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THE MAINE FORESTER
expresses its sincerest gratitude to

OXFORD PAPER COMPANY
DIVISION OF ETHYL CORPORATION
Rumford, Maine

for the generous contribution of the
paper used in this publication
We, the Class of 1970, dedicate this issue of *The Maine Forester* to a professor who has shown dedication to his students and to the forestry profession. The memory of his endless paths of detail and the specific expressions of fact will always remain with us as we seek our goals after graduating from the School of Forest Resources.

We take great pride and honor in dedicating the 1970 *Maine Forester* to Dr. Ralph Griffin.

Dr. Griffin is a professor of Forest Resources and teaches five courses—Silvics, Silviculture, Silviculture Trip, Regional Silviculture, and Forest Influences. The Class of 1970 first met Dr. Griffin in his Silvics class during the fall semester of 1968. In this class we learned what a forest stand is composed of and the related influences affecting the forest types across the United States. Our education continued with Dr. Griffin into the spring semester of 1969 while many of us were enrolled in Silviculture. Here we applied our knowledge of Silvics and Silviculture to the actual management of a plot of forested land. The Class of 1970 is grateful that the School of Forest Resources has such a dynamic professor as Dr. Ralph Griffin.

Besides being very active in the School of Forest Resources, Dr. Griffin is also a member of many Professional and Honorary Societies. These include the Society of American Foresters, Ecological Society of America, American Forestry Association, American Association for the Advancement of Science, Sigma Xi, Xi Sigma Pi. Dr. Griffin has also received many Honors and Awards which include: Member, Silviculture Committee, N.E. Section, S.A.F., 1959-1962; Associate Director, Junior Foresters' Institute, University of Maine, 1966, 1968 and 1970; Secretary-Treasurer, N.E. Section-S.A.F., 1968; Vice Chairman, N.E. Section of the S.A.F., 1969; Chairman, N.E. Section of the S.A.F.; 1970.

We the Class of 1970 respectfully dedicate this issue of *The Maine Forester* to you, Dr. Griffin.
THE DIRECTOR’S MESSAGE

The School of Forest Resources
1903 – 1970

By Director A. D. Nutting

The largest freshman class in the School’s history was enrolled in the fall of 1969. For several years freshman numbers have been kept at about 70 by limitation of enrollment. This year it was increased to 100 for Baccalaureate degree students and at the same time the 2-year technician enrollment was increased from 25 to 35. A significant fact about numbers is that those interested in the wildlife curriculum have increased from about 30 percent to 50 percent of the enrollment. Another is the increased number of women students. Increased enrollment means major increases and problems in class laboratory numbers and later in those seeking employment opportunities. Expected enrollment for the fall of 1970 is 120 freshmen. These students will be chosen from 500 applicants to the School’s program. Traditionally the School’s enrollment has been 50 to 60 percent out-of-state students while University-wide enrollment has been held to 20 percent from outside the state. A factor that may change final fall enrollment is an increase of $350 per year for out-of-state tuition, making the yearly tuition cost $1350.

The trend toward more students desiring to take advanced work continues at Maine as it does over the country. McIntire/Stennis, public agencies and industry have provided additional funds, but more are needed for assistantships.

Following are the student enrollments at the beginning of the fall semester:

<table>
<thead>
<tr>
<th>4 year Program</th>
<th>Associate 2-year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>First Year</td>
</tr>
<tr>
<td>Sophomore</td>
<td>Second Year</td>
</tr>
<tr>
<td>Juniors</td>
<td>Graduate Students</td>
</tr>
<tr>
<td>Seniors</td>
<td>Forestry</td>
</tr>
<tr>
<td>Transfers</td>
<td>Wildlife</td>
</tr>
<tr>
<td>Specials</td>
<td></td>
</tr>
</tbody>
</table>

The total enrollment at the beginning of the second semester was:

<table>
<thead>
<tr>
<th>Undergraduates</th>
<th>Graduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>331</td>
<td>23</td>
</tr>
</tbody>
</table>
The School was fortunate to have all staff members return this year.

Dr. Craig Shuler with his Ph.D. from Colorado State joined the faculty in September as Assistant Professor of Wood Technology. Dr. Harold Young returned, after a year's leave, from work in Australia. Dr. Thomas Corcoran is on a Fulbright grant in Finland studying forest transportation systems. The School has been fortunate to have Professor Emeritus Gregory Baker on a half-time basis. Professor Emeritus Fay Hyland has an office in the building and is teaching a botany course for the 2-year management students. He also assists Dr. Kutsche in research.

