

of the host, and finally reached full size and passed into the pupa stage, forming the little oval silk cocoons scattered over the body of the caterpillar. Such infested caterpillars never develop into the moth form. Their vitality has been sapped, and their life-cycle broken, they can serve no further purpose in the economy of life better than to aid in the development of forms, braconid parasitic-flies, that in turn will infect others of their kind.

Some months ago another little braconid was mentioned in these columns, the *Lysiphlebus tritici*, which is parasitic upon aphids. To this little fly belongs in a large measure the credit of holding in check the southern grain aphid. And who can tell what debts we owe to the little *Apanteles* for holding in subjection such large ravenous forms as the *Sphinxes*?

Compare the life history and work of the *Apanteles* with other parasitic insects, as the *Pimpla* and the *Limneria*, parasitic on tent-caterpillars and tussock-moth caterpillars; the *Ophion*, parasitic on the emperor and American silkworm moths; and the long-tailed ichneumon-fly, *Thalessa lunator*, parasitic upon the wood-boring larva of the Pigeon Horntail. Comparison might also be made with bot-flies of the horse and the sheep, and with the marble-fly of the ox. The economic importance of each of these forms is considerable and should receive some attention in nature-study.

GROUND-BEETLES.

Under sticks and stones one frequently finds small black beetles with glossy corrugated wing-covers, which in some species are marked with rows of dots. They all have long legs, and make good use of them both in escaping from danger and pursuing their prey. As a group they are called ground-beetles.

Several species of ground-beetles are found in gardens, where, in both the larval and adult form, they prey upon cutworms, grubs, etc.

Figure 2 pictures two of our larger ground-beetles. The upper one is commonly called the *Calosoma* beetle, and the picture tells something of its taste and ability. An European species of the *Calosoma*, of almost the same shape, has been imported into America to feed on the gypsy and brown-tail moths, and has been distributed from some centres in the Maritime Provinces. Another

ground-beetle, *Lebia grandis*, with a yellowish-red head and thorax and bright blue wing-covers, has been found to be an enemy to the eggs and larvae

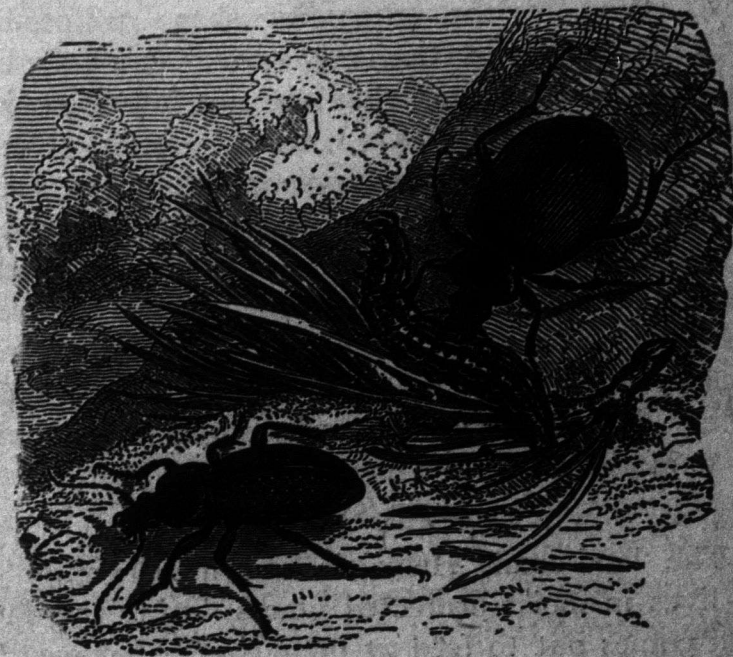


Fig. 2. Ground-Beetles—a *Calosoma*, above, feeding on a cutworm; below a Fiery Hunter.

of the Colorado potato-beetle. The other beetle pictured in Figure 2 is the Fiery-Hunter. It is easily recognized by the rows of reddish or copper-colored pits on the wing-covers. During October

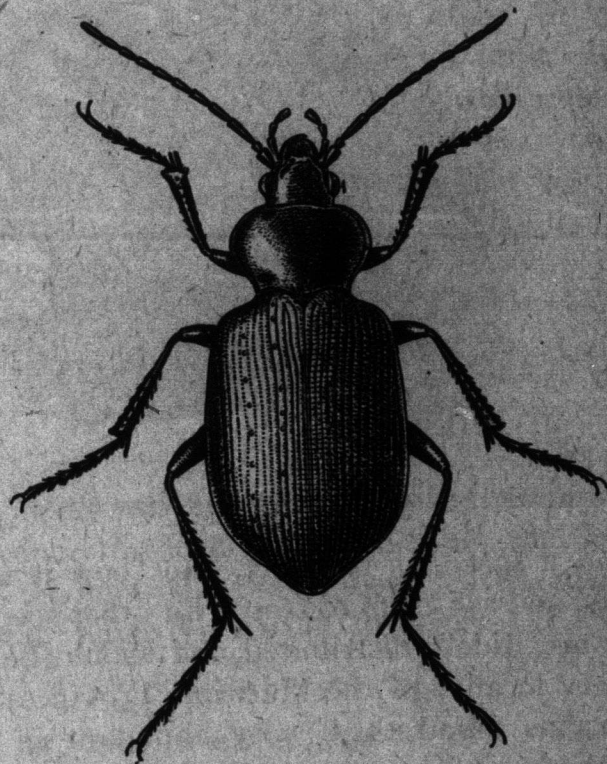


Fig. 3. European ground-beetle (*Calosoma Sycophanta*) imported to prey on the gypsy and brown-tail moths.

and November the writer has found this species very plentiful in the soft rotten wood of decaying hardwood logs and stumps. Do they winter in such places?