THE TORONTO FIELD NATURALISTS' CLUB

MARCH MEETINGS

Monday, March 1, 1948 at 8:15 p.m.

At The

Royal Ontario Museum

Speaker - Mr. G.E.Steel

A talk on Semi-precious gem stones of Canada.

Illustrated.

Rotunda Display

Exhibition of Canadian Semi-precious Gem Stones

by Mr. G.E.Steel.

Exhibition of jewellry designed and made

by Mrs. G.E.Steel

Saturday Afternoon Hike

Saturday March 6, 1948

MOORE PARK RAVINE

Meet at the corner of Welland & Moore Ave at 2.30 p.m.

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Number 74 - February 1948.

Last winter several members of this club visited the tree seed extraction plant at Angus, Ontario, and were warmly entertained there by Mr. and Mrs. Carman. Our pleasant experiences on that occasion, especially our amazement at the success of Mrs. Carman's feeding station, were recorded in the Newsletter at the time.

Much as we would have liked to have done so, we were quite incapable of describing the intensely interesting process of extracting tree seed which is the business of the plant maintained here by the Department of Lands and Forests. So we asked our host, Mr. Carman, who is superintendent of the plant and naturally conversant with every detail of the process, to prepare an article for the Newsletter. Although he is an extremely busy man he graciously consented to do this. Consequently it is with a deep feeling of gratitude and pleasure that we now offer the readers of the Newsletter Mr. Carman's excellent article.

THE TREE SEED EXTRACTING PLANT ANGUS, oONTARIO.

by R.S.CARMAN SUPT., Dept. of Lands & Forests.

While there is very little of a spectacular nature about the business of collecting, extracting, cleaning, and storing of tree seed, it is a very interesting operation and it has a lure to it which seems to attract not only the worker but the visitor. The plant at Angus is the only one of its kind in the Province of Ontario, which may be one of the reasons for the interest shown by the average visitor.

Since seed is the primary requisite of any reforestation program it is essential that a sufficient supply of each species must be kept in reserve to ensure a continuous annual supply for the nurseries which produce the seedlings.

The plant at Angus has been given the responsibility of building up the reserve stocks of the various species of tree seed to the point where there will be sufficient to keep five Provincial Forest nurseries in operation regardless of unpredictable seed crop failures.

Before getting into too much detail it may be of interest to know that Angus is located about 11 miles west of Allandale (Lake Simcoe) on #90 Highway leading into Camp Borden. The site of the plant is at the

extreme easterly part of the village in a park like stand of pine trees, and the area comprises approximately 27 acres. There are 25 buildings of all kinds attractively spaced in about one-third of the above property. The grounds adjoining the buildings have been improved by the use of flowers, shrubs, and a large variety of trees planted singly and in groups.

Not all forest trees are considered useful enough or sufficiently valuable in reforestation projects to be included in the list of conifers and hardwoods, from which seed is collected.

Even in the following list there are several species which can not be used in general reforestation projects and which will require considerable further experimental tests before they can be grown satisfactorily in mixed plantations.

Conifers

White pine	Scotch pine	White spruce	White cedar	Tamarack
Red pine	Austrian pine	Norway "	Red "	Hemlock
Jack pine		Black "	(European	Balsam
			(Larch	

Hardwoods

White elm	Silver maple	White oak	White ash
Rock elm	Red maple	Bur oak	Black ash
	Hard maple	Red oak	

White birch	Black locust	Butternuts	Shagbark hickory
Yellow birch	Honey locust	Walnut	Black cherry
Basswood		Beech	Tulip

With the exception of the two soft maples and the two elms, the balance of the above species have to be collected between the 10th of August and the winter snow storms. The four exceptions produce their seed in the spring starting about the 24th of May to the 1st. of June and ending about the 20th to 24th of June.

The collecting operations are carried out under two systems. In all instances where the cones or seed can be collected clean, or can be cleaned by private individual seed collectors, contracts are issued covering definite quantities of given species at a set price per bushel or per pound. These contracts are controlled by an issuing date and an expiring date so that the office has a rigid control of quotas, and collecting periods. This is essential because immature seed will not germinate satisfactorily.

Seed which is difficult to bring to a uniform degree of cleanliness is collected by the regular Seed Plant Staff, from government-operated trucks and during regular working hours.

All seed is collected after growth is completed and as it passes from a green condition to its mature state. As a result it has a high percentage of moisture in its structure and will heat if left in bags or in deep piles.

