1970 Newsletter 1968 1969 data included

Faculty of Forestry

Again, we are indebted to Dr. A. J. Kayll for news of the Forestry Faculty at U.N.B.

This year there are 276 undergraduates, 56 of whom are freshmen. From the second year on there are seven optional courses, the most popular at present being Management with 119 enrolled and Forest Engineering next with 34. The Wildlife option promises to attract students as there are ten in the sophomore class. There will be about twenty graduate students.

Tom Smith, a U.N.B. graduate in 1968 with an M.Sc.F. in Forest Entomology, is substituting for Prof. Rae Brown who is on sabbatical leave. When Prof. Brown returns, Mr. Smith will continue studies at McGill aiming for his Ph.D. in Soil Zoology.

John Walker, who has just graduated with an M.F. degree at Fall Convocation, completed a report, "Development of a Computer Simulation Technique for Training Forest Fire Control Personnel." This is the first attempt under the aegis of the Fire Science Centre to develop a game where fire control trainees can try their skill at putting out hypothetical fires. Although it is simple, the game clearly indicates the usefulness of such techniques, not only for training forest fire fighters but also for use as a research tool in understanding fire phenomena.

The Faculty has received a bequest of $25,000 from the estate of Col. Garnet M. Strong. It will be used to purchase a major piece of equipment. Col. Strong was a close friend of the late Dr. J. Miles Gibson former Dean of Forestry at U.N.B.

Provincial Park

On Oct. 1, Premier Robichaud announced that a Provincial Park complex centred at Lake Utopia would be developed and that the eastern part of Charlotte County has been declared a designated area under the Community Improvement Corporation Act. These developments together with the building of a mill to manufacture corrugated paper should improve the economy of the area around St. George.

Silviculture, New Brunswick, 1969 - by R. A. Redmond

The New Brunswick Department of Natural Resources carried out a number of silvicultural projects during the 1969 season, as part of its developing silviculture program.

Two million seedlings were planted on Crown lands at various locations in the Province. In the northeast New Brunswick F.R.E.D. area 600,000 trees were planted under agreement with the Community Improvement Corporation. Included was the completion of planting on an area burned in 1967, located near Balmoral, Restigouche County. Since 1969, 1,000 acres of this burn have been reforested. This particular project was carried out cooperatively by the Department of Natural Resources, the Community Improvement Corporation and the New Brunswick International Paper Company. Other planting projects in the northeast area were located at Allardville and Tracadie.

Several areas of Crown land in Northumberland, Kent and Charlotte counties were reforested by the Department of Natural Resources. Some of these areas were planted with the cooperation of Acadia Pulp and Pulp and Paper Limited and J. D. Irving Limited. Planting of seedlings in the Minto-Chipman strip mining areas continued. Four hundred thousand seedlings, chiefly pines, were planted as part of the Land Reclamation project for the area.

The Tubed Seedling Project, begun by this Department in 1966, continued with the planting of 250,000 tubed seedlings on areas located at Tomogonops, Barnaby, Blackville Tower, and Bartibog. Problems encountered early in the program in the greenhouse growing phase have been overcome and full evaluation of the technique now awaits the assessment of field survival. It is now apparent that plantations of red pine and jack pine can be successfully established as tubed seedlings. Red pine tubed seedlings planted in 1966 have attained the size of 2-2 nursery stock with survival of 80 per cent. The spruce plantations cannot be judged until another one or two growing seasons have passed. The Department of Natural Resources plans to continue the production of tubed seedlings at the present level until a complete evaluation of the technique can be made, in one or two years' time.

Scarification of areas clear-cut for jack pine continued in 1969. Areas scarified were located at Salmon River Road, Kent County and at Bartibog. It is planned to seed some 500 acres of the 1969 scarified areas, using jack pine and spruce seed, during the late winter of 1969-70. A snowmobile, first used for this purpose in 1969, will be employed to distribute the seed on the snow cover.

