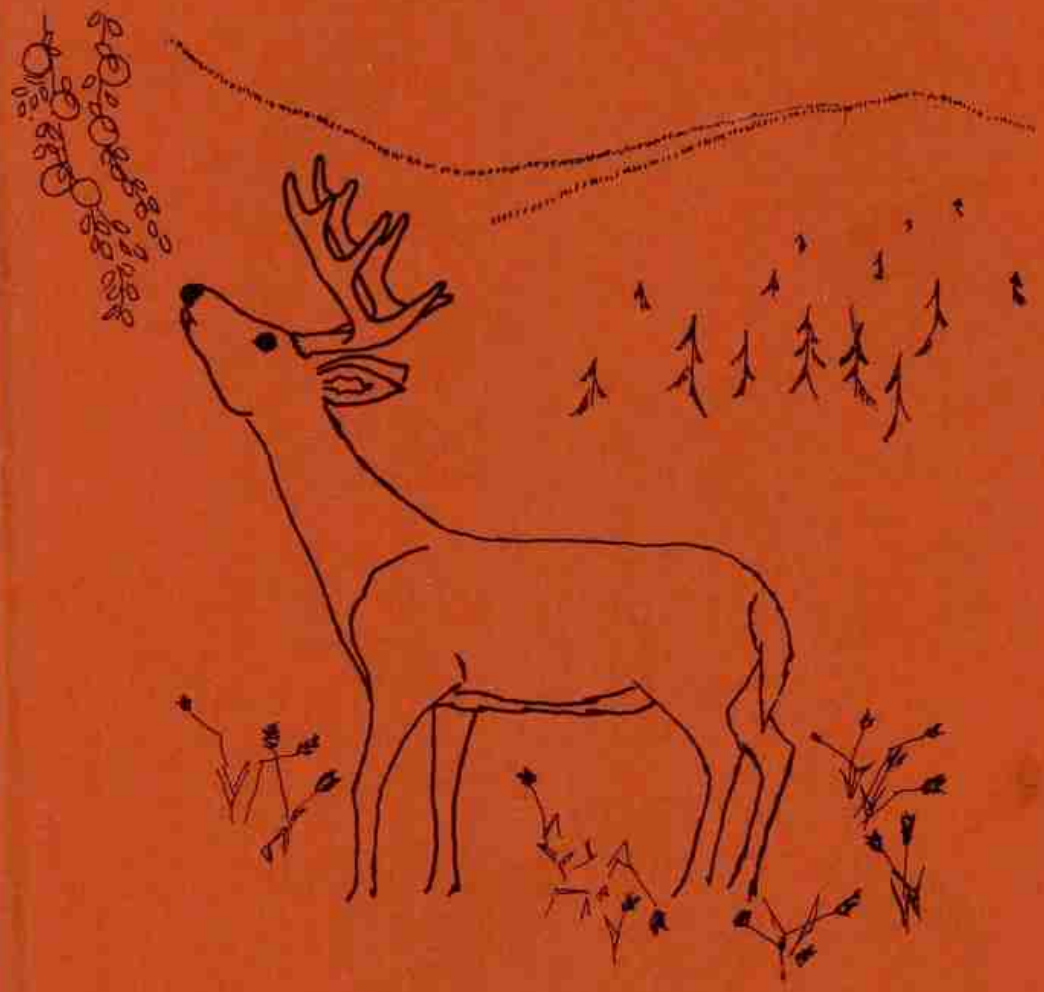
D. C. Holley

PINETUM '71



JOURNAL
of the
SCHOOL OF FOREST RESOURCES
NORTH CAROLINA STATE UNIVERSITY
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BOB SERINO, *Editor*
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BRUCE B. RICHARDS, *Artist*

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Volume XXXVII
1971

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ASSOCIATE EDITOR

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BUSINESS MANAGER

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PHOTOGRAPHER

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ARTIST

JOANNE ERNST
ASSISTANT EDITOR

VIC JOHNSON
ASSISTANT EDITOR

JIM ARNETT
ASSISTANT EDITOR

ACKNOWLEDGEMENT

It would be a task requiring supreme effort to recognize each individual who contributed either directly or indirectly to this issue of the *PINETUM.*

The editors are especially grateful to the following persons and agency without whose help *PINETUM '71* would have been an impossibility: To Dr. Ralph C. Bryant, and Dr. L. C. Saylor for their advice; to Bruce B. Richards for the blood, sweat and tears he put into his excellent drawings; to Don Simmons for his infinite patience and his camera that was always ready; to Miss Judy Baldwin for her professionalism and dedication; to Mrs. Frances Liles for her "nagging"; to Mrs. Margaret Burchette for her financial genius; to the North Carolina Wildlife Resources Commission for their excellent photographs; to the writers of our articles and to all those who contributed to *PINETUM '71* making it the success that it is.

DEDICATED TO
W. R. (MAC) McLAURIN

ONE MAN IN THE SCHOOL OF FOREST RESOURCES WHOSE LEADERSHIP, FAITH AND COURAGE HAS INSPIRED US ALL.
THE MAN – MR. W. R. "MAC" McLAURIN

Dr. R. J. PRESTON, JR.
Dean of the School of Forest Resources and Professor of Forestry
A.B., M.S.F., Ph.D., University of Michigan

Dr. L. C. SAYLOR
Assistant to the Dean, School of Forest Resources and Associate Professor of Genetics and Forestry
B.S. Iowa State University; M.S., Ph.D., North Carolina State University

PROGRESS REPORT FOR 1969-70

By

L. C. Saylor

Assistant Dean

Although several significant changes in personnel and facilities took place this past year, basic objectives of the School remained unchanged. Development and execution of programs of excellence in teaching, research and extension to better serve the state and region continued as priority goals. At a time that some have termed the "decade of the ENVIRONMENT," recognition of the need for wise *management* and *utilization* of our forest resources has increased tremendously, and renewed efforts have been made by the School to help provide the knowledge and manpower to meet present and future needs in these areas.