The first operation at the seed plant consists of spreading the seed or cones 2 or 3 inches deep on trays with the objective of having it complete its drying and maturing in a natural manner.

This air drying process is accelerated by keeping the cones or seed turned once a day in the first two weeks, and less frequently thereafter. As the danger of heating passes it will be noticed that the seed gives off a different sound when being handled.

Special buildings have been constructed and equipped with trays on which the seed is placed. Openings in the buildings allow free circulation of air but these are screened to prevent depredations of squirrels, mice and birds. In addition to the buildings at Angus special portable seed drying units have been designed for use at certain strategic collecting points in the province.

Every species of tree seed is different in form, and each has to be collected and prepared for storage in a special manner. Of the fourteen conifers in the above list the red cedar is the only species which does not produce a true cone with seeds born at the base of the cone scales. It has one or two seeds enclosed in a pulp. There is such a small demand for this species for waste land planting that no special care is given to the removal of the pulp, and the nursery superintendent does not worry when the seed lies dormant in the seed beds into the second and third years.

The balsam cone is the only one, of the remaining thirteen, which breaks apart as it matures and both scales and seed drop from a central woody axis.

In the other twelve species, after a reasonable time on the air drying trays, four open their cone scales and release the seed after being subjected to a kiln temperature of about 110 to 120 degrees Fahrenheit. The remainder require higher temperatures and some have to be treated with water once or twice to ensure a complete fluffing of the cone scales. Under natural conditions, when these cones are on the tree during the late fall, winter and spring the cones remain closed on rainy or humid days and start to open with the drying winds which reduce the moisture content of the cone fibre. This opening and closing of cones in the natural state may take place hundreds of times and all the seed will not fall at any one time. The wetting and drying of cones in the kiln is intended to have somewhat the same effect as the natural condition.

Some of the seed of each years' cone crop may have to be prepared for the nursery as soon as collected but in the majority of cases the seed is extracted, cleaned and stored during the winter months when outside work is curtailed on account of the snow and cold weather.

When the seed of conifers is extracted and shaken from the cones it still retains its wing and in addition there will be a certain amount of broken cone scales, pitch, dust, and needles, in the resultant mass. The wings have to be removed from the seed to facilitate either brodcast sowing or the use of a mechanical seeder.

The operations of dewinging are usually carried on by machinery specially built for the purpose. Then the separation of the seeds from the debris is accomplished by mechanical sifters, fanning mills, and a travelling belt.

All coniferous seed can be stored for more than one year but there is a limit, and this is different for each species. White cedar and white pine may be kept for 2 to 4 years but at the other

end of the scale is red pine. This has been known to retain its vitality over a period of ten or twelve years. Moisture content at time of storage, type of seed container, and temperature of the storage vault are all important factors in this program. Each species requires a different moisture content for the most satisfactory results for long term storage. The temperature of the storage vault, at the present time, however, remains at a constant of 38° to 40° F. for all species.

There are several reasons why special efforts are made to store seed over long periods of time. 1. Seed crops do not materialize every year. This may be due to a condition within the tree or it may be due to climatic conditions such as frost or rain which might kill the flower or wash off all of the pollen. 2. The largest percentage of tree seed is sown on the nursery bed in the fall of the year just before the freeze up. There would not be time to collect and prepare all the seed for the nurseries each Fall before the sowing program commenced. 3. Seed collection is a seasonal project and yet it is advisable to keep the same staff for the full year, and year after year, to ensure continuity of the program.

At the time that the seed is prepared for storage a sample is taken from each container and set aside for germination tests. At the same time a seed count is made of a known weight of seed and the number of seeds per ounce is computed. All foreign material is set aside during the seed count and its weight is shown as a percentage of the whole sample.

In the germination tests, 4 groups of seed of 100 each are prepared, two to go on the Jacobsen system (wet pad with heat) and two to go into pure sand with moisture and heat. The latter test will show up seed which has been injured and is too weak to germinate and push the seed cap and cotyledon up through the ¼ inch layer of sand.

The results of the germination tests and the seed counts are passed on to the nursery superintendent and he can plan the proper amount of seed to sow per square foot to get a bed of seedlings of the most satisfactory density for root and crown development.