Establishment of experiments to test the response to N, P and K of near-mature softwood stands, was completed in 1969 with the establishment of plots in white spruce stands in Albert County. The Department is cooperating in a fertilization project involving the eastern Canadian provinces. The project was initiated by the Pulp and Paper Research Institute of Canada.

A project to assess the effects of spraying of herbicide on a stand of poplar overtopping spruce and fir reproduction was carried out. Approximately 150 acres were sprayed near Budworm City Airstrip. The area sprayed was burned severely in 1960. It is hoped that the herbicide will kill the poplar and permit the softwoods to increase their growth rate.

Frost Heaving of Tubed Seedlings

A preliminary investigation of frost-heaving of tubed seedlings, conducted at Petawawa Forest Experiment Station, reveals that tubed seedlings planted on bare mineral soil after August 30 were severely damaged by frost-heaving. The extent of the damage increased from moderate on medium sand to severe on clay and to disastrous (all tubed seedlings heaved out on to the soil surface) on sandy loam. Lubrication of the tubes with petroleum jelly reduced heaving slightly. Heaving was negligible on close-cropped turf, but most of the tubed seedlings planted there died from the effects of root competition. Whether or not earlier planting will permit seedlings to resist frost-heaving remains to be investigated. (Information Report PS-X-12)

Dr. Skoupy and E. L. Hughes, in a demonstration of container planting at the Acadia Forest Experiment Station had a similar experience with tubed seedlings to that at Petawawa. Peat pots and plastic bags heaved much less, as did tubed seedlings in undisturbed forest soils.

Bolt and Tree Volume by Displacement

A volume by immersion study was first mentioned in Vol. 2, No. 2 of Pith to Periderm and progress on the study was described in Vol. 2, No. 3, which contains a brief description of the tanks and the measurements obtained on 20 trees in 1968.

Mr. E. L. Hughes reports that a second test was made in 1969 on 34 spruce trees cut at the Acadia Forest Experiment Station. The trees varied in breast-high diameter from 5.2 to 14.1 inches, and in total height from 38 to 67 feet. Each tree was felled and measured by caliper to obtain outside bark diameters at a stump height of 0.5 feet and at 2.0-ft. intervals up to a top diameter of about 2.0 inches. The trees were then cut into 4.0-ft. bolts, peeled, and then measured for inside bark diameters. The measurements provide diameters at the lower end, in the middle, and at the top of each 4-ft. bolt. By setting, arbitrarily, the stump height of 0.5 feet, the top of the first bolt was at breast height.

The volume of each bolt was obtained in three ways: by Huber's and Smalian's formulae and by water displacement. Using volume by displacement as the correct value, the volumes calculated by formulae were compared and percentage differences compiled for each bolt and for whole trees.

Maximum percentage differences in 1969 were much less than those obtained for the 1968 data (Table 1). Whereas diameters were obtained at exact 2.0-ft. intervals in 1968, they were obtained away from swellings and branch whorls in 1969.

Smalian's formula appears slightly superior to Huber's for both individual bolts and for whole trees (Table 2). However, as expected, the volumes of butt logs were usually overestimated, sometimes by large amounts, using Smalian's formula (data not shown).

Minimum butt diameters were obtained on each tree but the appropriate calculations relating volume of whole trees to minimum butt diameter has not been completed.

Table 1.

Maximum Percentage Differences Between Volumes of Four-Foot Bolts and Whole Trees Calculated by Huber's and Smalian's Formulae and Volumes obtained by Displacement (All volume determinations are for 4-ft. bolts: whole trees are summations)

Volume Compiled for	Huber		Smalian	
	Largest Plus	Largest Minus	Largest Plus	Largest Minus
Four-Foot Bolts				
1968 (184 bolts)	+52.3	-52.1	+34.2	-28.5
1969 (401 bolts)	+17.1	-18.2	+20.0	-13.0
Whole Trees				
1968 (20 trees)	+ 1.7	- 7.5	+ 5.1	- 5.9
1969 (34 trees)	+ 0.1	- 6.2	+ 0.9	- 5.1

Table 2.