Dr. Ashley will direct the 6-week summer camp at Princeton, Maine for B.S. degree students this coming summer. He will be assisted by faculty and graduate students. The wildlife will have a field trip in place of their usual week at Princeton, preceding regular summer camp. Drs. Owen and Schemnitz will handle wildlife courses during summer camp. The School is still hoping for faculty houses and new dormitories at Princeton.

A Junior Foresters' Institute is planned for the coming summer (1970) under the direction of Dr. Griffin. It will be for two weeks, July 19 to August 1, with one week on Campus and one at Princeton. Student enrollment cost is $125. The Pulp & Paper Foundation is providing $2500, in order to lessen costs to students. Scientists of Tomorrow with headquarters in Portland, Oregon are the sponsors of the program. It is planned on the basis of 80 students.

Advising students is of increased importance with more options to choose from in the School and added University course possibilities. This causes student questions about curriculums, courses, and possible employment after completion of programs. An open door is the policy of the School to students with questions. This means that every student should feel free to ask his advisor, the Director, or any staff member questions about his program or the arrangement of his course schedule. The School policy is to encourage students to seek faculty suggestions and to make advising a major faculty responsibility.

Curriculum and course improvement reviews have top priorities in the School's planning. Several staff meetings are held during the year for this purpose.

A Student-Faculty Advisor Curriculum Committee of 5 students and 5 faculty members was chosen at the beginning of the year. They have discussed a number of subjects including summer camp, mathematics, and computer program requirements with the intention of making recommendations to the School faculty. The committee meetings are open to any student or staff member who desires to attend.

The faculty are considering adding sequences or options in Forest Recreation and Conservation Education. Several new courses have been added during the past year—Fy-22, Bio-characteristics of Game Birds and Animals; Fy-157, Forest-Water Relationships; Fy-228, Advanced Wildlife Ecology; Fy-254, Forest Recreation Planning.

University students are planning an Environmental-Teach-In during a two-week period in April. The student Forestry and Wildlife Clubs of the School are sponsors and have an active part in planning the program. Former Secretary Stuart Udall is to be the featured speaker. The School is pleased that its student organizations are participating to help make the Environment Days program a success.

A very active group allied to the School is the Wives' Club. They have monthly meetings and have provided student scholarships. They made a major contribution of $800. to the Undergraduate Reading Room for books.

Xi Sigma Pi, the School's honor fraternity, combined with the Forestry Club, had a successful Christmas Tree sale this year to provide money for the School's Annual Honors Banquet to be held in April and to support the Woodsmen's Field Day. The fraternity also sponsored a get-acquainted night for faculty, graduate students, and the higher academic students in the junior class.

The Woodsmen's Team, supported by the Forestry Club, is sponsoring the Northeastern Woodsmen's Week-End on the University campus.
this spring. The team has been very successful in competition in recent years.

The School Alumni Association with Professor Emeritus Ashman as President, J. William Peppard, Vice President, and Professor Edwin Giddings as Secretary/Treasurer, keep alumni informed about the School through a Newsletter and alumni breakfasts at both Forestry and Wildlife Society meetings. Dues are $2.00 per year.

The School's proposal for a Ph.D. program in Forest Resources has been approved by all required committees, the graduate faculty and President Libby, and has been forwarded by him to the University Chancellor for his and the Trustee's approval. Hopefully, the School will be enrolling students for the Ph.D. program in the fall of 1970.

In order to encourage students through scholarships and awards, the School has established a committee to make recommendations on methods of making awards. They nominate persons for scholarships and awards for faculty decisions. New awards should be available next year from the Harold Worthen and L. J. Freedman Funds. A $300 Summer Camp Award has been provided by an anonymous donor for wildlife students.

The School's first 2-year forest management group will receive associate degrees in June. Although the 2-year program uses school laboratories and the University Forest, their courses and staff are completely separated from the B.S. degree programs.

New facilities and equipment with added faculty, obtained in the past two years, have been used to broaden teaching and research. This has made it possible to improve both undergraduate and graduate programs. They have also provided the incentive to greatly increase the research and extension efforts of the School.

Over twenty groups met at the School last year for special instructions and short courses... an all-time record for the School. Seven Visiting Scientists came to the School during the year to give lectures and meet with students and faculty.