The extraction kiln is composed of a compartment approximately 20' x 30' which is insulated and can be heated to temperatures as high as 160° F. with a hot air furnace, where convection circulation can be assisted by fans. Two systems of kiln containers are used (a) revolving drums in one half the compartment and, (b) cars and trays in the other half. Some species can be extracted satisfactorily in the drums but, if it is a case of sprinkling or wetting the cones to make them close, the trays are the most satisfactory system. The kiln is used for twelve of the 14 species of conifers.

The hardwood or broad leaf tree seed can be subdivided into 7 species with wings, 5 species of nuts with caps or husks, 3 species of nuts with pulp, 2 species with pods, 2 species with catkins, 1 species with a type of cone and 1 with two coverings both being impermeable to water.

None of these are subjected to kiln heat except opossibly to quicken a reduction of moisture content if the seed has been wet by rain or snow.

All winged hardwood seed is usually collected by the staff. It is put over a mechanical sifter to break down seed clusters and to

remove leaves, twigs and other debris.

Five nut species are purchased clean, with caps and husks removed.

Three nut species with a pulpy outer covering, have to be put through a hulling machine which breaks up the outer cover and at the same time a stream of water carries away the waste product.

In the case of pods, a special machine breaks the outer shell and releases the seed which in turn has to be separated from the debris.

The two catkins are broken down by the same machine as mentioned above but separation is obtained by the fanning mill.

Finally, the basswood seed has to be given two separate treatments of sulphuric acid to put it in a condition so that the embryo can absorb moisture as the first step in germination.

Storage of hardwood seeds is very similar to that of the conifers but in the majority of instances it is unnecessary to take as many precautions with the former.

In spite of the length of this article only a very sketchy outline has been given. There are numerous minor details which require individual attention. All told, it should be quite evident that with the changing work of each Season, and with the large number of different species, the duties never become monotonous. There is still ample scope for improving our knowledge of all operations and of learning more of the life history of each species of tree seed.

The Department of Lands and Forests extends a cordial invitation to all persons interested in this branch of reforestation work, to visit and become acquainted with the Tree Seed Extraction Plant at Angus, Ontario.

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A note recently received from Mr. R. Knights relates one of those experiences which reveal the element of surprise as a permanent fascination in bird watching. He says, "I was out yesterday (January 18th) with Edmund Johns, a juvenile member of the club, searching for the saw-whet owl which he had found and photographed last Sunday in the ravine beyond Sunnybrook Hospital. We spent all morning peering under the evergreens in the immediate vicinity where this tuftless midget was last seen, but without success.

Well, it's a small world and here is a strange coincidence. I was awakened this morning around 9 a.m. by a call from my wife to come downstairs to see the baby owl in the backyard. Arriving in the kitchen half awake and looking out the kitchen window from the breakfast table, lo and behold - what should I see but the saw-whet owl with a mouse in its claws. (#) It was perched in our lone spruce tree (8 feet high) which stands no more than ten feet from our kitchen window.

Taking a few snap shots from the window I hurriedly put on a few clothes and with slippered feet rushed out into the garden to take a few more close up shots. The owl seemed quite tame, and afterwards flew to the top of the post in the next yard and from there to

a small spruce tree at the bottom of our neighbor's garden with all the sparrows in the district taking refuge in the lilac bushes and scolding him vigorously. It then flew up the side drive with its victim still clutched in its claws, to a maple on the street, followed by the scolding sparrows.

The bird was not banded. It was an adult bird, and an exact replica of the colored plate in my field guide. It was also my first saw-whet owl."

(#) Ed. note. The owl may not have been the same individual previously seen near Sunnybrook Hospital. Several saw-whets have been reported in the Toronto area this winter. It is altogether probable that there are a great many more that are never seen. Their nocturnal habits and their daytime custom of hiding away in dark evergreens causes them to be overlooked even by many bird watchers. The Toronto region, incidentally, appears to be especially favored by the number of these owls which visit it.