Number of Bolts or Whole Trees Classified by Percentage Difference:

1969 Data

Item	Percentage Difference by Classes						
	+10.1 and up	+ 5.1 to +10.0	+ 0.1 to + 5.0	0	- 0.1 to - 5.0	- 5.1 to -10.0	-10.1 and down
401 Four-foot Bolts							
Huber	1	8	69	4	204	97	18
Smalian	6	8	98	5	212	68	4
34 Whole Trees							
Huber	0	0	1	1	30	2	0
Smalian	0	0	6	0	27	1	0

An Effective Method of Extinguishing Sawdust Pile Fires

Every forest protection service has undoubtedly been plagued by a sawdust pile fire which has refused to go out until an exhorbitant amount of time and tons of water have been expended on it. Often a fire which has appeared to be cold has smoked up and necessitated further action. Fire Control Notes (Summer 1969) reports that a sawdust pile fire 75 by 100 feet which could not be controlled by conventional methods, including a two-day soaking with a power pump, was finally extinguished by raking four 57-pound bags of "Phos-chek" fire retardant into the top 4-6 inches of sawdust. It is noted that any of the long-term retardants would probably have done the job, and it is also suggested that the method may be useful in controlling many deep-burning ground fires.

Fourth International Agricultural Aviation Congress - by F. G. Cuming

A most interesting and informative programme was presented from August 25 to 29 inclusive when the Fourth International Agricultural Aviation Congress was held at Queens University, Kingston, Ontario. The

theme of the Congress was "Progress through Cooperation". Approximately 30 countries were represented, and the three in attendance from the Nova Scotia Department of Lands and Forests felt that they derived considerable benefit from the symposia and ensuing discussions as well as from viewing the exhibits and aerial demonstrations. The executive group responsible for planning these congresses and for the dissemination of pertinent literature is the International Agricultural Aviation Centre with headquarters at The Hague, Netherlands. Its Director-General is W. J. Maan, and J. J. Fettes, Director, Chemical Control Research Institute, Canada Department of Fisheries and Forestry is the Canadian member on its Board of Directors.

The various symposia, at which many formal papers were presented and discussed, dealt with a wide variety of topics such as chemical formulations and aerial application techniques.

On Wednesday, August 27 demonstrations of new aircraft and equipment were conducted, measurements of distribution patterns were made and forest fire-fighting aircraft were shown at the Kingston airport.

It was generally recognized that many topics discussed were of a forestry nature. Consequently, a resolution was passed dealing with the Centre at The Hague which will in the future be known as the International Agricultural and Forestry Aviation Centre and the name of the Congress will also be altered accordingly.

"Tordon" Injection Kills Red Maple

Red maple is notoriously hard to kill, and injection of phenoxy herbicides which is an effective method of killing many hardwoods generally fails to give good control of red maple. In a study reported in Down to Earth (Winter 1968) Tordon 101 injected in a continuous ring (this was important, as spaced injections were much less effective) killed 77% of red maple trees 4-8 inches in diameter. Only 11% were killed by 2,4-D amine injected in the same manner.

Conservation Council of New Brunswick

K. K. Langmaid of the federal department of agriculture in Fredericton was elected to the presidency of the newly formed Conservation Council of New Brunswick on October 18. Others elected were Dr. Roy Strang of the Canadian Forestry Service, secretary; Dr. Gerry Shaw, Canadian Forestry Service, treasurer; novelist David Walker of St. Andrews, first vice-president and Dr. Austin Squires of Fredericton, retired curator of the New Brunswick Museum, second vice-president. The board of directors of the C.C.N.B. was also approved by the membership.

Two resolutions were passed, the first calling on government to promote biological control of pests and the second calling for a second meeting within a month to which all wildlife and conservation associations in the province will be invited to discuss involvement with the C.C.N.B. When the group was formed in August it was to become "a voice of the people" in the fight against land, water and air pollution, destruction of wildlife, damage by pesticides and misuse of the forest.

