

APPENDIX II.

Extract from Report of General C. C. Andrews, U. S. Minister at Stockholm, 1877.

The forests' greatest enemies in the animal kingdom are its smallest ones, so far as the coniferous trees are concerned. The forest insects which, because of their insignificant size, are often overlooked by uninformed persons, do sometimes, when conditions have been especially favourable for their multiplication to enormous numbers, cause great ravages, and can then destroy not only extensive tree plantations but also whole forests. Among the insects which appear to have been most destructive in the Swedish forests, belong different species of beetles, such as bark-beetles, pine weevils, pine-beetles and caterpillars. The bark-beetles are called bark-beetles because they burrow into the bark of trees and deposit their eggs there, after which the larvæ themselves make burrows in different directions in the bark, in consequence of which the tree dies. The eight-toothed bark-beetle (*Tomicus typographus*) deserves special attention, as it attacks the spruce forests, and during years of ravages causes spruce drought on a large scale; also the twelve-toothed bark-beetle (*T. stenographus*), which usually prefers pine trees.

A very small bark-beetle, the six-toothed (*T. chalcographus*), is often found together with the common eight-toothed beetle, and makes pretty star-shaped tunnels in the bark. The common pine weevil (*Hyllobius abietis*) makes great havoc on coniferous plantations, but can, with some labour, be exterminated. The common pine-beetle (*Hylesinus pini-perda*), which at first sight much resembles the common bark-beetle, is among the most widely spread of all the forest's injurious insects. Like the bark-beetle, they live as larvæ in the bark of trees, and cause not a little harm when they become fully developed and devour the marrow of the youngest pine shoots, which thereafter dwindle away. They do not immediately kill the trees, but to a great extent retard their growth, and the top of the pines acquire a peculiar appearance, as if the side shoots had been cut off, and this is the reason