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supplies. Business must go on; wheat, bacon, cheese and other exportable farm products must move freely or our agriculture would be seriously handicapped. Manufactured articles must be placed on the market or the country would come face to face with commercial disaster, and the wheels would stop. When purchasing Victory Bonds, the buyer is making a first-class investment, for the security is good and the rate of interest compares very favorably with that now being realized on investments with similar freedom from risk. Bonds were a new thing to many when the last loan was floated, but that strangeness has been dissipated and practically all who give the matter any attention, realize that it is our imperative duty to invest in the country's resources in order that we may carry on to the end. A period of saving is now in our country which we may be prepared to answer effectively our country's call when the next appeal is made.

Nature's Diary.

A. B. KLUUGH, M. A.

During the next two weeks people living in districts in which the White-marked Tussock Moth was common last year should make every effort to remove as many egg-masses of this pest as possible, as the eggs will begin to hatch about the end of May.

The White-marked Tussock Moth is chiefly injurious to shade-trees, particularly to Soft Maples, Elms and Horse Chestnuts, but it also sometimes attacks the Apple, Pear, Plum, Cherry, Black Walnut and Hickory. It is usually most destructive in cities, towns and large villages, the reason apparently being that in these places House Sparrows are abundant and this bird not only does not feed on the Tussock caterpillars itself but has driven away many native birds which do feed upon this pest.

The life-history of the White-marked Tussock Moth is as follows: From the eggs, which hatch at the end of May or early in June, there emerges a tiny caterpillar, one-twelfth of an inch in length, very pale yellow in color and covered with long irregular hairs. The caterpillars feed upon the tender tissues of the expanding leaves, grow, and molt several times. From the time they are about half grown until they are mature they have the following appearance: The head is bright orange and at the opposite end of the body is a single tuft of dark chestnut tipped with black. On the back are four white, or pale yellowish, dense, brush-like tufts. Along the back, except in the region occupied by the four white tufts, is a black line, and in the centre of this

on the sixth and seventh segments of the abdomen, are two red projections. Below this black line is a yellow stripe and below this a pearl gray stripe, bordered beneath by a fine black line. Below this line is a pale yellow stripe. The under surface is a pale green. In addition to the tufts mentioned above there are many long, bristly hairs on the body.

When the caterpillars are abundant they often completely defoliate the trees by eating all the substance of the leaves except the midrib and principal veins.

When the larvæ become mature, which in Ontario is about the first of August, they descend the trees and spin their cocoons in crevices in the bark of the trunk and main limbs, or on the underside of a branch just at the point at which it leaves a larger limb. They make their cocoons of silk interwoven with the long hairs which they pull from their bodies.

As soon as the cocoon is completed the caterpillar becomes shorter and thicker and gradually changes to a pupa, which at first is whitish but soon becomes a very dark brown color.

The pupal stage lasts from ten to fifteen days, at the end of which time the adults emerge. The male is a gray moth with wings about three-quarters of an inch across, the fore-wings having a small white spot, (hence the name of the species) and with feathery antennae, (feelers). The female is wingless and on emerging she crawls out upon her cocoon and deposits her 200 to 500 eggs upon it. The eggs are laid in a mass and they



Fig. 1—Cocoon of Pimpla. Fig. 2—Pimpla Inquisitor, female.

are covered with a viscid, creamy-white substance which hardens on exposure to the air and which not only holds the eggs in place but protects them against the weather. After the eggs are laid the female falls to the ground and dies. The eggs hatch the following spring and the life-history is repeated.

In Canada there is but one brood of this species per year, though further south there are two or three broods.

There is only really one feasible way of combatting the Tussock Moth, and that is to remove and burn the egg-masses. This may be done any time from September to the end of May. They are very easily removed either by hand or with a scraper on the end of a pole.

There is, however, one very important point to bear in mind in removing these egg-masses and that is—leave alone all cocoons which do not bear egg-masses. The reason for this injunction is that the cocoons which do not bear egg-masses may contain the cocoons of a little Hymenopterous parasite of the Tussock caterpillar. Some of the cocoons without egg-masses are those from which males have emerged and can do no harm, but a good many will be found to contain packets of little cocoons such as the packet shown cut across in Fig. 1. These are the cocoons of the commonest parasite of the Tussock caterpillar, which is a little fly-like insect known as Pimpla inquisitor, one of the Ichneumonidae, the adult female of which is shown in Fig. 2.

It is really upon the activities of parasitic insects such as Pimpla that we depend for checking the inordinate increase in numbers of injurious insects. In this respect birds count for a good deal, spraying and other efforts of man count for a good deal, but both are really only adjuncts to the work of the parasites.

The life-history of Pimpla is as follows: The female on emerging from her cocoon seeks out a Tussock caterpillar, or the larva of some other moth, as Pimpla is also parasitic upon several other species. If the caterpillar is still crawling about she inserts her ovipositor, (the projection shown in the figure at the posterior end of her body) into the body of the caterpillar, and lays her eggs in the tissues of the host. These eggs hatch into little grub-like larvæ which feed on the juices of the caterpillar. If the caterpillar has spun its cocoon Pimpla thrusts her ovipositor through the cocoon and lays her eggs on the body of the caterpillar, and when they hatch, which they do in a few hours, the larvæ suck the juices of the caterpillar. The result is that the caterpillar dies, either before changing to a pupa or immediately afterwards. The larvæ of Pimpla then make their little cocoons within the cocoon of the Tussock.

How Sandy Views Farming.

BY SANDY FRASER.