Forest Industrial Developments

Most of the developments mentioned below are not news to everyone but in total they give an idea of the unprecedented expansion in the wood-using industries in the Maritimes over the last few months:-

The $72 million St. Anne-Nackawic pulp and paper mill will begin production in May 1970, employing 400 in the mill and about 1,000 supplying hardwood to make 850 tons of fine papers and corrugating medium daily.

On September 30, Mr. J. H. Heuer, President of Fraser Companies Limited announced a $60 million expansion program, the "Big Thrust". The program includes the installation of a new 306-inch specialties paper machine and rebuilding of 7 others, a testing laboratory and a 10,000 ton storage warehouse in Madawaska; a 200 ton groundwood mill at Edmundston; and a pollution control program at Madawaska and Edmundston. The recently acquired lumber mill at Boiestown will be modernized as the Plaster Rock and Kedgwick mills already have been, and dry kilns will be built at Plaster Rock.

Fundy Forest Industries Limited will soon begin construction of a $16 million mill to manufacture corrugated paper in Charlotte County near St. George. The mill will begin production early in 1971, using 70% hardwood and will employ 120 men with many more employed at providing wood.

MacMillan Bloedell Limited has acquired a majority interest in MacMillan Rothesay Limited which will acquire all assets of Rothesay Paper Corporation of Saint John, N.B. A new 180,000 ton a year newsprint machine will be installed at a cost of $35 million. Mr. Keith LaBerge is general manager of the new company and R. W. Bruce Thompson will continue as woodlands manager.

On August 21 Consolidated Bathurst Packaging Limited opened new 55,000 sq. ft. facilities in Saint John costing $750,000.

Anil Canada Limited is to begin an $8 million expansion immediately which will more than double its production to 110,000 tons hardboard a year. It will employ 65 more men in the mill.

Irving Pulp and Paper has formed Tidal Chemicals Limited with Chemetics Limited to build and operate a sodium chlorate plant at the Irving mill site in Saint John at a cost of $3 million. Production will start late in 1970. Chemetics together with Scott Paper and Nova Scotia Pulp have formed Canso Chemicals Limited which is building an $8.5 million plant at Abercrombie Point, Pictou County to produce bleaching chemicals for the pulp and paper mills.

Nova Scotia Pulp is in the midst of an expansion program including the building of a 160,000 ton newsprint mill and developments to increase the annual production of bleached sulphite pulp to 175,000 tons from 130,000. Employment at the plant will increase from 420 to 570. In the course of construction water pollution will be eliminated as well as most of the air pollution.

Scott Paper is increasing its production of bleached kraft to 550 tons a day from 500 tons.

Exotic Larches in New York State

In the first number of this newsletter we reported George MacGillivray's findings on the early growth of hybrid larch which outperformed spruce in a spectacular fashion. If any reforestation foresters' interest was aroused they will want to read David Cook's book "Planted Larch in New York", published by the author at 12 McPherson Terrace, Albany, New York. This book is a distillation of the vast knowledge gained by the author in 40 years of growing European, Japanese and Dunkeld larches on his own forest property.

Conservation School Opens - by Franklin Gilmore

The Canadian Forestry Association of New Brunswick Inc. officially opened its second Conservation School on Monday, September 15. The school is being conducted this year on the Little Mactaquac Nature Trail and is being directed by Mr. Franklin Gilmore, former Science teacher at the Provincial Teachers' College, Fredericton.

A class of Grade 7 students from the Nashwaaksis Memorial School was welcomed by Mr. Leo Lepine, president of the Canadian Forestry Association of New Brunswick, Inc.. Other persons attending the opening were Mr. Dennis Wolstenholme from the Department of Natural Resources, Mrs. Perkins and Miss Winters from School District # 26 and Mr. J. Bruce Kelly, Forestry Extension Service, University of New Brunswick.