An important era ended in the 1970-71 period, when Dr. R. J. Preston retired as Dean of the School of Forest Resources after serving in that position for twenty-three years. Dr. Eric L. Ellwood, Head of the Department of Wood and Paper Science since 1961, was selected to replace Dean Preston on July 1, 1971. In responding to the announcement of his appointment, Dr. Ellwood stated . . . . "I will continue to aim high, in the tradition already established, to meet the rapidly intensifying challenges of the future." Upon relinquishing his administrative duties, Dr. Preston will assume new duties in undergraduate teaching.

Important administrative changes also occurred in two departments. On July 1, 1970, Dr. T. E. Maki stepped down as Head of the Department of Forestry to resume fulltime duties in teaching and research; he was replaced by Dr. C. B. Davey, who prior to his appointment served as a joint professor of Forestry and Soil Science. At the time of this writing, the new Head of the Department of Wood and Paper Science had not been appointed, but the selection committee was considering various candidates.

The physical facilities of the School were enhanced greatly with the completion of Biltmore Hall and the addition of a third floor to the Robertson Laboratory late in 1970. In a day of great festivity, the new complex was formally dedicated on November 6th with nearly 500 faculty, staff, students, alumni and friends attending. Mr. Voit Gilmore presented the dedicatory address and the Building was formally accepted by President William Friday. Other important events occurring during the day included: (1) Presentation of a portrait of Dean Preston to the School by the Alumni Association, (2) Dedication of the Libby Coating Laboratory and the Conger Room in Biltmore Hall, (3) Presentation of a Ranger Log Skidder by representatives (Larry Cross and Mark Staff) of the Clark Equipment Company, (4) Awarding of the first Distinquished Alumnus Awards of the School to Mr. Walton R. Smith and Dr. Stephen G. Boyce.

STUDENTS

Enrollment in the School of Forest Resources totaled 772 last fall which was an increase of approximately nine per cent. The breakdown by curricula was as follows:

ENROLLMENT FALL 1970

Curriculum	Undergraduates	Masters Candidates	Ph. D. Candidates
Conservation	40		
Forestry	252	16	26
Nat. Res. Recreation Mgt.	22		
Recreation & Park Adminis.	248		
Pulp & Paper Sci. and Tech.	127	2	2
Wood Science & Technology	21	7	9
TOTAL	710	25	37

Degrees awarded during the 1969-70 academic year included: (a) Bachelor of Science—132; (b) Masters (M. S. and Professional Degrees)—7; (c) Ph. D.—6.

FACULTY

In addition to the administrative changes mentioned above, Dr. L. C. Saylor was appointed Assistant Dean and will assume more extensive responsibilities in the area of academic affairs.

Mr. W. T. Huxster was appointed Head of the Forest Management Extension Section, replacing J. C. Jones.

Changes in faculty personnel included the following resignations and appointments:

Mr. Hugh Fields resigned from Wildlife extension to accept a teaching position at Elon College.

Dr. B. E. Griessman, joint Associate Professor of Sociology and Forestry, resigned to accept the Chairmanship of the Department of Sociology at Auburn University.

Dr. Leonard Hampton resigned as Forestry Extension Specialist to accept a position with the University of Georgia.

Mr. William Keppler, Head of the Wood Products Extension Section, died while on vacation in Europe. This was a great loss to the School, and every effort is being made to find a successor.

Dr. Peder Kleppe, Associate Professor of Wood and Paper Science, resigned to accept an industrial executive position in Norway.

Dr. William T. McKean, Jr., formerly senior development engineer for Battelle Northwest, accepted a position as Associate Professor of Wood and Paper Science.

Dr. R. L. McElwee resigned as Associate Director of the Cooperative Tree Improvement program to accept a position at the University of Maine.

Mr. Ronald G. Pearson was appointed Associate Professor of Wood Science and Technology. Mr. Pearson comes to us from Australia where he was with the Division of Forest Products.

Mr. Jerry R. Sprague, a 1970 graduate of North Carolina State University, was appointed Research Assistant and will join the staff of the Tree Improvement Cooperative.

AWARDS AND RECOGNITIONS

Dr. A. C. Barefoot was appointed by the Governor to the Legislature's Teachers and State Employees Benefits Study Commission for which he served as Chairman.

Dr. F. S. Barkalow, Jr. was re-elected for a three year term as a Director of the American Society of Mammalogists.

Drs. R. C. Bryant and J. W. Hardin were elected to the North Carolina State University Academy of Outstanding Teachers.

Dr. E. B. Cowling was awarded an eight months leave to the Institute of Physiological Botany at the University of Uppsala, Sweden where his works were recently recognized by the awarding of the prestigious Swedish doctoral degree.

Dr. C. B. Davey was elected Fellow of the American Society of Agronomy.

Dr. J. O. Lammi was awarded a Fulbright lectureship for the fall semester at the University of Tampere in Finland.

Dr. T. E. Maki became chairman-elect of the Forest and Range Division of the Soil Science Society of America. He also was an invited speaker at the IUFRO conference on Mechanization and Thinning at Stockholm, Sweden.

In recognition of excellent research productivity, a Forest Service Pioneering Unit in Population Genetics of Forest Trees was established at North Carolina State University for Dr. Gene Namkoong.

Dr. R. J. Thomas was awarded first prize at a joint meeting of the Forest Products Research Society and The Society of Wood Scientists and Technologists for a series of electron micrographs depicting wood anatomy.

Dr. B. J. Zobel spent several days in Chile consulting with various officials and agencies regarding tree improvement projects.

PROMOTIONS DURING THE YEAR INCLUDED:

Mr. W. T. Huxster to Extension Associate Professor of Forestry.
Dr. R. C. Kellison to Assistant Professor of Forest Genetics.
Dr. T. O. Perry to Professor of Silviculture.
Mr. W. M. Stanton to Extension Assistant Professor of Forestry.

DR. T. EDWARD MAKI
Carl Alwin Schenck Professor
of Forestry
B.S., M.S., Ph.D., University
of Minnesota

OUR WATER RESOURCES TODAY AND TOMORROW

By T. Ewald Maki

"Natural resources of . . . the Nation . . . cannot be considered as elements of separate evaluation from the economic factors that govern the lives of human beings. All life is a product of the land, and man utilizes the products of the land to gain economic security. It is this profound understanding that we are seeking, and those who would turn back the clock are indulging in daydreams and wishful thinking."