The School staff is proud of the many research articles written last year by the faculty and graduate students.

The School's major concern continues to be to provide excellent professional training for foresters and wildlifers. Well-trained people will best meet the challenge of the times to maintain high quality environment.
Acknowledgments

We wish to thank those timberland owners and private industries whose generous contributions have made this edition possible.

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ASK SAF Representative Director Albert D. Nutting for details.
Director A. D. Nutting  
School of Forest Resources  
B.S., Maine, 1927  
Senior Seminar

Thomas J. Corcoran  
Prof. of Forest Economics  
Assoc. Director of  
Forestry and Forest Products  
B.S., Mich. College of  
Mining and Technology  
M.S., Purdue, 1960  
Ph.D., Purdue, 1962  
On sabbitical leave  
University of Helsinki  
Helsinki, Finland

Gregory Baker  
Prof. of Wood Technology  
B.S., Maine, 1924  
M.F., Yale, 1939  
Wood Technology

Henry A. Plummer  
Assoc. Prof. of Forestry  
B.S., Maine, 1930  
M.F., Yale, 1950  
Introduction to Forestry,  
Forest Planting,  
Forest Harvesting,  
Utilization Trip

Arthur G. Randall  
Assoc. Prof. of Forestry  
B.S., Yale, 1933  
M.F., Yale, 1934  
Chairman—Two-Year Program  
Introduction to Forest Technology,  
Applied Silviculture,  
Forest Land Management,  
Forest Protection,  
Seminar,  
Summer Camp,  
Range Management,  
Forest Fire Control

Fay Hyland  
B.S., Michigan State, 1925  
M.S., Maine, 1929  
Sc.D., 1965  
Two Year Program
Ralph H. Griffin  
Prof. of Forestry  
B.S., Virginia Polytechnic Institute, 1943  
M.F., Yale, 1947  
D.F., Duke, 1956  
Silvics, Silviculture, Silviculture Trip, Regional Silviculture, Forest Influences

Charles E. Shomaker  
Assoc. Prof. of Forestry  
B.S., Penn. State Univ., 1950  
M.F., Penn. State Univ., 1954  
Ph.D., Mich. State Univ., 1962  
Forest Hydrology and Watershed Management, Forest-Water Relationships

Harold E. Young  
Prof. of Forestry  
B.S., Maine, 1937  
M.F., Duke, 1946  
Ph.D., Duke, 1948  
Forest Inventory and Growth, Advanced Forest Mensuration

Roger F. Taylor  
Superintendent of Univ. Forest  
Univ. of Mass.

Wallace C. Robbins  
Instructor in Forestry  
B.S., Maine, 1954  
M.S., Univ. of N. Brunswick, 1956  
Aerial Photo Interpretation, Forest Measurements, Wood Product Utilization

James E. Shottafer  
Assoc. Prof. of Wood Technology  
B.S., State Univ. of N. Y., 1954  
M.S., State Univ. of N.Y. and Syracuse, 1956  
Ph.D., Michigan State Univ., 1964  
Analysis in Forest Utilization, Wood Technology II, Research Methods in Forest Utilization
Richard Hale
Assist. Prof. of Wood Technology
B.S., Maine, 1949
M.F., Yale, 1950
Primary Wood Processing, Wood Preservation

Lewis P. Bissell
Forestry Specialist
Coop. Extension Service
B.S., New Hampshire, 1940
M.F., Yale, 1947

Norman Kutscha
Assist. Prof. of Wood Technology
B.S., College of Forestry, Syracuse, 1959
M.S., Univ. of Wisconsin, 1961
Ph.D., College of Forestry, Syracuse, 1967
Wood Technology, Wood Anatomy

James C. Whittaker
Assist. Prof. of Forestry
B.S., Purdue Univ., 1958
M.S., Purdue Univ., 1960
Ph.D., Ohio State Univ., 1965
Forest Recreation
Forest Policy and Administration
Forest Economics

Edwin L. Giddings
Associate Prof. of Forestry
B.S., Univ. of Maine, 1933
M.F., Yale, 1934
Introduction to Forest Resources,
Timber Management and Valuation

Donald Wilson
Instructor in Forestry
B.S., Maine, 1965
M.S., New Hampshire, 1967
Introduction to Forest Resources,
Forest Mensuration
Marshall Ashley
Assist. Prof. of Forestry
B.S., Maine, 1965
M.S., Purdue Univ., 1966
Ph.D., Purdue Univ., 1969
Introduction to Forest Resources,
Forest Sampling Methods,
Forest Mensuration,
Forest Photogrammetry