On hand also were Mr. Hendrich Deichmann and Mr. Henry Lounder, both of whom helped at the school last year at Odell Park, Fredericton. Mr. Deichmann of the Parks Branch is assisting Mr. Gilmore in instruction and trail activities.

The students spent all day at the site. The noon lunch was eaten at a "lunch hole" beside a cool spring on the banks of the Little Mactaquac stream. This is about midway along the three mile Nature Trail. Genuine interest was shown by the pupils in the variety of plant and animal life observed during the day.

The school will continue until October 31st and open again in the spring term in April. It is expected that over one thousand students will enjoy a day in the out-of-doors actively engaged in studying some of our natural resources first-hand.

In the first week of operation a great variety of animal life was observed, including Black Ducks, Bittern, Broad Winged Hawk, Varying Hare, Ruffed Grouse, Eastern Garter Snake, Common Toad plus numerous small birds and insects. A highlight of the trail is a newly constructed beaver dam and its effect on the surrounding terrain.

The theme of the school is - Appreciation through Knowledge will lead to Conservation - This will indeed become a realization if the enthusiasm of the teachers and students already participating is transferred to the general public. The carry-over effect from last year's initial work at Odell Park is very evident, and the Canadian Forestry Association officials and Conservation School staff feel, that a great deal has already been accomplished in making Conservation a part of the fabric of the younger generation in the Fredericton area.

Plans are already being formulated to expand in this field of education and with the co-operation of other interested groups within and outside the provincial government, the Canadian Forestry Association of New Brunswick, Inc. hope to make this one of their major projects.

Ranger School Begins Fall Term - by H. W. Blenis

Sixty-one students returned to the Maritime Forest Ranger School on September 2 to register for the 1969 fall term after completing a summer of field employment.

Geographic origin of Fall Term students is as follows:

New Brunswick	26
Nova Scotia	19
Newfoundland	8
Manitoba	3
Jamaica	2
Maine	2
Ontario	1
Total	61

The following staff changes became effective at the start of the term: R. E. Hanusiak began a one-year leave-of-absence; his duties have been assumed by E. T. Owens. H. Eugene Mattinson, M.F.R.S. 1967, of Amherst, N. S., and formerly on staff of the Ontario Department of Lands and Forests, joined the Ranger School faculty as Assistant Instructor.

Forest Fertilization in Nova Scotia - by F. G. Cuming

The Canadian Forestry Service has initiated a project on forest fertilization in Nova Scotia under the direction of R. E. Bailey. This came about in response to a request from the N. S. Department of Lands and Forests for technical assistance in the development of a provincial forest fertilization program and, further, is designed to enable the Province to fulfil its obligations to the Inter-Provincial Task Force on Forest Fertilization.

The objectives of this project are:

(a) to measure and explain the growth responses of various species of different ages to different rates and combinations of N, P and K fertilizers and to determine whether these responses are economic justification for the use of fertilizers;

(b) to determine whether foliage and soil nutrient levels can be used to predict fertilizer needs, and

(c) to evaluate the effectiveness of fertilizers in promoting the dominance of crop trees, thereby increasing the per cent merchantable volume.

These objectives will be met by conducting a series of replicated factorial fertilizer trials at approximately 4 locations each year and in stands of varying maturity, species and stocking. The areas also will be selected by soil series and eco-district to ensure that the results can be extrapolated to large areas.

The treatments involve the application of nitrogen (urea) at the rates of 100 and 200 lbs./acre, phosphorus (triple superphosphate) at the rates of 100 and 150 lbs./acre and potassium (muriate of potash) at the rate of 100 lbs./acre. At each establishment there will be 18 treatments replicated four times for a total of 72 per installation.

The fertilized and control plots will be in concentric double circles and diameters and height measurements will be taken within the inner circles. Remeasurements will be made every 2 years over a 10-year period. Foliar samples will be analysed to follow nutrient uptake response and soil samples will be tested to characterize the soil at each installation. Temperature, relative humidity and precipitation records will also be maintained during the growing seasons.