— Ernest Swift

Water is one of the few renewable resources on this Earth. Man has the capability to improve the production of water, at least in quality, if not in quantity, but all too often his burgeoning technology has contributed impressively to defilement of streams and lakes beyond the point of fitness for many types of use. As one magnificent example, Lake Erie is considered to be a cesspool, still 240 miles long, up to 60 miles wide, and 200 feet deep, but they say it stinks. And the liquid that flows down Detroit River, the main stream into Lake Erie, doesn't look like water, and probably "doesn't taste like tomato juice."

Pollution, however, is not new nor peculiar to our times. It began long before *Pithecanthropus erectus* (that ancient man so named, no doubt, because he walked with a slight stoop) shuffled around on this earth. In fact, eons earlier the rivers of this world were carrying materials in their flow to the oceans at rates now estimated to be in excess of 500 tons per square mile of land per year. It is this natural background pollution, unaided by man, that has also helped to maintain and build up the brine levels in our oceans and seas, and our Great Salt Lake. This form of pollution emanates even from very well-forested watersheds undetected because it is mainly in solution or colloidal state. Thus, through the eons streams have been flowing down to the oceans, and will continue to flow so long as this earth turns, the sun shines, and the rains come; but the marine masses of air that drift back over the land

Dr. RALPH C. BRYANT
Professor of Forest Management
B.S., M.F., Yale University; Ph.D., Duke University

Dr. JOHN W. DUFFIELD
Professor of Silviculture B.S., Cornell University; M.F., Harvard University; Ph.D., University of California, Berkeley

have left the salts behind them. Some day we may need to concern ourselves assiduously to the task of desalting the ocean waters, if we find enough energy to distil and transport the potable product on a meaningful scale, but that eventuality is very likely years away, and the need may never arise.

In our own land we have the potential to avert the nasty job of desalting the oceans' briny liquid, if we husband the land and the water stored in it and falling periodically on it. The 2¼ billion acres of land comprising our 50 states receive an average of 30 inches of precipitation each year. Of this total, 21 inches is lost to the atmosphere by evaporation from all forms of vegetation, from bare rocks and soil, from roof-tops and roads, from ponds and impoundments. About 9 inches remain for culinary and industrial use, for maintaining streamflow, and for basin storage and recharge of ground-water "reservoirs." Even with the anticipated growth of our population, the potential supply, in terms of quantity, appears quite ample for years to come. Quality and timing are a different matter, and to assure an ample supply of usable water for all purposes will require a higher level of management and husbandry of both ground and surface water supplies than we have mustered to date.

Aside from floods that result in loss of property and lives and occur largely because of Man's stubborn insistence on occupancy of floodplains, most of our water problems today stem from shortages relative to locality, time, or both. Problems of this sort in time will be solved by the interplay of forces found in the market place. We use water lavishly and waste it readily because it is so cheap. The good, potable, reasonably soft water available at any spigot in Raleigh costs only about 16½ cents per ton, or slightly more than 0.07 cents per gallon. Surely no other raw material is cheaper than this! If the price goes up, we will hasten to reduce waste in the home; and industry will find re-circulation attractive in many production functions.

Next to furnishing the necessary culinary supplies, the most important use of water today is for waste disposal. As our technology continues to develop and the GNP continues to rise, no matter what, the demands on water for waste disposal is sure to rise sharply, unless research finds ways of making dilution and flushing obsolescent. If we can't find a way of managing our waste better than we have in the past, all our major rivers will become merely channels for transporting the waste and garbage of our effluent society into the sea.

Yet all major rivers in the United States originate in drainage basins predominantly under forest cover. They constitute the postion of our country often referred to as the "land of many uses." One of the most useful of all goods and services from, and of, such land is the water, whether as baseflow or stormflow, issuing from these forested basins. From here on out, the forester supervising and administering these lands will need to be concerned to a greater degree than ever before that his silviculture, utilization, protection, and related activities will contribute to the maximum extent toward stability of flow and quality of water, consistent with management objectives within the constraints of climate and geomorphology. How else are we to be sure of having adequate supplies of "clean" water for dilution of wastes downstream?

THOMAS V. GEMMER
Teaching Technician, Forestry and Wood and Paper Science; B.S., M.S., Purdue

DR. THOMAS O. PERRY
Associate Professor of Forest Genetics
B.S., M.A., Ph.D., Harvard University

A. G. MULLIN
Instructor, Wood and Paper Science and Forestry
B.S.C.E., M.F., Duke

DR. GENE NAMKOONG
Associate Professor of Genetics and Forestry
B.S., M.S., State University of New York; Ph.D., North Carolina State University

DR. WILLIAM L. HAFLEY
Associate Professor of Forestry Biometry
B.S., Pennsylvania State University; M.F., Ph.D., North Carolina State University

DR. ERIC L. ELLWOOD
(Professor and Head, Dept. of Wood and Paper Science) Dip. For (A) Creswick, Australia
B.Sc. For., M.S., University of Melbourne, Australia; Ph.D., Yale University

DR. DONALD H. J. STEENSEN
Assistant Professor of Forestry and Wood Science and Technology
B.S.F., Iowa State University; M.F., Ph.D., Duke University

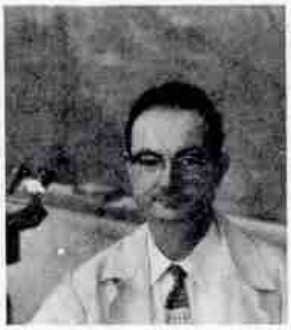
DR. ROBERT C. KELLISON
Associate Director Cooperative Programs
B.S.F., West Virginia University; M.S., Ph.D. North Carolina State University

DR. J. O. LAMMI
Professor of Forest Economics
B.S., M.S., Oregon State University; Ph.D., University of California, Berkeley

DR. L. F. GRAND
Assistant Professor of Plant Pathology and Forestry
B.S., M.S., Pennsylvania State University; Ph.D., Washington State University

J. B. JETT, JR.
Liaison Geneticist-Cooperative Programs
B.S., M.S., University of Tennessee

DR. M. H. FARRIER
Research Associate Professor of Entomology and Forestry
B.S., M.S., Iowa State College; Ph.D., North Carolina State University



