



AUDITORIUM, A.-Y.-P. EXPOSITION.

a very striking animal; however, when feeding amongst the leaves and branches, in spite of its bold coloring, it is not at all conspicuous. When so situated, its broken masses of green and brown, and their soft shadings, harmonize so closely with the moving leaves and brown branches that it becomes very difficult to detect it by ordinary methods of observation; hence its apparently conspicuous coloring serves in reality to make it inconspicuous, and so protects it from the eyes of its enemies.

It sometimes happens, though, that the caterpillar is discovered by an enemy and it is then that the object of its strange disguise becomes apparent. At the slightest touch, when feeding on the tree, the larva instantly turns its repulsive mask towards the source of irritation, and, so to speak, glares wildly at the enemy, the ring of the body bearing the eye-spots being distended to its fullest extent. At a touch from the opposite side round goes the "face" in that direction, bearing the same terrifying aspect, which, by its fixed glare, seems to plainly imply some considerable danger to the enemy if it is further interfered with.

How effective this quick movement of the head and the sudden presentation of a facial monstrosity are as a protective device may be readily appreciated by the effect it has upon a human being who touches one of these larva for the first time; rarely will he touch it again without an assurance that no harm will come from the venture. Let us imagine, then, that some bird or small animal meets one of these caterpillars resting or feeding amongst the branches, and, on account of its coloring, is doubtful whether it would make a toothsome morsel. It approaches carefully, and probably gives the suspicious object a preliminary prod, just as man himself would do. Then the caterpillar suddenly faces round with that apparently outraged stare, as if to say, "Who dares?" and the terrified foe takes to flight.

When a healthy larva is feeding, a sudden touch may often produce a further surprise for the enemy. At the moment the terrifying mask is presented to view the forked tail is raised, and from its two prongs the pink threads previously referred to are suddenly pro-

truded to a great length, and lashed like whips over the caterpillar's head and back.

Now it happens that the worst foes with which the larva of the Puss Moth has to contend are ichneumon flies—parasite flies which boldly attack the caterpillar and deposit their eggs upon it, usually behind its head. From the eggs of the ichneumon little grubs emerge, which are parasitic upon the caterpillar, sucking its juices from the moment they break through the egg-shell, and adhering firmly afterwards. The caterpillar feeds ravenously, but the appetites of its visitors increase also. Eventually the caterpillar attains its full growth and spins its cocoon, yet it is never destined to become a moth, for the ichneumon grubs then completely devour the soft parts of their host, and attain their full growth, making their own cocoons within that formed by the caterpillar, thus utilizing the caterpillar's home as their own.

The ichneumon fly is, therefore, a formidable enemy that has to be dealt with promptly when it appears. Whether the caterpillar's remarkable simulation of a face has any influence on the ichneumon fly is a doubtful point; probably that feature is only of service in scaring larger foes, including man. Its tail-whips, however, have probably been developed purely as a means of reaching the back of its head, where the ichneumon fly usually makes its attack; for these or-

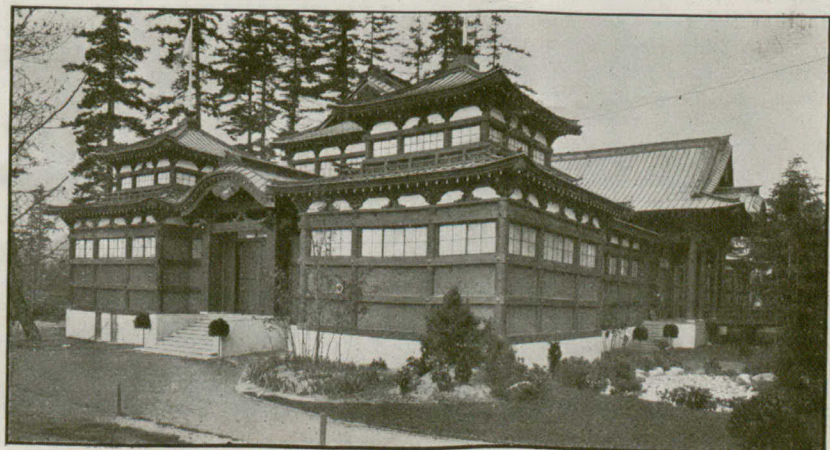
gans are really the caterpillar's last pair of clasper legs modified and evolved into tube-like structures and endowed with delicate muscles, which allow of the sudden protrusion and contraction of the pink threads. It is curious, too, that these whips should be of a color similar to that of its mask, a fact which seems to imply that the color may have some influence on the particular enemies which the insect has to combat. In this connection, too, we have to remember that colors and forms which we may regard as merely curious or quaint may affect other animals in a very different way, and have a significance which they have not for man. Especially is this true of insects, the structure of whose eyes is so very unlike our own. We should never overlook the fact that peculiarities in an organism that appear to us useless, and sometimes absurd, may be of great practical value to the creature possessing them.

So far as is known, the tail-whips are perfectly harmless to the ichneumon, and only serve to drive it away, just as a cow removes flies from its back by the switch of its tail. Nevertheless, the parasitic ichneumon takes considerable risk in making its attack upon the caterpillar.

In the lower part of the red mask is a transverse slit, connected with a gland in which a strong solution of formic acid is stored. Professor Poulton, who has made many interesting experiments with this species of caterpillar, states that this solution, in a mature larva, contains a proportion of acid "as high as 40 per cent.," which is a much greater percentage than that found in the stings of nettles, wasps, hornets, bees, etc.

This irritant fluid the larva is able to eject as a fine spray when it directs its "face" towards an enemy. I would suggest that the mask may be a means of holding the attention of the enemy in the right direction to receive this shower of acid. Of the effect of this liquid, we have professor Poulton's statement that he has "seen a marmot and a lizard effected by it," and has himself "twice experienced sharp pain as the result of receiving a very small quantity in the eye."

It follows, therefore, that the ichneumon fly has also a formidable foe



JAPANESE BUILDING, A.-Y.-P. EXPOSITION.