

and the combs destroyed as often as once a week, they actually prove a curse to a hive. Says Mr. Langstroth, "All such contrivances, instead of helping the careless keeper, will but give him greater facility for injuring his bees." Mr. H. also very confidently asserts that "the statements in regard to the invention, disuse, revival, &c. of the wire-cloth bottom are untrue." Having in my possession a pamphlet published by the inventor of the "wire-cloth bottom," in which he gives a full description thereof, I take from the title-page the following as proof of the truthfulness of what I stated. "PATENTED BY ALMOND BENNETT, MAY 17, 1858. HAMILTON, C. W." Mr. Bennett sold through Canada hives and rights to the amount of three thousand dollars, and as there are not probably over one dozen of the hives now in use, I feel justified in saying that it fell into "disrepute;" and as Mr. H. has introduced it into his hive, and both "talks and writes about it," I tell you "untruth" about it when I say it has been revived. If I mistake not, Mr. John Robinson, Divisional Engineer of the G. T. R. R., has one of the wire cloth bottoms now in use in the Bennett hive. Mr. H. would have it appear that Quimby is in favor of "miller-traps," because he advises the laying of refuse comb near the entrance to induce the miller to deposit her eggs there." Again, he says, "Put some pieces of comb under the swarms; the moth will be deceived and lay her eggs there, when the worms are easily destroyed." But this is not attaching a miller trap to a hive. The bee-keeper who would take the trouble to save refuse comb and lay it near the hive, would be the one out of fifty that would attend to it; hence it would be all right and in perfect harmony with what I have written. But what says Quimby of a "moth-proof hive?" A hive that is proof against the moth is yet to be constructed. We frequently hear of them, but when they come to be tested, somehow the worms get where the bees are." Probably Mr. Quimby has not heard of the "People's Hive." What says Harrison? "There being no such thing as a moth-proof hive in existence, nor any prospect of such a discovery ever being made, we are compelled to be content with that that makes the nearest approach to it, viz, one that gives the bee-keepers easy access to the worms." Bee Culture p. 115. Says Metcalf, "There is no moth-proof hive and cannot be." Says Miner, "When a perpetual motion, the philosopher's stone, and a north-west passage to the Pacific are discovered, you may believe such a thing as a hive, proof against the moth possible—not before." But then they had not heard of the "People's Hive."

The sum of Mr. Henry's arguments for comb guides consists of quotations from the sayings of two individuals, who probably have never used a properly constructed moveable comb hive. His "considerable study" should have enabled him to have said something original in their favour, but I presume his short (one season) experience forbade it. He seems desirous, however, by his remarks, to impress upon the public mind that I have taken "the position that in my hive, bees will "without exception" build straight comb. By reference however to my articles published in the FARMER, it will be seen that I have never taken such a position. Yet J. H. Thomas and Bros. have offered to guarantee that not over one swarm in twenty-five will build crooked in my hives. What I mean by building crooked, is building across from one frame to another so that the frames cannot be removed. I will say still more; if the bee-keeper will but take half the trouble that he would require to take, if using comb guides, he need never have a swarm build across the frames. Of what real use then are "comb guides," even in the hands of those who would use them? Of no use whatever. When comb guides are used it is absolutely necessary to remove them frequently or the bees will so fasten them in that they can hardly be removed without injury to the combs. In fact I have seen them so fastened in that it was impossible to remove them. Now, nothing can be more self-evident than this, if bees, in a properly constructed hive will build combs straight enough for all practical purposes, without "comb guides" all such additions adding as they do to the complication and expense of a hive, must be worse than useless. I am quite certain that any bee-keeper visiting my apiary, will be convinced that "comb guides" are things to "talk about" but not to use.

The remarks of Mr. H. concerning "condensers" are laughable indeed. Mr. H. would think the occupants of a sleeping apartment or bedroom *non compos mentis*, who would provide it with a condenser instead of ventilating it, yet would not think that person *compos mentis* who would ventilate a bee hive,—the sleeping apartment of his bees—instead of providing it with a "condenser." Between the sleeping apartment of persons and the sleeping apartment of bees he can "trace no analogy." The small amount of "exhalation" arising from the occupants of a sleeping apartment, he would by no means condense, but

allow it to be carried off by proper ventilation but the "exhaling mass" arising from the occupants of a bee-hive, which mass occupies "about one-sixth of the space," (close calculation) he would by no means allow to escape but condense it in the top of the hive over the sleepers! Philosophical indeed! Mr. H. has "condensers" for bee-hives for sale, but none for bedrooms. Then, again, only think of a bee-keeper going round with a teaspoon to catch the "exhaling mass" as it drops from his hives "after a cold snap!" It needs not a "Mr. T. to ring the death knell" of any such contrivance, for the intelligent bee-keepers of Canada will never suffer it to live outside of the apiary of Mr. H. Talk of the "exhaling mass occupying one-sixth of the space" in a properly ventilated hive! I venture to say that from the time my bees were housed last fall until they were taken out this spring, that Mr. H. could not have found one drop of moisture in the hives. The bees were all dry and comfortable as in any well ventilated apartment. In concluding, Mr. H. makes the very fair admission that he is experimenting, which is the most important truth his article contains.

The remarks made by Mr. H. concerning my "celebrated wedge shape top piece" of comb frames, relate to a side issue, which this is not the place to discuss. I am, however, quite at a loss to understand how Mr. H. is prepared to prove "that it was in use before I ever conceived the idea of getting up a hive," as such an idea was conceived many years before I ever saw Mr. H. or he saw me. And if I have not the sole right to it, how is it that Mr. H. so readily abandoned it when informed that he must not introduce it into his hive.