Craig Shuler
Assist. Prof. of Wood Technology
B.S., Colorado State, 1960
M.S., Colorado State, 1966
Ph.D., Colorado State, 1969
Wood Technology

John Diamond
Associate Dean—College Life Sciences and Agric.
B.S., Rhode Island, 1951
M.S., Rhode Island, 1953
Ph.D., Ohio State Univ., 1957

Howard L. Mendall
Prof. of W. L. Mgt.
Leader, Coop. W. L. Research Unit
B.A., Maine, 1931
M.A., Maine, 1934
Graduate Seminar

Malcolm W. Coulter
Prof. of Game Mgt.
Associate Director of Wildlife
Assist. Leader, Maine Coop.
W. L. Research Unit
B.S., Connecticut, 1942
M.S., Maine, 1948
Ph.D., Syracuse, 1966
Wildlife Ecology,
Conservation of Our Natural Resources Biological Characteristics of Game Birds and Mammals, Senior Seminar, Graduate Seminar

Sanford D. Schemnitz
Assoc. Prof. of W. L. Mgt.
B.S., Univ. of Mich., 1952
M.S., Univ. of Florida, 1953
Ph.D., Oklahoma State Univ., 1958
Introduction to Forest Resources,
Wildlife Ecology Camp,
Biological Characteristics Of Game Birds and Mammals,
Game Biology
Ray Owen
Assist. Prof. of Wildlife
A.B., Bowdoin, 1959
M.S., Univ. of Illinois, 1966
Ph.D., Univ. of Illinois, 1968
Wildlife Ecology Camp,
Wildlife Ecology,
Biological Characteristics
Of Game Birds and
Mammals,
Advanced Wildlife Ecology,
Graduate Seminar

Fredrick Gilbert
Assist. Prof. of Wildlife
B.Sc., Acadia Univ., 1965
M.Sc., Univ. of Guelph, 1966
Ph.D., Univ. of Guelph, 1968
Graduate Seminar

Voit Richens
Assist. Prof. of Wildlife
B.S., Wash. State Univ., 1957
Post B.S., Oregon State, 1958
M.S., Utah State Univ., 1961
Ph.D., Utah State Univ., 1967
Game Management,
Graduate Seminar

Sandra Stolt
B.A., Maine, 1969
Research Associate
Mrs. Soulvie

Miss Dyer

Miss Horn

Miss Gifford

Mrs. Cleale
Graduate Program not Adequately Developed at Time of Publication

THE GRADUATE PROGRAM OF THOMAS J. ALLEN
(1970)

Telemetry Studies of Deer Movements and Habitat Utilization at Acadia National Park.

This program includes a two year study of movement and behavior patterns of deer through the use of radio transmitters. It also includes a winter survey of available food.

THE GRADUATE PROGRAM OF VICTOR S. BALINGA
(1970)

A Comparative Study of National Park Systems.

The program will involve a comparative study of National Parks in the United States, Canada, and probably Africa. It is also probable that the work will compare the Refuge Systems.
THE GRADUATE PROGRAM OF MYRTLE C. BATEMAN  
(1971)  

Some Behavioral and Physiological Effects of Three Different Cover Conditions on White-Tailed Deer  

The objectives of the study are to relate differences in the behavior of white-tailed deer penned under three different cover conditions to environmental factors, and to determine if certain physiological parameters indicate a difference among deer penned under these cover conditions. Each of twelve deer is confined to a quarter acre pen. Four of the pens are clearcut, four have artificial windbreaks and four have natural cover. Intensive behavior observations will be made during the winters of 1970 and 1971. A subcutaneously implanted physiological transmitter will be used to monitor heart and respiratory rates of the deer.

Myrtle C. Bateman  
B.S., Univ. New Brunswick, 1968

THE GRADUATE PROGRAM OF ANDRE A. BOURGET  
(1970)  

Interrelationships of Breeding Eiders, Herring Gulls and Black-backed Gulls  

The purpose of this study is to determine which species of gull, when both occur with the eiders, is the most serious predator of eider nests. Also, emphasis is placed on: the relationship of territorial defense by gulls to eiders nesting in the vicinity, the cause triggering a predation act, and on the individual or group response by gulls to predatory activity. The study area consisted of four grassy islands near Isleboro in Penobscot Bay. The investigation required observation from blinds and periodic nest checks of both gull species and the eider duck.

