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GUARDING FORESTS FROM INSECTS

How Entomologists and Foresters Co-operate in Protecting This Great Natural Resource.

By Dr. J. M. Swains, Dominion Entomologist for Forest Insects.

In dealing with the great natural resources embodied in Canadian forests the forest authorities have to consider not only the economical harvesting and efficient utilization of the crop, but also the protection of the growing trees. The three chief enemies of the forest are fires, fungi and insects, and while opinions differ as to which of the three causes the greatest loss, there is no doubt that the damage due to insects in Eastern Canada and in British Columbia during the past ten years has been very heavy.

The insects which have in recent years been most injurious to Canadian forests are the spruce budworm in Eastern Canada, the western pine bark-beetle in British Columbia; and the larch (or tamarack) sawfly from the Atlantic westward to Saskatchewan. Other injurious insects are: the Douglas fir bark-beetle, the mountain balsam bark-beetle, and the western spruce bark-beetle in British Columbia, the eastern spruce bark-beetle, the bronze birch borer, the birch leaf skeletonizer, the forest tent caterpillar and the white pine weevil which appear, as the names indicate, chiefly from the Prairie Provinces eastward.

Difficult to Fight.

Unlike forest fires, insect attacks are not caused by man and, consequently they are more difficult to fight. Nevertheless the Dominion Government, as part of its work in protecting forest resources, carries on an unending war against this enemy. The campaign is entrusted to the Forest Insects Division of the Entomological Branch of the Department of Agriculture and in carrying on the work the division co-operates with the Forestry Branch of the Department of the Interior and with the provincial forest services.

The two greatest problems thus far attacked are those created by the spruce budworm and western pine bark-beetle. The former is the most serious outbreak of recent years. Since 1910 it has swept over the spruce and balsam fir forests of Eastern Canada and destroyed an immense quantity of pulpwood, estimated by authorities as between 100 million and 200 million cords, or a quantity sufficient to supply our pulp mills for many years at their present rate of consumption. This appalling loss renders it important that we conserve carefully all that remains. The officers of the Division of Forest

Insects have studied the situation minutely throughout Ontario, Quebec and New Brunswick and the final results of their studies with recommendations of methods to be used will be ready for distribution shortly.

Efforts to Control Pests.

The extensive barkbeetle outbreaks in the yellow pine, white pine and lodgepole pine in British Columbia have killed many millions of feet of the best pine timber in the province, and the injury is still spreading in many places where artificial control measures have not yet been undertaken. Extensive control operations carried out by the British Columbia Forest Branch and the Dominion Forestry Branch in co-operation with the Dominion Entomological Branch have resulted in the satisfactory control of these outbreaks over hundreds of square miles of forest lands and in the direct saving of many millions of feet of timber. It should be possible, through an extension of these control measures to check all the remaining pine beetle outbreaks in British Columbia during the next two years.

These insect problems and many others are being investigated by the entomologists of the Division of Forest Insects. The control of forest insect injuries must be based on a knowledge of the habits of insects, the principles of silviculture and the methods of logging employed in the region affected; and, while direct measures, such as modified logging operations, must frequently be employed, the extension of the practice of scientific forestry will largely remove many of the insect and fungus troubles so common now in our timber lands. It is being realized that forest entomology and forest mycology are branches of silviculture and that for the solution of their major problems, foresters, entomologists, mycologists and practical lumbermen must work in co-operation, as they already have been doing, in this country, in the most harmonious and effective way.

The services of our entomologists are available without charge for advice with respect to all forest and other insect injuries, and for more detailed investigation and report in the more serious cases. Reports on the major problems under investigation are published from time to time in the form of bulletins or circulars of the Entomological Branch, Department of Agriculture.

Obtaining Accuracy in Measuring Canada.