Along with Jim Baillie, Bob Trowern, and Jack Satterly, I had the good fortune myself last Sunday (February 1st) to be shown one of these attractive little owls by Mr. Russell Dingman. We drove up to his house at 71 Castle Frank Crescent a little before nine o'clock. Mr. Dingman was waiting and immediately opened the door to greet us.Imagine out delight when he answered our queries about the owl by telling us that it was on its accustomed perch which, he said, was in that blue spruce right at the corner of the house, just a few feet away. At once we were all attention, peering and focussing binoculars. Even so it took us some moments to assure ourselves that the fat little ball in the dark heart of the spruce was really an animate owl. But said Mr. Dingman, "Come in, come in. You can get a far better look from inside!" In we went, and were let to a window directly behind the spruce tree. Was this ever bird watching in comfort on a winter's morn! There was the owl, practically within arm's reach had the window been open, and completely exposed to our view on this side as the tree's branches were sparse against the house. At first the little fellow, even with its feathers partly puffed up hardly bigger than a large fist, paid no heed to us. Then our talking seemed to arouse it and the delicately lined head turned slowly until the slitted eyes could gaze sleepily in our direction. No more than that. "Really! Why don't you go away and let me sleep?" seemed to be the saw-whet's thought. When everyone had had a good chance to study the owl we did take our leave, very grateful to Mr. Dingman for letting us share his discovery.

That was the first saw-whet any of us had seen this year, or this winter for that matter. Little did we suppose that as we were walking along the fence which separates Cedar Woods from Rosedale golf course we would glance up and see another saw-whet owl perched quite openly on a cedar tree! But we did! And, though this owl was more alert and nervous - possibly because of its open perch - than the other, nevertheless it did not fly. Hence twice in the same morning we had ample opportunity to study at close quarters a bird which, though not so uncommon as is supposed by many, is yet seldom seen. We may go months before we see another as we did go months before we saw these two owls. It's all in the game, and it's what adds zest to bird watching.

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Florence Page Jaques. Canadian Spring. Illustrated by Francis Lee Jaques. Harper and Bros.(In Canada, Musson Book Co. Ltd.) 1947. Pp.216.

With the temperature hovering around twelve below zero it is like a look at the Promised Land to open a book entitled Canadian Spring. All the more so when this book is the work of that famous family duo, Florence and Francis Jaques. Most of the members of the T.F.N.C. are already acquainted with the other books of Mr. and Mrs.Jaques - Canoe Country, The Geese Fly High, Birds Across the Sky, and Snowshoe Country. They feel assured that any new book from these two will exhibit the same colorful, sensitive style of Mrs.Jaques and the lively, stirring illustrations of Francis Lee Jaques. It will be a gem in a series of gems. In their anticipation they will not be wrong. Canadian Spring merits a place in any field naturalist's library, it suffers in no way by comparison with its predecessors. Rather, this book is a worthy member of a series, the uniform quality of which is one of its most remarkable features.

No one today surpasses Francis Lee Jaques in his capacity to portray birds and other animals in their native habitats. Only one who lacks all sense of beauty or feeling for nature can fail to be whisked from his studiesinto the midst of the wild when he looks at one of Mr. Jaques' drawings or paintings. For one who knows the natural scene himself such illustrations are the open sesame to beloved memories and past experiences. I have felt the charm of Mr.Jaques' work since I first became acquainted with it in Howells' Florida Bird Life. I have felt it more and more intensely through all the series of books mentioned above. Now as I turn the pages of Canadian Spring I find my conviction strenghened anew. Who can resist the saucy humor of that ruddy duck on page 40? the proud carefree strut of the elk on page 53? the awesome feel of the mountain forest on page 123? When I saw the wonderful drawing of the marsh and ducks on pages 6 and 7. I said instantly, "Good heavens! I've been there!" And it was true: I had. That drawing swept me back to the great marsh at Delta in an instant, and to a memory of the kind hospitality which I enjoyed there as did the Jaques. One could go on testing these illustrations, each with its own special attraction, but it is far better to have them before you, and to see for yourself.

The illustrations are in black-and-white but color shines from every page through the words of Mrs. Jaques. As in all else, individuals vary in their capacity to see color, to hear sounds, to sense the beauty and catch the spirit of the passing scene. Mrs. Jaques has these endowments in the highest degree and she knows how to cultivate them. Here is the eye of the artist, the soul of the poet. And, happily for them, what she sees and feels she can record, she can pass on. Humor also is one of her gifts. The combination makes us all her beneficiaries.

Yet it is neither one alone, but the co-operative work of both that creates the perfection of their books. Thus in Canadian Spring have they revealed the myriad beauties of the season of re-birth as it sweeps across the prairies from Manitoba to Alberta and into the Rocky Mountains of Canada. Birds, flowers, trees, animals, people spring up and take life in these pages. A Canada that even many Canadians did not know is unveiled because the Jaques have eyes that can see and ears that can hear.

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R. M. Saunders,
Editor.