To date, 3 installations have been established: one in a semi-mature red spruce stand in the Liscomb Game Sanctuary; the second in an immature white spruce stand near Lake Ainslie, and the third in a mature balsam fir stand on the Cape Breton Highlands. Tree diameters and heights have been measured in all plots, foliage and soil samples are being collected this fall, and the fertilizers will be applied during the spring of 1970.

Post-cut Utilization Survey Method

A fast, simple method of estimating the volume of logging waste (or the weight of forest fuels) is described by C. E. VanWagner in Forest Science (March 1968). Transect lines are run across the sample area and the diameter of every piece of wood intersected by the line is measured at the point of intersection. (There are rules for dealing with pieces whose central axes are not crossed by the sample line). Length of piece and angle of intersection are not recorded. When diameter is measured in inches, and length of the sample line in chains, the total volume in cubic feet per acre is obtained from the formula $V = \frac{5.65 \quad d^2 \cdot}{L}$. If diameters are measured outside bark the volume of bark is of course included. Use of a cumulative tally card for squared diameters and length of line would facilitate the rapid calculation of volume in the field.

Lunenburg County Christmas Tree Producers Association - by Fred Cuming

Keen interest in the perpetuation and improvement of the Christmas tree industry in Lunenburg County was certainly much in evidence at New Germany on October 4 when the Lunenburg County Christmas Tree Producers Association (LCCTPA) held its third annual meeting and fall field day. This association, which refers to Lunenburg County as the "Balsam Fir Christmas Tree Capital of the World", was organized in October, 1967, as part of an ARDA program of woodlot owner organization and education being carried out by the Extension Department on St. Francis-Xavier University under the direction of Richard Lord.

Approximately 100 members and guests spent the afternoon touring Christmas tree lots where they observed improvements in tree quality as a direct result of underpruning, shearing, butt-scarring, fertilization and herbicidal applications. Experienced Association members and extension foresters of the N. S. Department of Lands and Forests were on hand at the four tour stops to discuss and occasionally demonstrate the various techniques employed.

Following supper, the business meeting convened when the following slate of officers was elected: L. A. Corkum, Falmouth, President, succeeding L. E. Veinotte, R.R.#2, Bridgewater; Delmer Conrad, R.R.1, Bridgewater, Vice-President and Douglas Cox, Bridgewater, Secretary-Treasurer. In addition, 12 directors representing 6 sections were announced.

One interesting resolution which was unanimously approved by the membership after its proposal by Extension Forester T. Ernst, dealt with the directing of a request to the N. S. Department of Education that a special forestry course be offered at the new Lunenburg County Vocational School, Bridgewater.

Dr. F. E. Webb, Associate Director, Canadian Forestry Service, Maritimes Region, addressed the meeting outlining the federal government's responsibilities to forestry in Nova Scotia and referred to various research projects either presently underway or to be undertaken in the near future to help meet these responsibilities, particularly those pertaining to the Christmas tree industry.

Following the business meeting a technical session on "Fertilization and Marketing" was conducted with John Torunski, Assistant Director of the New Brunswick Forest Extension Service, delivering the theme address and other staff members of that service assisting him in the ensuing discussion period.

Direct Seeding Studies Underway in Quebec and Newfoundland

In our February number we discussed developments in direct seeding in Ontario and the southern States. We have since heard foresters

deploring the fact that there is no research into this promising reforestation method being conducted in the Maritimes. Those people may be interested to know that both the Quebec and Newfoundland regions have active research programs, the results of which may be applicable in the Maritimes. The Newfoundland trials (Research News, July-August, 1969) appear to be further advanced and more successful so far, but one can also learn from failures such as that reported by Jim Arnott in "An Operational Trial of Scarification and Aerial Seeding" (Information Report Q-X-11).