DR. ELLIS B. COWLING

DR. J. H. HARDIN
Professor of Boany and Forestry
B.S., Florida Southern College; M.S., University of Tennessee; Ph.D., University of Michigan

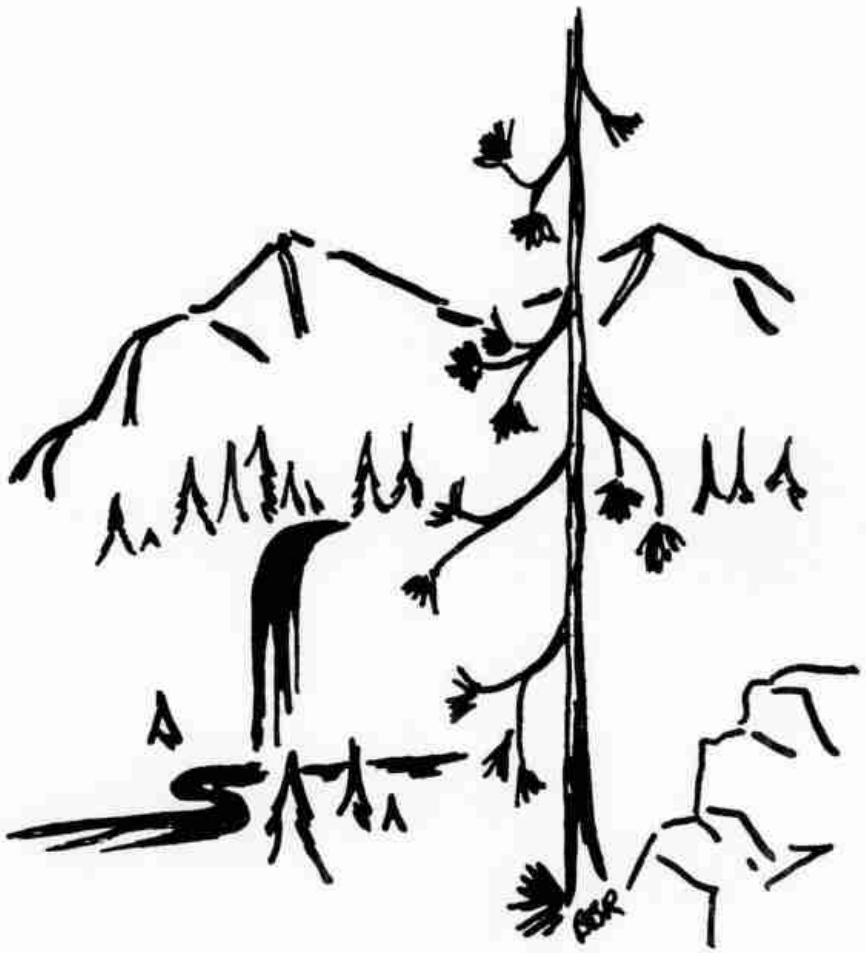
DR. A. W. COOPER
Professor of Botany and Forestry
B.A., M.A., Colgate University; Ph.D., University of Michigan

DR. C. B. DAVEY
Professor and Head, Department of Forestry
B.S., Syracuse University; M.S., Ph.D., University of Wisconsin

J. H. ROBERDS
Associate Director, Cooperative Tree Improvement Programs
B.S., M.S., North Carolina State University

DR. BRUCE J. ZOBEL
Director of the Cooperative Tree Improvement Programs
Edwin F. Conger Distinguished Professor of Forest Genetics
B.S., M.S., Ph.D., University of California

L. WAYNE HAINES
Director of North Carolina State Forest Fertilization Cooperative.
B.S.F., M.S.F., University of Florida



Forest Resources and Society's Needs

by

Eric L. Ellwood

Forestry and its related programs are essentially resource management and utilization professions which are pointed towards developing the wisest management and use of our forest resources for the enduring benefit of society. This is a huge area when one considers that approximately one-third of the earth's surface and two-thirds of North Carolina are forested.

The complexity of the field of forest resources arises from the fact that it is concerned with an imperfectly known dynamic biosystem, long term in nature, which is the source of multiple products and services of value to man.

The principal resources derived from forests may be listed as follows:

a) wood for society's requirements, e.g., lumber, plywood, etc. for housing, furniture, paper, packaging and scores of other wood products.

b) clean water production--forests are the major catchment areas for water supply; they reduce surface runoff which results in a more even release of pure water from the soil.

c) wildlife habitat--animal life is most abundant in forests, which are necessary for the sustenance of most animals.

d) atmospheric influences--forests are a major source of oxygen in the atmosphere through the mechanism of photosynthesis and also influence atmospheric temperature and humidity in the vicinity.

e) soil stabilization and amelioration--the forest ecosystem is a natural soil building system, and even in forests managed for wood production, soil improvement rather than soil deterioration is normal.

f) recreation and aesthetic values--an increasing number of Americans seek forested environments for a variety of recreational pursuits and aesthetic considerations.

The very diversity of the goods and services that can be provided from forests is at the heart of the current controversies about what constitutes wise use of our forest resources.

There is an apparent shift away from the embracement of the material benefits, such as wood, towards the intangible benefits such as aesthetic and recreational values. Some of this change in sense of values is a reaction to today's affluence, to the increasing crowding and congestion in forest recreational areas, and to some extent the belief that wood production activities are incompatible with the non-consumptive values of the forests. Undoubtedly also, the negative attitudes of some towards wood production are due to a lack of appreciation of the value of the wood resource to the total economy and failure to understand the renewable nature of forests when they view a newly logged area. Nevertheless, the challenges being raised over the management and use of forests do focus upon the need to evaluate and articulate much more clearly the social, as well as the economic, consequences of management and utilization policies and techniques.

