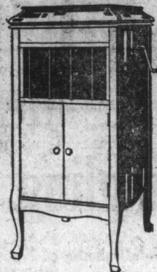


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The Predacious Insect

W. C. MOTLEY.

To-day I have witnessed three tragically interesting scenes: one in which a bald faced (or black) hornet captured and dined off a house fly, another in which a hunting spider stalked, killed, and ate a moth, and a third in which a shad fly was killed and likewise eaten by a species of stink bug which has been especially prevalent in the southern districts of British Columbia during the past two summers.

The insect world forms an intensely interesting realm for investigation, and the most casual student cannot fail to be amazed over the amount of slaughter that occurs among its inhabitants. The spirit of blood-thirstiness appears to be the ruling passion. Cannibalism runs rife. Just as it is in the animal kingdom, it is a case of "dog eat dog," and one species either preys upon the other continually or else uses it for wholly selfish and diabolical ends. Even though the insect appears beautiful when placed under the microscope or other high power glass, its instincts are wholly devilish and beastly, and its activities are destructive in the extreme except in those comparatively few exceptions where this destructiveness happens to be to our advantage.

Just which is the most blood-thirsty of the purely predaceous species is a question I am not prepared to answer; neither would I care to express an opinion as to which is the most destructive. The wood boring beetles cause enormous annual losses in our forests and it is asserted by entomologists that, great as is the waste caused by fires, it is in no way comparable to that caused by those pests which prey upon standing timber.

Likewise, the farmer is fully conversant with the work of such pests as cutworms, weevils, and plant lice, and the host of kindred afflictions which he must fight, just as is the stockman who must contend against the depredations of bot flies, warbles, and ticks. All these, as well as others contrive in some way to make continual nuisances of themselves, despite the fact that they were originally placed here to assist in maintaining the balance of nature which man has destroyed. Ticks alone take a terrible toll among game birds and the smaller animals, while warbles raise havoc with the well-being of larger game.

This phase of the subject, however, is not one which I wish either to discuss or speculate upon just now. Rather, I would attempt to draw parallels between the animal and insect worlds by discussing briefly some instances in which I have seen members of one species prey upon the other. It is the law of the wild; the fundamental principle underlying that balancing of nature already mentioned, and which holds in check the abnormal growth of numerical increase of all life forms, be they vegetable, insect, or mammalian.

I did not see the hornet capture the house fly, although the same performance has been enacted before my eyes on other occasions in which the participants were yellow jackets and certain lace winged flies. Without doubt the unlucky fly was caught while on the wing and stung to insensibility, after which his captor repaired to the granum leaf on my verandah. The hornet suspended himself downward from the edge of the leaf by means of his two hind legs, in which position he proceeded to make his prey still further hors de combat. First, the wings were quickly bitten off at their roots, the abdomen was next severed from the thorax and allowed to fall away, after which the remorseless slayer proceeded on his way with his victim's head and thorax clutched in a close embrace.

The contest between the spider and the moth was nothing more than a deadly and unevenly contested wrestling match in which the moth was taken completely unawares. His assailant crept upon him, sprang upon his back and severely wounded his thorax, and then slithered off to a safe distance from which he watched his victim's death struggles, gloating the while. From time to time, it appeared as though the unfortunate moth would resurrect sufficient strength to make good his escape, but on each occasion the watchful spider "spread-eagled" his victim, lacerated its thorax still further (an insect's body is divided into three sections: the head, thorax, and abdomen) and then retired again to await further developments.

After several attacks had been made the moth merely fluttered, whereupon the spider proceeded to feast upon his prey. When fully gorged, he trotted several inches away and then returned again to nip the carcass without actually feeding further; it being quite apparent that he was reluctant to leave the spot although he could eat no more. Eventually, however, he strolled away, and doubtless repaired to some secluded and dark crevice where he could sleep off his orgy.