Thinning by Machine

Mr. E. L. Hughes and Drs. Neilson, Fowler and Baskerville visited some silvicultural operations of Nova Scotia Pulp Limited on September 24. Mr. Redmond, New Brunswick, Dept. of Natural Resources and Mr. Curry, Acadia Pulp Division, Atlantic Sugar Refineries Limited also travelled to Cape Breton.

The group made the trip mainly to see trials of the Roanoke brush cutter. Mr. Hughes' reports that the brush cutter, hinged to the back of a tree farmer is lowered to a horizontal operating position by a cable operating over a fixed boom. The two blades worked the same as the blades of a rotary lawn mower. They were powered by the 65 H.P. engine of the tree farmer through a hydraulic take off, and required 40 horse power, which left the tree farmer underpowered. In spite of this the machine demonstrated that it had great potential. It cut 8 foot wide strips through the young growth, leaving uncut strips to be thinned manually.

The advantages of the brush cutter are that the cut strips give easy access for manual thinning, trees bordering the cut strips are little damaged and the cost will certainly be less, exactly how much is not yet known.

Messrs. Hughes and Redmond recommend more power, preferably separate from the tree farmer and Mr. Redmond suggested a stronger set of blades. Both were emphatic that the machine was effective now but further development would increase its efficiency.

York Flooring Mills Limited Closes

One of central New Brunswick's important wood using industries, York Flooring Mills, Ltd., has been forced to close after twenty-one years of operation in its present location. The deteriorating market for hardwood flooring has been blamed for this action.

Apart from the serious dislocation of some 45 employees, repercussions will also be felt by the producers who supplied the hardwood lumber stock. Another casualty is the Presto-log plant, the only one in the Maritimes, which utilized the flooring waste in the production of a very popular product.

"Films"

The Department of Fisheries and Forestry has just produced a catalogue, "Films", which lists and describes about 225 Canadian-made films connected with some aspect of forestry. The descriptions are accompanied by codes giving details and source of each film. A copy of "Films" is available from Information Services, Canadian Forestry Service, P.O. Box 4000, Fredericton, N.B.

"Christmas Tree Management in the Maritime Provinces"

Part 2 of the above publication "Common Insects and Diseases and their Control" has just been issued by the Maritimes Region of the Canadian Forestry Service. The authors are C. C. Smith and W. R. Newell. This manual is directed to Christmas Tree growers in the Maritime Provinces and contains descriptions and photographs of serious pests and control measures.

It is a companion publication to Part 1 "Cultural Practices" by J. W. McLeod which was published in 1968. These are both available from Information Services, Canadian Forestry Service, P.O. Box 4000, Fredericton, N.B.

Tree Diseases Manual Revised

"A Field Manual of Tree Diseases in the Maritimes Region" by G. A. Van Sickle, originally issued in 1966 was revised and re-issued this year. The diseases are classified according to place of occurrence in the tree, root, stem or crown. This is a very useful publication for all those interested in Maritime forests. It is Information Report M-X-1 and may be obtained from Information Services, Canadian Forestry Service, P.O. Box 4000, Fredericton, N.B.

For the Christmas Tree Producer

"Shearing Fir Christmas Trees" Bulletin 33, by G. L. Saunders is published by the Department of Lands and Forests, Nova Scotia. It deals with shearing exhaustively, is profusely illustrated and will be extremely useful in helping the grower upgrade his trees. Copies are available from the Department of Lands and Forests, Box 68, Truro, N.S.

Other Local Reports Just Issued:

Internal Report M-48 - by A. Jablanczy

Establishments of white spruce and balsam fir in shelterwood fellings of field spruce in Nova Scotia.

Information Report M-X-19 by A. Jablanczy and G. L. Baskerville

Morphology and development of white spruce and balsam fir seedlings in feather moss.

Internal Report M-47 by E. L. Hughes

Survival and development of regeneration two years after mechanical logging in northeastern New Brunswick.