The forest based professions have generally tended to put their emphasis in the wood production or other tangible commodity aspects of forest management, in the well based belief that more economic and social needs of

DR. VIVIAN T. STANNETT
Professor of Chemical Engineering and Wood Science and Technology
B.S., London Polytechnic Institute; Ph.D., Polytechnic Institute of Brooklyn

DR. C. A. HART
Professor of Wood Technology
B.S., Virginia Polytechnic Institute; M.S., Ph.D., North Carolina State University

DR. R. J. THOMAS
Associate Professor of Wood Technology
B.S., Pennsylvania State University; M.W.T., North Carolina State University; D.F., Duke University

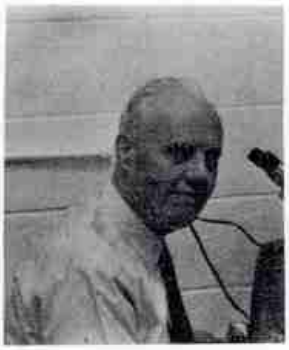
ROBERT C. GILMORE
Assistant Professor of Wood Science and Superintendent, Wood Products Lab
B.S., Pennsylvania State University; M.S., North Carolina State University

DR. A. C. BAREFOOT, JR.
Professor of Wood and Paper Science
B.S., M.W.T., North Carolina State University; D.F., Duke University

ROY M. CARTER
Professor of Wood and Paper Science
B.S.F., University of Minnesota; M.S., Michigan State University

RONALD GRAY PEARSON
Associate Professor of Wood and Paper Science
B.C.E., B.A., University of Melbourne, Australia

ROBERT G. HITCHINGS
In Charge—Pulp and Paper Curriculum, Associate Professor of Pulp and Paper Technology
B.S., State University of New York, College of Forestry; M.F., Duke University



CHESTER G. LANDES
Associate Professor of Wood and Paper Technology
B.S., Ohio State University

RAY SMITH
Executive Secretary of the Pulp and Paper Foundation
B. S., North Carolina State University

CHARLES N. ROGERS
Associate Professor in Pulp and Paper Technology
B.S., N. C. State University

DR. HOU-MIN CHANG
Assistant Professor of Wood and Paper Science
B.S., National Taiwan University; M.S., Ph.D., University of Washington

our civilization are met by this approach. However, now, with the increasing urbanized, affluent, mobile society, and the shrinking land base available for forests, the intangible values of the forests must be more clearly built into decision making.

We need to synthesize the hopes and aspirations of society with practical reality and interpret these in terms of our resource policy goals.

The questions that beg answers are:

what are the priorities of products or values to be derived from forests and how are they best obtained?

what are the limitations of the multiple use concept?

how much forest land do we need and where should it be?

These questions must be answered rationally and with a substantive base of evidence as a forerunner to establishing a sound land use policy, which is needed in North Carolina, and the South, to head off haphazard and unsound land use. Also, the controversial question of regulations applied to private forest land must be confronted.

Although much is known to provide answers to these questions, there are gaps in our knowledge, which must be filled. Generally, these gaps relate to the evaluation of intangible values of forest resources, and, to some extent, knowledge of the interactions occurring in the forest biosystem as a result of management techniques.

It is my personal conviction that, when reviewing all evidence available, an overwhelming case can be made for wood production to be rated as a high priority objective of the majority of North Carolina and southern forests. Let me hasten to add that this does not mean the exclusion of other values of the forests, as there are pressing needs for a variety of forest based recreation opportunities, for water supply, and for wildlife sustenance. Rather, the combination of the topography, climate, rapid tree growth, and the concentration of forest land in North Carolina, all create a complex in which wood production can be practiced faster and more economically on a sustained basis than in any other major forest region in the continental United States.

Excluded from the high priority timber production category should be those forested lands situated near recreational waterfronts, in unique or striking locations, or which otherwise have substantial scientific or historic value. Wood production is not incompatible with water production, wildlife management, or many recreational opportunities, and forest management techniques can be designed to favor the resource values desired.

North Carolina and the South generally have a tremendous stake in the wise use of forest land because forest based industries constitute a major part of the economic strength of the region.

The South produces two-thirds of the nation's paper pulp, more than one-third of its lumber; it harbors the largest wood furniture manufacturing center in the world, supports a burgeoning softwood plywood industry, and is a leader in hardwood plywood production and a great variety of specialty wood products. The consumer products from these industries provide the material needed for our housing and furniture, for newspapers, books and packaging and less obvious items such as tire cord for automobiles, clothes,

components for paints and finishes and even constituents for tooth paste and food flavoring.

Simply, there is not in existence any material which approaches the versatility of wood. Yet there are some who say we should not cut our trees. Consider for a moment the alternative of no, or little, wood available for our nation's consumer needs, the shelter industries without lumber, plywood, panelling, paper products or wood furniture--in the face of a projected doubling of housing starts over the next ten years--communications without newsprint, book and writing papers, wood railroad ties, wharves and utility poles, packaging of food and items of commerce without paperboard, boxboards and lumber, the paints and finishing industries without turpentine and scores of other wood derived chemicals. That we replace wood with substitutes of plastic or metal is another frequently encountered suggestion. Consider the implications of that in a world which is suffering from increasing demands on its natural resources and associated pollution. First, the wood resource differs from fossil fuels (from which the majority of plastics are derived) and mineral ores in that it is renewable. When we use up our minerals there will be no more, whereas forests can be managed to produce wood in perpetuity. Secondly, vastly more generated energy is required to convert a mineral ore or a fossil fuel to the final consumer product--metal or plastic--than is the case for wood which is essentially derived from the sun's energy through photosynthesis. The extra energy generation required to produce metals and plastics and the associated demand on more non-renewable resources to produce them, together with associated process pollution means that, by comparison, the use of wood for society's needs is far less damaging to our environment than use of alternative materials. Thirdly, if large scale substitution of wood were made through increased use of plastics and metal, what about the disposal problem when the item has served its usefulness? Wood and its components are biodegradable and naturally recycle back to soil when discarded through the action of fungi, insects, and bacteria in a relatively short period. Junk piles of discarded plastic cartons, old refrigerators and the like are mute evidence of the disposal problems of plastics and metals.