The third episode—that of the stink bug and shad fly—hardly warrants description, despite the fact that I watched it in its entirety through a 15-power triple apertur magnifier. The same sordid tragedy was enacted, and different only in that the senseless and insane shad fly was more

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quickly overcome. At the finish, nothing remained but the head, wings, and abdominal sheath from which all juices had been sucked. This coupled with the beastly odor of the stink bug, constituted a performance which was repulsive in the extreme, and had I not been studying the habits of these bugs for a purpose, doubtless the victor would have been prevented from scuttling away into the crack which eventually swallowed him.

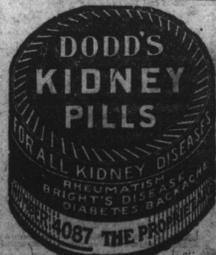
It does not necessarily follow, though, that just because the weak were overcome by the strong in the instances mentioned this is arbitrary, for there are exceptions to all cases. Those who are familiar with the life histories of wild animals are well aware that the weasel—small though he is—is a formidable antagonist to animals several times his size. It frequently happens that dexterity in attack against some vulnerable spot which is difficult of defense, is the deciding factor in some mortal combat and there are many instances to prove that this is so in the insect world.

We have in this country a species of water beetle which is about an inch in length, and which is so colored that when lying on swampy ground he closely resembles a bronze-green colored pebble. So much for natural camouflage, but it is not entirely this disguise nor is it altogether his strength that makes him the deadly menace to the well being of fully grown toads and frogs that he is. On the contrary, it is that instinct which impels him to seize the amphibian on the abdominal region immediately on the groin that raises havoc among the toad and frog population, and which forces them to wait—even though they starve—while the insect forces himself on their life blood. These beetles seize their prey unexpectedly and by means of their clawlike feet, pierce the skin with razor-like mandibles, and while sucking the blood, they inject draughts of saliva which apparently paralyze their victims. Toads do not ordinarily frequent swampy lands, except during the breeding season and when laying their eggs, but when they do they pay terrible toll to the predaceous species of beetles mentioned.

For grim tenacity of purpose, however, I have never seen anything more interesting and at the same time unusual than an instance I came upon one day late this spring. While walking down a railroad track, I chanced upon a large spider, to the hind leg of which a small red ant had fastened itself. The spider was of such size that with legs outstretched, it would cover a fifty cent piece, while the ant was probably no longer than a quarter of an inch.

I watched the performance for some time as the spider dragged himself along, and it occurred to me that while the ant was probably quite capable of severing the spider's leg completely, its actions had a deeper significance. Had the situation been reversed, doubtless the spider would have proven itself to be more than a match for its small antagonist and no doubt the ant was fully aware of this. Consequently, it seized the big fellow at what appeared to be a safe point and evidently intended to wear him down until, being tried with the unaccustomed exertion, he would be less dangerous to attack in a more vital spot. If my surmise was correct—for unfortunately I had not the time to await the outcome—I was witnessing one of those evidences of ant strategy and generalship which doubtless was a factor leading to that dictum contained in Holy Writ: "Go to the ant, thou sluggard. Consider her ways and be wise."

Thus far, we have considered briefly several instances in which insects have been seen to overcome their prey by means of actual combat, but there are other ways in which they accomplish a fell purpose



and the animal world contains no parallels of which I am aware at the moment.

During the summers of 1923-1924, the forest and tent caterpillars became such a plague that the situation was alarming to contemplate. Whole hillsides were literally stripped of their foliage, and fruit trees were denuded of leaves. The pests swarmed on railroad tracks to such an extent that trains skidded on the grades; this being especially the case during exceptionally warm days when the ground swarmed with them. This summer, the situation is wholly different. The caterpillars still exist, but only in normal numbers, and the method by which Nature exercises her means of control is interesting as well as instructive. It illustrates alike the way by means of which surplus numbers are exterminated and in which one species uses another for selfish purposes.

Last summer I caught and examined many caterpillars, upon the heads of which a single parasite egg had been laid. The egg was oval in shape, white, and about 3-64 of an inch in length. On several occasions I attempted to remove these eggs and had considerable difficulty due to the security with which they were fastened down. These had been laid by other insects which prey upon tent caterpillars; the idea being that when the egg matures into larva form, the caterpillar's body will constitute a food supply sufficient to last the grub until it becomes matured.

