarcely to be distinguished from the sound parts of the cheese. It is a great mistake to send cheese that have deep checks or broken rinds to market. For, in addition to their liability to be attacked by the fly, they have the appearance of being imperfect, and are justly regarded with suspicion. A few such cheeses in a lot will injure the whole, causing a larger depreciation in price on the whole lot than if the imperfect cheeses had been separated from the rest and sold by themselves for what they would bring.

Some dairymen think that a darkened curing room is best for cheese and at the same time is the best protection against the fly. We think this is a mistake. Cheese cures with the best flavor when it is exposed to light, and besides it can be examined more minutely from time to

time, and freed from any depredations of skippers.

August and September are generally the worst months in the year to protect the cheese against attacks of the fly. Some years the trouble is greater than others, and various means have been resorted to for the purpose of avoiding the pest, such as rubbing the cheese over with a mixture of oil and cayenne pepper. These things generally do not amount to much, and are not to be recommended. The best protection is cleanliness, sharp eyes and good care of the cheese. Whenever a lodgment of skippers has been made, they must at once be removed. Sometimes it will be necessary to cut down into the cheese and remove the nest with the knife, but if the colony is young and small in numbers, a thick oiled paper plastered over the affected part so as to exclude the air, will bring the pests to the surface when they may be removed. The oiled paper should again be returned to its place and the skippers removed from time to time, until all are destroyed.

If skippers begin to trouble the cheese, the best course to be adopted is to commence at once, and wash the ranges or tables on which the cheese is placed with hot whey. This will remove all accumulation of grease and nits about the ranges, giving a clean surface which does not attract the flies. If the cheeses also are washed in the hot whey and rubbed with a dry cloth, the labor of expelling the trouble from the curing rooms will be greatly facilitated. We have seen this course adopted with entire success in many instances, when much time and labor had previously been employed without effecting the desired object.

Keep the curing room clean and sweet; see that the cheeses have a smooth rind, that the bandages are smoothly laid at the edges; turn and rub the cheeses daily, and there need be no trouble from the cheese-fly.

[NOTE BY THE EDITOR. — It is only unprofessional readers who will need to be told, that the Cheese-fly (*Piophilæ casei*) is one of the numerous noxious insects that have been imported into this country from Europe—that it is a small black fly less than half the size of a common House-fly, and belongs to the great Order of Two-winged Flies (*Diptera*) and to the great *Musca* family in that Order, the same Family to which also appertain the House-fly, and our various Meat-flies and Blow-flies—that the female deposits her eggs exclusively on cheese—that these eggs soon afterwards hatch out and produce whitish maggots called "skippers," because these maggots have the remarkable faculty of taking their tails in their mouths and then by suddenly releasing their hold skipping to a distance of several inches—that when full grown the "skippers" have their skins contract lengthways, harden, turn of a mahogany brown color, and assume an oval form technically called "a coarctate pupa"—and that from these pupæ the winged flies soon afterwards



burst forth, destined to couple together, and by laying fresh eggs in other cheese produce successive generations in the same unvarying cycle of changes. As with House-flies and Meat-flies, the breed is propagated from year to year by a few fortunate individuals securing in the fly state some uncommonly snug and secure place by way of winter-quarters, the great majority of the last autumnal brood falling victims to their various cannibal foes or to the inclemency of the weather. Hence we see at once why all these insects are far less numerous in the early part of the summer, than they are towards the autumn; for being all of them many-brooded, and laying a very large number of eggs, the breed of them naturally, under favorable conditions of warmth, increases in a fearfully rapid geometrical progression as the summer advances.

We have said that the Cheese-fly breeds exclusively in cheese, because that is the only substance in which the larva is at present known to occur. But of course, before man became so civilized as to take to manufacturing cheese, it must have inhabited some analogous substance—a peculiar kind of fungus for example—which perhaps existed only in very small quantities and was scattered widely over a large extent of country. Hence, under such circumstances as these, it was probably, like many other such flies, only to be met with in very small numbers. It is the manufacturing cheese in great quantities, and especially the concentrating the cheese in a few localities, instead of scattering it broadcast over the whole country, that affords such facilities for the great multiplication of the species. But as we have enlarged more fully upon this last point in our Article on the Increase of Noxious Insects, we need not dwell upon it here.]

#### THE HARLEQUIN CABBAGE-BUG.

(*Strachia histrionica*, Hahn.)

Cabbage-growers in the North are apt to think, that the plant which they cultivate is about as badly infested by insects as it is possible for any crop to be, without being utterly exterminated. No sooner are the young cabbages above ground in the seed-bed, than they are often attacked by several species of Flea-beetles, one of which, the Wavy-striped Flea-beetle, we figured and illustrated in all its stages in the 8th number of our First Volume (pp. 158-9). By these jumping little pests the seed-leaves are frequently riddled so full of

holes that the life of the plant is destroyed; and they do not confine themselves to the seed-leaves, but prey to a considerable extent also upon the young rough leaves. After the plants are set out, the larva of the very same insect is found upon the roots, in the form of a tiny elongate six-legged worm. Through the operations of this subterranean foe, the young cabbages, especially in hot dry weather, often wither away and die; and even if they escape this infliction, there is a whole host of cut-worms ready to destroy them with a few snaps of their powerful jaws; and the common White Grub, as we know by experience, will often do the very same thing. Suppose the unfortunate vegetable escapes all these dangers of the earlier period of its existence. At a more advanced stage in its life, the stem is burrowed into by the maggot of the Cabbage Fly (*Anthomyia brassicae*)—the sap is pumped out of the leaves in streams by myriads of minute Plantlice covered with a whitish dust (*Aphis brassicae*)—and the leaves themselves are riddled full of holes by the tiny larva of the Cabbage Tinea (*Plutella cruciferarum*), or devoured bodily by the large fleshy larvæ of several different Owlet-moths.\* Nor is this the end of the chapter. The Cabbage-fly, the Cabbage-plantlouse, and the Cabbage Tinea were long ago imported into this country from Europe. There is a still more savage foe to the cabbage, that is just beginning to make his way among us from his native home on the other side of the Atlantic. One of the White Butterflies (*Pieris rapæ*, see Figures 48 and 50 in this number) that in Europe are such a plague to the Cabbage grower was introduced accidentally into Canada some six or eight years ago; and already it is spreading into the United States in all directions with giant strides, having up to this date occupied and possessed the more northerly parts of New England, and as we learn from Dr. Hoy of Milwaukee, Wisconsin, being now tolerably common in his neighborhood.

[Fig. 56.]



Colors—Shining black and bright yellow.

Severe as are these inflictions upon the Northern Cabbage-grower, there is an insect found in the Southern States that appears to be, if possible, still worse. This is the Harlequin Cab-

\* *Mamestra picta*, *Plusia precatiosis*, another *Plusia*, and two or three different *Agrotidians*.