J. H. THOMAS.

Brooklyn, April 9th.

BEES STORING HONEY.—R. F. Henry, Fond du Lac, Wis., says that his bees never failed to store honey in boxes when kept in hives one foot square. He thinks the trouble generally arises from having hives too large.

FEEDING BEES IN WINTER.—The following passage from *Galignani* will interest those of our readers who keep bees:—"M. Masso, an Italian agriculturist, has discovered an excellent way of feeding bees in winter. These insects, it seems are exceedingly fond of rape oilcake, a fact that M. Masso discovered, on finding several sacks, in which he kept some, pierced with holes by the bees in order to get at the contents. He then put some on plates near the hives, and found the bees regularly busy making their bails of provisions and stowing them away; and they went on so until the flowers re-appeared in spring. M. Masso observed that his swarms were never in a more prosperous condition than after having been fed for some time in this way."

Entomology.

Egg Parasites of the Tent Caterpillar.

In our last issue, we referred to a letter handed us by Professor Buckland, respecting the eggs of the well known Tent caterpillar. The writer stated that with the aid of a glass he had observed "the interior surface" of a nest of these eggs "teem with life foreign to the nest, so small as to require several seconds of active locomotion to cross the surface of one of the eggs."

An article by Dr. Packard, in the November No. of the *Practical Entomologist*, throws some light upon this interesting subject. He states that he "detected on the inner side of a bunch of these eggs, a minute Ichneumon fly, or *Platygaster*," which he put away for future examination. He afterwards discovered that "several more of the parasites had appeared, and that nearly all the eggs were tenanted by these minute flies either in a chrysalis or perfect state, showing how much is done by these invaluable, as they are infinitesimal, friends of the farmer, in staying the undue increase of noxious insects."

"This minute insect—he adds—is only four one-hundredths of an inch in length." "Late in June, in New England, just as the moth has finished laying her eggs, numbers of our friendly flies appear and bore through the egg-shell of the moth to deposit within, a tiny egg. The egg hatches, and the microscopic grub ensconces itself in a less vital part of the growing tent-caterpillar, in the fatty matter on the back of the

worm, and gradually exhausts the life of the caterpillar, so that it dies before being large enough to hatch. Upon opening the egg in the fall of the year, instead of the young caterpillar just ready to eat its way through the egg-shell, we find an insect friend with its head in the largest end of the shell, which faces outward, and in the autumn a few hatch out. But it is probable that a larger number are born in the early summer."

The minute organisms which our correspondent observed in the eggs he was inspecting, were in all probability specimens of this parasite in an early stage of their growth. Should he detect any more, we should be glad of specimens for examination, the eggs of the nests that we have found on our own apple-trees, being apparently unattended by this tiny parasite.

It has long been known that a very similar ichneumon pierces the eggs of the canker-worm moth, (*Antispilera cernata*, Peck). Sometimes every egg out of a cluster of about a hundred will be found to be thus punctured, and each of them will produce a friendly Ichneumon instead of a pestilent caterpillar. Thus wonderful are the provisions of Nature for keeping within due bounds all the members of her kingdom! Her laws, assuredly, would be all-sufficient for the purpose, were it not that man, having his own ends in view, breaks through her established rules, and creates anarchy and confusion where all before had been harmony and order.

The Trichina Disease.

Trichina Spiralis is a name which has recently appeared so frequently in newspaper paragraphs, in connection with the description of a very painful and, in many cases, fatal disease, that it has occurred to me that a short account of the natural history of the animal might not be without its interest and practical value at the present time.

The *Trichina Spiralis* is one of those animals known as entozoa—parasites that live in the bodies of higher animals, occupying them as human beings occupy a continent or territory. Entozoa are, however, migratory in their habits, and pass from one animal to another in order to complete the cycle of their existence. This migration is, in fact, a necessary condition of their development, for, if confined to the body of a single animal, they die without reproducing their kind. The group is very numerous, the animals constituting many distinct families, differing much in their external form and development.

The life history of many of these entozoa is involved in much obscurity, but that of *Trichina spiralis* is well known. The animal was first discovered in its undeveloped, or what is usually termed its larval state, existing in the muscle (or flesh) of many animals, more particularly the human and the porcine animal, or, in plainer terms, in man and the pig, who have the mutual honor of affording "happy hunting grounds" to this most delicate monster.

The accompanying engraving, carefully drawn on a magnified scale of 200 diameters, by my friend Mr. Draper, shows the condition of the trichina as existing in the flesh of the pig, and may also be taken as an equally correct representation of the parasites as they sometimes occur in almost countless thousands in the flesh of man. They appear as small worms, spirally coiled up in globular cysts, which, however, are so small as only to appear minute specks to the naked eye. In this condition the animal has a proper digestive apparatus, and obviously feeds on sustenance derived from the body of its "host." If a portion of pigs' flesh infested with these spirally-coiled trichinae be eaten by man, the animals are not destroyed, but immediately pass into a higher stage of development in their new abode, and become mature or perfect animals in two days; on the sixth day these mature trichinae lay eggs, which hatch speedily, and give rise to young embryos, that immediately bore their way through the walls of the intestines, and all other softer tissues in the way, until at last they reach the muscles, where they coil up into the spiral form, from whence they have derived the name of *T. spiralis*, and in fourteen days acquire their full larval size. If the muscles become infested with great numbers of these parasites, an almost complete disorganization of the tissue, and a consequent inability to move the part, result from their presence. The migration of the trichina through the body of man from diseased pork, that has been eaten is often