This is a method by means of which wasps provide food for their offspring, and constitutes a method of pest control which has resulted in these insects being classed as beneficial. The cicada, or harvest bug, is one species frequently used by wasps as a host for their larva and spiders are also used for the same purpose—possibly to a greater extent. Females have been observed to capture a spider, sting it, and then place it in a cell, after which the egg was laid on its body; the victim eventually being sealed into its prison to prevent either escape or detection by other insects.

One would naturally expect that the spider would be killed outright, but the wasp is too clever for that. Vespa knows, just as do we, that the moment any living body is killed, mildew or decay sets in. Hence, she stings the spider or other insect until it reaches a comatose state from which it does not recover before being devoured by the grub. What she desires is a fresh meat supply for her offspring, and she has such a nicety of control over her stinging organs that practically any degree of poisoning desired is possible of attainment. The amount of food laid up "in cold storage" depends very largely upon the size of the spiders available. Sometimes as many as six of these insects, or more properly, animals of the order (Arachnida), are stored away; the wasp egg being laid upon the top spider.

Somewhat the same thing occurs in the case of the tent caterpillars. These are preyed upon by several flies of the orders Diptera and Hymenoptera which lay eggs, sometimes on the caterpillar itself as noted, and sometimes in the eggs of the caterpillar moth. When the parasite eggs develop into grubs, both caterpillars and eggs are destroyed. Of course, birds and parasitic diseases play their respective parts; the latter being of such a nature that the internal organs of the caterpillar are reduced to a dark brown slime with the result that development of the moth, or breeding stage, is arrested.

Such are the characteristics of insects, and while whole volumes have been written on the subject, much remains yet to be known. Sufficient has been discovered, however, to indicate that while predatory animals cause enormous losses among valuable animal and bird species, the slaughter that goes on in the insect world is incalculable. For downright cold-blooded ferocity, there is nothing in nature to compare with that of those beetles, bugs, and flies which are equipped with mandibles for lacerating and disemboweling their prey. Likewise, those species which lay their eggs in living bodies, whether they be other insects or animals, are entirely in a diabolical class by themselves. Bloodsuckers such as mosquitoes, black flies, ticks, some of the more minute as to be microscopic—disseminators of disease and suffering as well as death to the whole universe of life forms in which there are no exceptions—that is the insect world as I have observed it—Rod and Gun in Canada.

An Old Man's View

"We have a wee bit country here o' our ain in Ulster now, and it has a gran' chance. We can build ships w' anybody and that an' a when o' hen eggs and prattles is about a' we have to sell. I dinna think we're makin' much of the tax on dolls' eyelashers, an' if I had my will I'd throw open oor borders to the wide world, and gie the share o' our bit bacon, a farl o' oaten bread, a blade o' duff, a sup o' buttermilk, and a prattle or two." He humorously added, "and maybe they might buy a when ships to tak' them back the whar they come frae." "Grand!" in the Northern Constitution.

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**Auto Fees in
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WILL BE 20 PER CENT LESS THAN EXISTING RATES.

Fredrickton, N.B., Dec. 5.—Automobile license fees in New Brunswick for 1926 will be about 20 per cent less than the existing rates, in view of the introduction of the gasoline tax, Hon. D. A. Stewart, Minister of Public Works, said to-day.

The reduction in license fees will put the new scale back at about the same figure that existed before a surcharge was inaugurated a couple of years ago to pay for the patrol system of the highways which was then introduced. It had been expected that a somewhat greater reduction would be made with the introduction of the gasoline tax, but the Minister of Public Works said that it would be unsafe to make a further cut until experience shows what the gasoline tax will yield.

The gasoline tax, Hon. Mr. Stewart stated, will in all probability be three cents per gallon, which, he said, is the figure generally adopted by other provinces. Some change in the mode of collecting automobile license fees is under consideration and it is expected when the new scale is finally adopted some provision will be made whereby the burden on the owners of the smaller cars will be lightened and the owners of the big, high powered and heavy cars will pay a larger portion of the total receipts from motor vehicle license fees, which now amount

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