I hae just been readin' a wee editorial in the last "Farmer's Advocate" on the subject o' "Making Capital to Farm". It mentions the fact that a great many men say, when the subject of farming comes up, "I intend to return to the farm when I hae made enough money to start on a good footing." And oor editor is wonderin' what can the matter be with the business when a man has to hae enough money to live on before he can afford the luxury o' warkin' sixteen hours a day on a farm, wi' no holidays and half-time on Sundays. It reminds me o' a chap I wis pretty weel acquainted wi' at one time in my life. He wis quite a talker and could tell ye something about everything. One day he says to me, says he, "Sandy, I'm gaein' to try the wheat-ramin' in the West. There's mair money to be made there in one year than can be made here in five and when I've made enough sae that I can work or not, juist

as I feel like it, I'll be comin' back East again an' settlin' doon on a farm here that I'll rin in a way that it ought to be run, for I'll hae the money to do it." I didna' try to change his mind, for I had an idea that experience would do it better than I could, so he went off tae Manitoba where he got some land for little or naething in a place where the railroad was sure to go through in a couple o' years at the outside. It's a guid many years noo since he left his home here but he's still in the "golden West", as he used to call it, and he's still about as far frae a railroad as his grandfather wis when he cam' oot to this country first. Frae what I hae heard the only "up to the average" crop he has had in that time has been the harvest o' knowledge an' experience he has reaped, but na doot that has paid him weel for the loss of his iither crops. However he hasn't come back yet to show us how to rin a farm in the way it can be done with money made in some iither place or in anither business. To my mind he is one mair proof o' the rule that success in the making o' money, or almaist anything else for the matter o' that, depends mair on the man than it does on the job. There's men who don't seem to hae the right material in them to push them ahead in ony line, and again there seems to be very few trades or professions or jobs o' ony kind that someone hasn't made money at, or at least got a guid comfortable living by them. And money can be made at farming by ony man wi' the average amount o' brains, if he's willing tae pay the price. And that price is his undivided time an attention given to his business. He's got to wark wi' his head as weel as his hands and wi' his hands as weel as his head. The city merchant or manufacturer has no advantage over us farmers in this respect. A wee bit o' carelessness or ignorance and they go under like onybody else. They say that ninety-five per cent. o' the business men of the towns and cities fail at some time or iither in their careers, so if that's the case there's still something to be said for the farm as a means o' support for a man an' his wife, wi' maybe a few boys an' girls thrown in as weel. I dinna think ninety-five per cent. o' the farmers o' this country hae failed, onyway. And if a considerable number o' them are able to make enough to put a little to the good every year, besides having lived comfortably all the time, isn't it pretty good proof that the rest o' us who hae the same opportunities can dae as weel? I ken farmers who hae come to this part o' Ontario from the Province o' Quebec, and these men haven't even the advantage o' bein' able to read, but juist the same they hae bought farms here on credit and in the course of a few years have not only paid for them but have bought and paid for farms for twa or three o' their sons. But they didn't dae it by spendin' their time lookin' for an easier job or one that had mair money in it. They had faith in the farm and they showed their faith by their works and the farm didn't go back on them. The trouble wi' a guid many o' us is that we hae the habit o' grumblin' an' findin' fault wi' this an' that an' pretty nearlly everything that comes to us, till we make ourselves believe that we're little short o' martyrs and that if we got what was comin' to us by rights we wouldn't hae to work for oor board an' clothes. I heard a chap say the iither day, when he wis tauld that the price o' cheese had been fixed at twenty-three cents, "Hoot", say he, "it ought to be twice that." An' if it wis raised tae twice that he wad still be dissatisfied and juist as poor in his ain mind as he is the noo. There seem to be twa classes o' farmers these days, when the price o' everything is on the jump. One class pays attention to the rise in price of what they sell, while the iither class look only at the rise in price of what they hae to buy. Since it dinna really mak' ony difference, sae far as the money goes, which side they look at, I'm thinkin' the first-mentioned chaps hae the best o' it. They're comparatively happy, onyway, and they say that happiness is what we're all in search of.

Sure thing, the farm will keep us in food an' clothes an' a little over, if we give it a chance, and what mair can ony iither job dae for us. But it seems tae be the fashion juist noo to be sayin' that farmin' does not pay and there's some sayin' it that never would hae thought o' it if it wisna for somebody else. It's a bad attitude o' mind tae get into and it hae the tendency to mak' us slacken up on oor work. In the lang run, what we are all the time expectin' will come to us, an' if we are continually thinkin' poverty it's poverty we're likely tae get. And while we're doing it the man who is thinkin' an' expectin' prosperity and daein' his wark wi' that end in view, is gettin' tae the top o' the pile while the rest o' us are wonderin' if it's goin' to pay us to mak' the attempt.

Let's quit this howlin' doon oor job. Onybody can dae that sort o' thing. And sae far as I hae heard it's never made a dollar yet for anybody that spent their time at it. They're askin' us what is wrang wi' the farm. There's naething wrang wi' it; but if they asked us what wis the matter wi' some farmers we would hae to gie it up, unless we wad call it mental dyspepsia and let it go at that. It's a disease that takes time to cure but we've found some that got over it a' right. They must hae found some medicine that took the twist oot o' their thinkin'-machine for they seem to be as weel and happy noo as they were miserable and discontented before. Na doot it wis some simple thing that helped them, such as the fresh air an' sunshine treatment, for instance.

Under date of May 2, J. McPherson & Sons, of Grey County, write as follows: "We hae done very little on the land as yet. The frost is not out in lots of places. We hae plowed a little and hae sown oats to-day for the first. Our fall wheat is winter-killed, except for a strip along the fence. There is very little heaving of the clover this spring, but there has been no rain to speak of since the snow went away."

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