But although the use of wood compares favorably in terms of protection of our environment and conservation of our resources, by comparison with the use of other materials, there are problems still to be solved. With the shrinking land base available for forests and the increasing need for forest products, as a result of population growth, it becomes increasingly important to make the best use of the forest land that we have. We have to make our wood go further by developing more efficient technology in its use. For example, the dominant paper pulp process results in a yield of paper which is only about one-half of the dry weight of the wood delivered to the mill. We need to develop new processes which will substantially increase the yield of paper that can be obtained from wood. Further, much more remains to be done in developing reconstituted wood products from residues obtained in manufacturing items such as furniture, plywood and moldings, etc. and in recycling used products, such as paper, back to the factory for remanufacturing.

Also, many of the forests of the nation and the South can be substantially improved in productivity. Improvement of wood growth rate and quality can be obtained by selection of trees with superior genetic constitution, fertilization and a variety of silvicultural measures.

All these approaches to increase the efficiency of wood production and its utilization should not only lead to provision of society's need of the wood resource in the future, but should also reduce the pressure to cut trees on forest land better suited to provide non-consumptive values.

Together with the need for more wood production there is an explosive growth in need for outdoor--mostly forest based--recreational experiences, provided by parks and monuments conserved and developed for their scenic, natural, and historic resources, fish and wildlife areas and specialized recreational areas administered primarily by government agencies. Also private owners are increasingly opening up their forest lands for recreational pursuits, mainly hunting, camping and resort development.

Criteria must be developed for establishing priorities for recreation in the management and use of forest land and opportunities for the integration of recreational activities with production of other forest resources should be examined. One immediate need is to develop procedures whereby vest-pocket and larger parks and forests are provided in, or adjacent to, urban areas for the enjoyment of citizens, thus bringing parks to the people rather than the reverse. It has been said that in no other area of American life does the park and recreation movement touch the individual citizen more than at the community level. The South, with its newly developing urbanization and industrialization, is in an excellent position to imaginatively pioneer the use of some of its forest resources for the enjoyment of its urban citizenry, and to improve the quality of life for all.

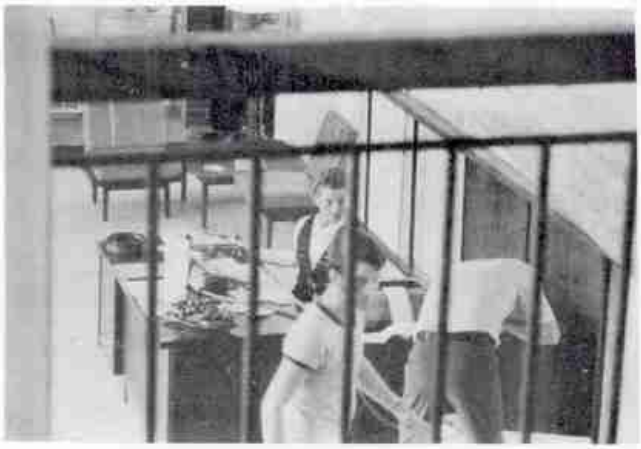
From the foregoing it can be readily seen that forest resources are a major factor in the socio-economic adjustment of society, and that interpretation of the wise use of our forest resources can mean many different things to different segments of society. However, it is essential that with the special needs and interests of all these segments in mind, goals be set and policy clearly defined for North Carolina and the South, particularly now while we are still in transition to an urbanized society.

The role of the North Carolina State University School of Forest Resources is to interpret wise use of forest resources for the enduring benefit of society and to provide programs to meet the needs through education of professionals, research, and continuing education.

THE SOIL

by Dr. T. E. Maki

The soil locks within its embrace the beginnings of all life and receives, at last, their discarded forms. It will outlive all the works of men, transcend all human thought. It traces the progress of history and shelters its ignoble end. It speaks eloquently and is dumb. It is the imperishable storehouse of eternity.



R. G. HITCHINGS

THE PULP AND PAPER SCIENCE AND TECHNOLOGY CURRICULUM–1970-71

by R. G. Hitchings

On November 5, 1970 we had the opportunity to dedicate a portion of the newly-expanded Robertson Wing of Biltmore Hall as the C. E. Libby Memorial Coating Laboratory. It is a pleasure to have the space available on the third floor for the expanded laboratories and facilities to be used in wood chemistry, water effluent, pulping and bleaching research as well as paper coating. During the period from September to December, we have also had the first two floors of the pulp and paper facilities repainted and refurbished. I hope the alumni and friends of the program will plan to visit us in the near future to see the new facilities.

The fall semester saw an enrollment of approximately 120 students in the pulp and paper program. The number of new freshmen was 36, reflecting the lower number of scholarships offered. Due to the increasing tuition costs for out-of-state students, the number of scholarships offered new freshmen has been somewhat reduced during the past year. We are hopeful that the increasing costs can be stemmed in the next few years.

The Pulp and Paper Foundation approved a budget of $107,000 for the support of the pulp and paper program during the 1971-72 academic year. As in the past, over 70 per cent of the budget is committed to undergraduate scholarships and graduate fellowships. The members of the Foundation expressed their concern over the rising differential between out-of-state student tuition charges and in-state tuition charges. A committee, chaired by Mr. Harry Pedley of U. S. Plywood-Champion Paper Company was appointed to seek a stabilization of the out-of-state differential at its present level since the pulp and paper program has been recognized by the Southern Regional Education Board. Mr. Robert J. Leaby of Hercules, Inc. continues as President of the Foundation and Dr. F. B. Schelhorn of Tennessee Pulp and Paper Company continues to serve another term as Vice-President.

Dr. Peder Kleppe left the program in August to return to Norway and head a new experimental pulping program at M. S. Peterson and Son, Kraft Pulp Mill, Moss, Norway. This plant will house the new pilot plant designed by Kamyr, Inc. and we feel that Peder's interest in new pulping processes will contribute greatly to the success of this operation.

In the middle of November, Dr. Charles McKean, formerly of Batelle-North-west, joined the staff as our water effluent treatment and air pollution abatement expert. Dr. McKean is preparing for this spring's courses and is busy writing research proposals in the area of water and air effluent treatment as it affects the pulp and paper industry. We hope an increasing number of graduate students will be attracted to this area of the program.

Dr. Hou-min Chang who was a post-doctoral student with us has been appointed Assistant Professor of Wood Chemistry. He is carrying on work in lignin chemistry and in the field of oxygen pulping and bleaching. With the aid of part-time student technicians, the work on the use of oxygen as a pulping and bleaching agent looks particulary promising.