The necessity for exact surveys in order to properly develop the natural resources of a country is everywhere recognized and it is the aim of the different organizations entrusted with Canada's surveys to attain as near as possible to absolute accuracy. Every one knows in a general way that in a geodetic survey of a continent or country the surface is mathematically covered by triangles, the triangle being the figure into which every conceivable outline can be divided. Every one knows too that if a mathematician is given the length of one side of a triangle and the angles which the other sides make with that line he can determine the length of the other two sides exactly, and, consequently, the position of the third angle. Since any number of triangles may be built up on the first one, the need of knowing

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is checked by reference at regular intervals to these standards.

Small Chance for Error.

The base line, for the purpose of measurement, is generally divided into kilometre lengths, (about five-eighths of a mile). Posts are placed at twenty-five metre intervals; larger ones at the even fifty-metre lengths, and smaller ones intermediately. A larger post than ordinary is placed at the end of the kilometre stretches. Where the base line passes over ravines, creeks, or shallow lakes, it is necessary to put up bridge work and use longer posts to carry the line. Each kilometre section of the line is measured four times, once in each direction with each of two tapes.

The effort throughout is to have the measurement exact and there is no standard maximum allowance for error. At the same time it may be explained to the general public that today error of measurement in base lines does not exceed one-twentieth of an inch per mile.

A Crocodile Report.

Running railways in India has certain drawbacks. Witness this report that the traffic superintendent of the Bengal Northwestern Railway at Sonpur recently received from the native station master at Koparia:

"Resident Engineer Mansi saw other day a crocodile here in front of the station borrow pit, which contains water to a height of about ten feet and is broad 40 feet; connected it is, become now only with Kosi River flood water. Two small and one their mother crocodile lie in it.

"Last night one big crocodile came on the station line at north end of platform and was lying. Pointsman Kunda Mail was going for reception of forty down that he narrowly escape of its attack. Traffic inspector saw some days ago the crocodile injury to a kid, but could not shoot for it went under the water.

"This is of course dangerous to public passengers who remain at station during night, unconsciously sleeping down on platform as well as to staff and their family and children. Please arrange!"

We hope that the matter has been arranged by this time, and that the mother crocodile and her two babies are not sitting on the platform, shedding crocodile tears for the station master.

Minard's Liniment for Dandruff.

Soon Put Right.

Pat Macree was in search of a new house, and at last, after many weary months of unsuccessful search, he found one which he thought would be just the thing.

Accordingly he went off at once to see the agent about it.

That gentleman at once gave him the key and accompanied him on a tour of inspection round the premises. Looking out of one of the back windows Pat remarked that the railway ran rather close to the house.

"The trains do make rather a noise," the agent admitted. "They may interfere with your sleep at first, but you'll get accustomed to that after the first two nights."

"Arrah, shure, O'll not want to get accustomed to it at all, sir, answered Pat, "cause OI can easily go an' sleep in me aunt's house thim couple o' nights!"

Dignified, But Funny.

Little Dorothy's mother was showing her new dress to some of the neighbors. "Oh, mother, what a pretty dress!" cried Dorothy. "Do wear it to-night." "No, darling," said the mother, "not to-night. This is to wear at the party next week when ladies and gentlemen come to dinner." Dorothy showed her disappointment. "But, mother," she said, suddenly, "can't we pretend just for this evening that daddy is a gentleman?"

Not a Family Pet.

"Jim, to what family does the whale belong?" asked the teacher. "I dunno," said Jim, awaking from a sound sleep, "no family in our neighborhood owns a whale."

A rather awkward looking individual went into an ice cream parlor the other day and bought an ice cream cone. He went out on the sidewalk to eat it. Presently he reappeared with the cone emptied of the cream, and, handing it to the astonished clerk, said: "Thank you for the vase."

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"The Man of Perfect Service."

From Serbia comes an interesting account of a popular hero who lives in one of the country districts. He is a peasant named Marko, but he is known far and wide as "The Man of Perfect Service."

"With nine of his peasant comrades he was detailed during the Great War to do orderly work with a general and his staff. It was the duty of Marko and his companions to keep everything in order about the general's headquarters.

They had not been at work long before the general received loud complaints of their slackness. He called them before him. "Brothers," he said, "you are here to render service to myself and my officers. Let it be done joyously and perfectly. That is all."