Andre A. Bourget  
B.S., Laval University, 1968

THE GRADUATE PROGRAM OF PETER D. BREWITT  
(1971)  

Growth and Yield of Even-Aged Spruce and Fir in Maine  

With the recent interest in mechanical tree harvesting and the increased trend to commercial clearcutting as a whole, it became clear that accurate growth and yield information must be made available for the implementation of successful even-aged management policies. The objectives of this study are to provide forest land owners with information regarding: (1) average tree size and cubic foot yields per acre to be expected at periodic intervals in the productive life of even-aged spruce-fir stands, (2) any differences in growth that may be attributed to climatic factors, and (3) the respective effects of diameter, height, and crown size upon the periodic growth in diameter and height of spruce and Balsam Fir respectively.

Peter D. Brewitt  
U. S. Naval Academy,  
B.S., Maine, 1969
THE GRADUATE PROGRAM OF DAVID E. CAPEN (1971)

Establishing and Increasing Local Breeding Populations of Wood Ducks by Relocating Active Nest Boxes

During the spring and summer of 1970 approximately twenty active wood duck nest boxes will be taken from areas with high populations of breeding wood ducks and relocated on areas with little or no wood duck production. If hatching is successful, the young birds will be marked for later identification. The spring and early summer of 1971 will involve observation on the areas of nest box relocation to determine if the yearling wood ducks will return to these areas to breed.

The Graduate Program of Loren W. Cole (1971)

A Simulated Model of a Pulpwood Harvesting System

Mathematical simulation techniques and heuristics will be used to predict optimal equipment and product mix combinations over extended planning horizons.

THE GRADUATE PROGRAM OF JAMES F. CONNORS (1971)

Economic Analysis of Campgrounds in the Sebago Lakes Region of Maine

My graduate program is concerned with the recreational use of forest lands. Proper recreational use of forest lands is based on economics and planning, but people management is the key to success. Therefore, my interests are in three areas: people, economics, and planning. Hopefully, course and thesis work will fulfill these goals. My thesis is a subproject of NEM-42—Economic Analysis Of The Camping Market In The Northeast. My project is a camping market structure survey in the Sebago Lake region of Maine. We hope to include information about operator goals, camping facilities development and future development of the market.
THE GRADUATE PROGRAM OF DOUGLAS P. DENICO (1969)

An Application of Continuous Forest Inventory to Small Forest Ownerships

A continuous forest inventory system is to be applied to a particular forest property. The efficiency of this inventory system will be compared with alternative methods. Analysis of inventory data will include an evaluation of multiple volume tables. Computer processing techniques are to be applied in all data analysis and summarization.

Douglas P. Denico
B.S., Maine, 1967

THE GRADUATE PROGRAM OF ROBERT D. DUNFORD (1971)

Summer Behavior of the American Woodcock

The general objectives for the study are to determine the home range and the behavior of woodcock during the summer months. Radio telemetry will be used to track the bird and to determine movement patterns.

Robert D. Dunford
B.S., Univ. of Florida, 1969

Graduate Program not Adequately Developed at Time of Publication

Larry L. Emery
B.S., Maine, 1970
THE GRADUATE PROGRAM OF JAMES R. GRAY

(1970)

Program not Currently Titled

My thesis will be concerned with: 1) an examination of the importance of studying lignin and the lignification process based on current literature; 2) a determination of the suitability of various well-known dyes for studying the lignification process in fixed woody tissue; and 3) an examination of the lignification process in various stages of cell development in tissues of balsam fir, Abies balsamea (L.) Mill.

THE GRADUATE PROGRAM OF BRUCE A. GURALL

(1971)

Program not Currently Titled

Thesis will be concerned with the evaluation of particleboard.
THE GRADUATE PROGRAM OF BRUCE C. McLAUGHLIN
(1970)

Engineering Economic Analysis of the Pallet Industry in the State of Maine

Existing pallet manufacturing operations in the state will be surveyed to determine current processing methods, market characteristics and pallet designs in use. The potential market for pallets of various types will be characterized based on existing economic projections for user firms. Optimum material and methods for pallet manufacture in a proposed process design, and for a process integrated with an existing wood using operation will be developed.