This fall, a special program to train South American students in pulp and paper technology was sponsored by the W. R. Grace Company. "Doc" H. D. Cook has been brought out of retirement to work with the 5 individuals sponsored by W. R. Grace Co. and International Paper Co. The students are all graduates of engineering programs and, despite some language problems, have integrated themselves extremely well into the senior courses and with the student body. We are looking forward to continuing this program in the future if the demand for these special training is sustained.

Job opportunities for the graduating seniors has been quite selective so far this year. Most corporations in the paper industry are continuing to interview, but the numbers of jobs per company are definitely off when compared with prior years. No indication of salary levels to be offered has become apparent as yet. This experience is a direct contrast to the situation of the 1970 pulp and paper graduate, who received the highest starting salary at the University and was highly sought after by several companies. Many company personnel feel the new year will bring an optimism which will lead to an increase in job opportunities.

A study of the curriculum in pulp and paper science and technology has continued during the past year. The concept of two-three options within the program has been established, with the endorsement of the Pulp and Paper Foundation Curriculum Committee. The faculty will continue to refine the details of the curricula and hope to have an approval by the University for adoption by the Fall-1971. We have valued the suggestions of students, alumni and Foundation members in the preparation and revision of the program and will continue to seek them.

Highlights in Wood Science and Technology

by

Eric L. Ellwood

Curriculum Revision

The Wood Science and Technology undergraduate program has, until recently, involved a course credit requirement for graduation (143 credits) which was higher than the average program on campus. Ten of these credits were specified for an included summer program of laboratory and practical experience so that the semester credit load for students was not overly burdensome during the four years of the program. The educational experience and training received by students graduating from that program stood them in good stead in the variety of career positions they embarked upon ranging from technical service and sales, production management, cost control, quality control, to manufacturing operations in various segments of the wood industry.

However, with the general reduction in credit hours required by the University for graduation, primarily to provide students with the opportunity for more independent study and opportunities for other than classroom learning experiences, the curriculum was revised during the year to a requirement of 129 credit hours for graduation.

In approaching the curriculum revision a variety of inputs were sought including contributions from students in the program, alumni, needs of industry, government, society and the state, and viewpoints of faculty with a wide range of specialties. The new curriculum so evolved, and approved for operation in the spring semester of 1971, reduced the core requirements but provides considerable flexibility and choice in options provided which allows students to concentrate in any field of their interest. Thus, for example, students interested in science and perhaps in later graduate study with an emphasis on science, may choose their options in chemistry, biochemistry or biology. Students interested in production technology, or management may choose options in economics or business management. For students interested in the interaction between industry and society, there is even an option in political science. In all, there are seven options specified and additional options can be tailored to meet the specific needs of students. The curriculum still maintains its multidisciplinary flavor combining a theoretical background with applied technology and an included summer practicum together with work experience in industry.

Undergraduate Scholarship Program for Wood Science and Technology

Career opportunities for wood science and technology graduates have always been good. Particularly with the expansion of the forest products based industries in North Carolina, there is an increasing need for people with a background in wood utilization, processing and marketing. Instances of these needs are exhibited by the rapidly developing softwood plywood industry, the increase in the number of manufacturing plants producing reconstituted wood such as particle and fiber board, the expansion of the

paper industry into sawmilling, and the continued growth of the furniture industry, to name a few. Ahead lies a vastly increased housing need which will be largely dependent upon the supply of wood based construction materials. Wise utilization of the wood resource is coming increasingly into the spotlight because of the need to make the wood resources go further. Yet enrollments in wood science and technology have been considerably below the career opportunities available. As one means of bringing attention of prospective university students to the program, and also for providing financial support for worthy students, funds were sought to establish a scholarship program. An encouraging start was made. Through the generous donations of $2,000 from the North Carolina Furniture Foundation, and $500 on a continuing basis from Beasley Lumber Products Company, it will be possible commencing in the fall 1971, to offer scholarships for the wood science and technology program. In addition, Mrs. Nancy Keppler has graciously donated two scholarships to commemorate the late William Keppler who led the Wood Products Extension program.

It is our hope to strengthen the scholarship program in the future, and in so doing, to substantially increase the number of graduates in this all important field.

New Facilities

A major improvement in program potential was the completion of modern facilities in the new Biltmore Hall which were occupied just prior to Christmas.

These facilities include a complex for studies of the ultrastructure of wood which will house a transmission electron microscope and photographic darkroom together with optical microscope equipment. New laboratories for the study of wood physics, wood fiber properties, and wood mechanics were also constructed on the ground floor of Biltmore Hall. Other facilities constructed were six self-contained temperature and humidity controlled rooms for conditioning and testing of wood. New graduate student research laboratories and study offices were also constructed elsewhere in the new building.

The consolidation of the wood science and technology laboratories into one complex, including the Brandon Hodges Wood Products Laboratory, and the accompanying modernization of the equipment should do much towards facilitating both teaching and research besides making it more enjoyable.

Faculty Changes

All were saddened by the untimely death last summer of William Keppler, Leader, Extension Wood Products Section and Professor of Wood Science and Technology. William Keppler will be sorely missed, not only as a friend and counselor to many, but also as an outstandingly capable professional who led the Wood Products Extension group to distinction. The department said "farewell" to Dixie Hobbs of the Wood Products Extension group who retired during the year and welcome to Earl Deal who joined the Extension group to specialize in the field of wood harvesting.

In February 1971, Dr. Lester Holley of the U. S. Forest Service joined the Department as Assistant Professor. Dr. Holley's field is the economics of forest products enterprises and at least for the first year of his appointment he will work chiefly on the economics of hardwood management with Professor Zobel's Tree Improvement Program.

Dr. Hou-min Chang, who previously held a visiting Assistant Professorship in the Department, was appointed Assistant Professor of Wood Chemistry and will teach the newly structured course on Wood Products Chemistry in addition to pursuing research in wood chemistry.

It has been a year of significant progress and change for the program and we look forward to maintaining this impetus.