After the appeal they showed marked improvement. But before long the complaints began again. One night as Marko and the others were settling to sleep the flap of their tent lifted, and the general appeared. "Good-night, brothers!" he said. "I hope all is well with you."

"Good night," was the gruff rejoinder. When the flap had fallen Marko cried, "Brothers indeed! Who's he calling brothers! Don't we do all the work! What is he a general for, I'd like to know? He's no better than the rest of us."

The next morning when they awoke they discovered to their astonishment the officers' boots, brightly polished, standing in a row just inside the tent. They hastened into the hall and found the fire burning merrily and the place looking cleaner than they had ever seen it before! They rubbed their eyes and spoke to one another of the old fairy tales of the elves that came to help the good housewife.

When the same thing occurred the next morning they decided to set one of their number to watch during the night. Towards morning the sentinel saw the general appear in the tent and quietly arrange the officers' boots, all perfectly polished, in a row. As soon as the general had gone the man aroused his comrades and told them the staggering news.

Presently Marko was summoned to the general's presence; he guessed that the general had overheard his foolish words of complaint. "Marko," said the general, "did you ever hear of Jesus Christ?"

"Why, yes, sire!" was Marko's amazed response.

"Then you remember the lesson He gave His disciples when He washed their feet?"

Marko's heart was suddenly filled with shame.

"Marko," continued the officer, "I am your general because a general is supposed to be able to do any of the duties of those under his charge as well as much more. I have shown you that I can do your work, but you must not think that I have not enjoyed doing it!" His eyes twinkled with delight. "In every perfect service there is hidden a great treasure. Whenever a man truly serves he finds God."

That was the beginning of a great change for Marko and his friends. There was never any more need of complaint, and when the war was over Marko returned to his own district to begin there a new life of service. So perfectly has he achieved it that many have cause to think with undying gratitude of "The Man of Perfect Service."

Not On the Spot.

Little Tommy had a sore toe, so his mother thought this a good opportunity to make him eat his cereal. "Tommy," she said, "if you eat your oatmeal, it will cure your toe."

Shortly afterward Tommy came to his mother with a very disgusted air. "I ate my cereal," he said, "but my toe isn't any better. I guess the stuff went down the wrong leg."

Minard's Liniment Heals Cuts.

Caught the Post.

Pat was walking along the road when, hearing a whir, he looked back and saw Larry flying fast and furious on a bicycle.

"Hi, wait a minute," shouted Pat. "I want to speak to you."

"I can't; I'm in a hurry. I want to catch the post," cried Larry, flying by. Suddenly the bicycle swerved and crashed into a telegraph pole, and Larry and the machine lay in a helpless tangle. When Pat came up, Larry was extricating himself from the wire puzzle.

"Begorra," said Pat, with a grin, "I see you caught the post."

He Forgot the Combination.

A colored man was driving along the road in a ramshackle buggy drawn by a bony, spavined old horse, when a stranger hailed him:

"Hello! uncle! Can you get me to the station in time for the next train?"

"No, sub; I don't believe I kin, sub. This is a broken-down o' cavalry haws. You can't git him offen a walk nohow."

"Huh! You say he's an old cavalry horse? Let me drive him."

The man clambered upon the seat and took the reins. "Make ready!" he called out sharply. "Charge!"

The old horse pricked up his ears and broke into a gallop. As they reached the station the man shouted, "Halt!" The horse obeyed. The man flipped old John a quarter.

The next day two young men stopped John and asked him to take them to the station as quickly as possible.

"Suttinly, gen'l'men," said John. "Git right in." He gathered up the reins and shouted: "Make ready! Charge!" The horse broke into a gallop and soon reached the station.

"Git ready to jumpy, gen'l'men," John looking frightened, shouted to his fares. "I've done forgot de word what stops him."

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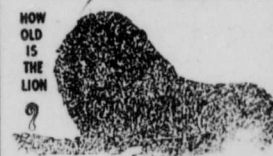
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