Bruce C. McLaughlin
B.S., Maine, 1966

THE GRADUATE PROGRAM OF RAYMOND R. McORMOND III
(1971)

The Effect of Drying Severity on the Strength of Plantation Grown Red Pine

Three drying schedules covering a wide range of temperature conditions will be used. Samples from the 8/4 stock will be tested in flexure for modulus of elasticity and modulus of rupture.

Raymond R. McOrmond III
A.A., Union Junior College, 1966
B.S., Maine, 1969

THE GRADUATE PROGRAM OF PETER R. MARTIN
(1971)

Throughfall Interception and Moisture Holding Capacity of Forest Litter Under Coniferous and Deciduous Stands in the University of Maine Forest.

Peter R. Martin
A.A.S., Paul Smith’s College, 1963
B.S., Maine, 1965
THE GRADUATE PROGRAM OF JAMES M. RAMAKKA (1971)
Study of the Breeding Season Movements of the Woodcock (Philohela minor).

James M. Ramakka
B.S., Cornell University, 1969

THE GRADUATE PROGRAM OF DENNIS M. RILEY (1971)
Program not Currently Titled
An exploratory study into the perceptions and attitudes of snowmobile users towards their environment.

Dennis M. Riley
Michigan State Univ.; B.S., Maine, 1969

THE GRADUATE PROGRAM OF ANTHONY M. RINALDI (1969)
Production of Deer Forage Following Clear-Cutting on the Penobscot Experimental Forest
This study measured plant regeneration by quantity and species on clear-cut forest land treated in various ways. Tree and shrub species received major attention, but cover composition of herbaceous plants was also determined. An analysis of variance will be run on the results to examine differences between treatments.

Anthony M. Rinaldi
B.S., N. Y. State College of Forestry, 1967
The State of Maine has been divided into climatic provinces. In this study, one of these provinces will be researched to determine if soil-site properties can be dependably related to the growth of spruce and fir. This study will be done in conjunction with a spruce-fir yield table study by Peter D. Brewitt (1971). Therefore, detailed growth data will be made available for comparing the influences of soil-site properties. Regression analysis will be used to correlate spruce-fir growth with soil-site properties. Any findings about soil-site properties as related to spruce-fir growth would be of great interest to the pulp and paper industry in Maine.

Ronald W. Schillinger, Jr.

B.S., Washington State University, 1969

Direct Seeding of Red-Pine Subsequent to Herbicidal Treatment of the Vegetation of a Pine-Barren in Maine

Observations on previous direct seeding experiments on the pine-barrens in Township 30 M.D., Washington County, indicated that drought resulting from severe competition of vegetation was the major cause of seedling mortality on the unprepared sites, while on the mechanically prepared sites the major portion of the losses were due to rapid desiccation of the soil surface during the growing season and frost heaving during the dormant season. This experiment was initiated in the summer of 1967 in cooperation with St. Regis Paper Co. and the Maine Agriculture Experiment Station to study the possibility of reforesting the pine-barrens by direct seeding red pine subsequent to deadening the existing vegetation cover with selected herbicides. Seven herbicides were used, five foliar herbicides were applied at three rates (1/2 suggested rate, suggested rate and twice suggested rate) in a water solution of 40 gallons per acre, two root herbicides were applied at suggested rate in dry form. Three of the herbicides, (2,4-D, 2,4,5-T and a 50/50 mixture of 2,4-D and 2,4,5-T) were applied at three times during the summer, (mid July, August and September). The remaining two foliar herbicides, (Tordon 101 and Bandvel-d) and the two root herbicides (Tordon pellets and Bandvel-d granules) were applied in August only. Each treatment strip (40x5 ft.) received one herbicial application and four sowing treatments. The strip was quartered into 10x5 ft. subplots. Each subplot received 10 seed spots each of which were sown with 10 red pine seed in either the fall of 1967 or the following spring by one of two methods of sowing (surface sowing or drilling). The survival through the first year will be evaluated for each treatment.

Willaim R. Sayward

B.S., Maine, 1967
THE GRADUATE PROGRAM OF CHARLES F. VALENTINE 
(1971) 
Graduate Program not Adequately Developed 
at Time of Publication 

Charles F. Valentine 
B.S., Maine, 1969 

Graduate Program not Adequately Developed 
at Time of Publication 

William R. Whitman 
B.S., Maine, 1964 
M.S., Univ. of Rhode Island, 1966