Future of Water Resource Management Under Multiple Forest Use

Howard W. Lull

The management of the water resource of forest lands in the future will involve more intensive consideration of water yield, flood control, and water quality. Demands for greater water yields, contributions of forest areas to damaging flood peaks, and criteria for water quality will have to be assessed along with other multiple uses to determine overall management policies and priorities.

Where and when water yields do not meet domestic and industrial demands, forest clearing with provisions for a soil-protecting ground cover can produce substantial increase in runoff: roughly, the annual increase amounting to about one-half the average annual evapotranspiration as calculated from mean annual precipitation minus runoff - or about 6 to 10 inches annually (150,000 to 250,000 gallons per acre) for most of the Eastern forest. No major clearing of forest lands is anticipated. According to one report (Dr. John Hewlett, University of Georgia) clearing only 10 percent of the forest land in the East would increase water supplies enough to meet the needs of an additional 80 million people.

Prospects of obtaining significant water-yield increases from multiple use will continue to improve as even-age management, with associated clearcutting, is more widely practiced to achieve efficient timber production. Recent estimates by the U. S. Forest Service (Washington Office 1969) suggest that a potential annual increase of 600 million gallons from the Eastern forest could be expected if all treatable forest areas were put under management. This increase could come from sustained-yield timber management of commercial forest land without lowering timber yields or the quality of water or the forest environment.

Folklore attached to the flood-prevention influences of the forest may diminish in the future as these influences are better understood. Trees, compared with other kinds of vegetation, provide maximum opportunity for controlling runoff from flood-producing rainfalls; rarely is overland flow produced from an undisturbed forest floor. At the same time most maximum floods of record have come from well-forested watersheds, not because they are forested, but because the sites they occupy (high rainfall, steep topography, shallow soils) produce high rates of runoff from subsurface flow. Further, research has shown that forest cutting, per se, has only minor affects on flood runoff. Rapid regrowth can quickly re-establish the interception and evapotranspiration reduced by clearing. Also the small proportion of the total forest area clearcut under sustained yield management, or as limited by the variation in ages of stands under private ownership, could not mount a major flood threat.

Reduction in water quality by logging should continue to decrease as more attention is paid to the location and maintenance of logging roads that produce about 90 percent of the sediment. Pre-planning the road systems can reduce the area of bare soil and the opportunity for muddy overland flow of reaching the streams. When erosion-control procedures are followed, experience has shown that municipal forested watersheds can be harvested without damaging the water resource.

C. B. DAVEY

POLLUTION EFFECTS ON FOREST GROWTH

by C. B. Davey

Trees in general, and evergreens in particular, because of continuous exposure of their foliage, reflect changes in the quality of their environment over considerable periods of time. Man-caused pollution, which results in a decrease in environmental quality, is currently on the increase. Pollutants exist in all three of the major forms of matter: solid, liquid, and gaseous. Regardless of their form, however, most of the damaging materials arrive in the forest by way of the atmosphere.

The most common pollutants in the United States are aldehydes, chlorine (Cl), ethylene, hydrogen chloride (HCl), hydrogen fluoride (HF), hydrogen sulfide (H_2S), oxides of nitrogen (NO_x), ozone (O_3), particulates, peroxyacetyl nitrate (PAN), silicon tetrafluoride (SiF_4), and sulfur dioxide (SO_2). Of these the most damaging are SO_2, fluorine compounds, O_3 and PAN.

Air pollutants of interest in forestry are generally classified as one of three chief types: SO_2, fluorine compounds and smog. Smog is itself of two distinct types: reducing and oxidizing. Reducing smog is typical of the "London" type which includes SO_2 and particulates (smoke) in fog. Oxidizing smog is typical of the "Los Angeles" type, and includes neither smoke nor fog, but rather a combination of NO_x, O_3 and PAN. The O_3 and PAN are secondary pollutants which arise as the result of photochemical reactions between volatile hydrocarbons and NO_x, both of which are components of automobile and truck exhaust.

In the past, smelters of ore which produce reducing-types of pollutants have been the major offenders, but today the automobile and other sources of the oxidizing type of pollutants are by far the most serious. However, the reducing types are still prevalent and thus still important.

Pollution is not entirely attributable to man. Nature itself pollutes both slowly over long periods, and rapidly over short periods. The geologists tell us that only three fairly recent volcanic eruptions put more toxic gases and particulates into the atmosphere than all of man's activities during his entire span on this planet. Man is important as a polluter, however, and his effect is increasing unnecessarily. A current example of major man-caused pollution exists in California, east and north of Los Angeles. There O_3 and PAN have drifted up to 80 miles and adversely affected in excess of 100,000 acres of forest land, and seriously hurt or killed 1.3 million trees, primarily ponderosa pine. Many of the weakened trees are attacked by insects and killed, whereas in the healthy condition they were not susceptible to the insect attack.

The general effects of pollutants on leaves are to destroy chlorophyll, upset photosynthesis, and thus reduce carbon dioxide fixation. Also certain tissues, such as the pallisade layer or the spongy parenchyma, may collapse. Growth rate, of course, is reduced, and in some cases dwarfism is induced. In other cases, flowers or fruits may undergo early maturation and drop off before being fully developed. Foliage symptoms often resemble other problems, such as nitrogen deficiency, or virus or disease infestations. For example, three toxic gases and two fungi have been found to produce very similar symptoms on eastern white pine. The problem of pollution damage is very complex. Simply measuring the concentration of a pollutant in the air is not sufficient evidence upon which to predict damage, since temperature, humidity, photoperiod, age of foliage, species, and even genotype within species all influence results. Diagnosis is not a simple matter.

The different pollutants are injurious to plants at various times and in various ways. For comparison, we can mention that O_3 injures pallisade cells and damages older leaves first, while PAN is most injurious to spongy parenchyma, lower epidermis, and chloroplasts, and damages young leaves first. The injurious concentrations of various pollutants varies from season to

season, and species to species, but in general the thresholds for injury are all at low concentrations, varying from less than one to slightly more than 100 parts per million. Unfortunately, injury in nature is usually more severe than would be predicted from laboratory tests with individual pollutants. This occurs because of strong synergistic effects of multiple toxicants. The concentration thresholds for damage also are lowered when more than one pollutant is active at a time.

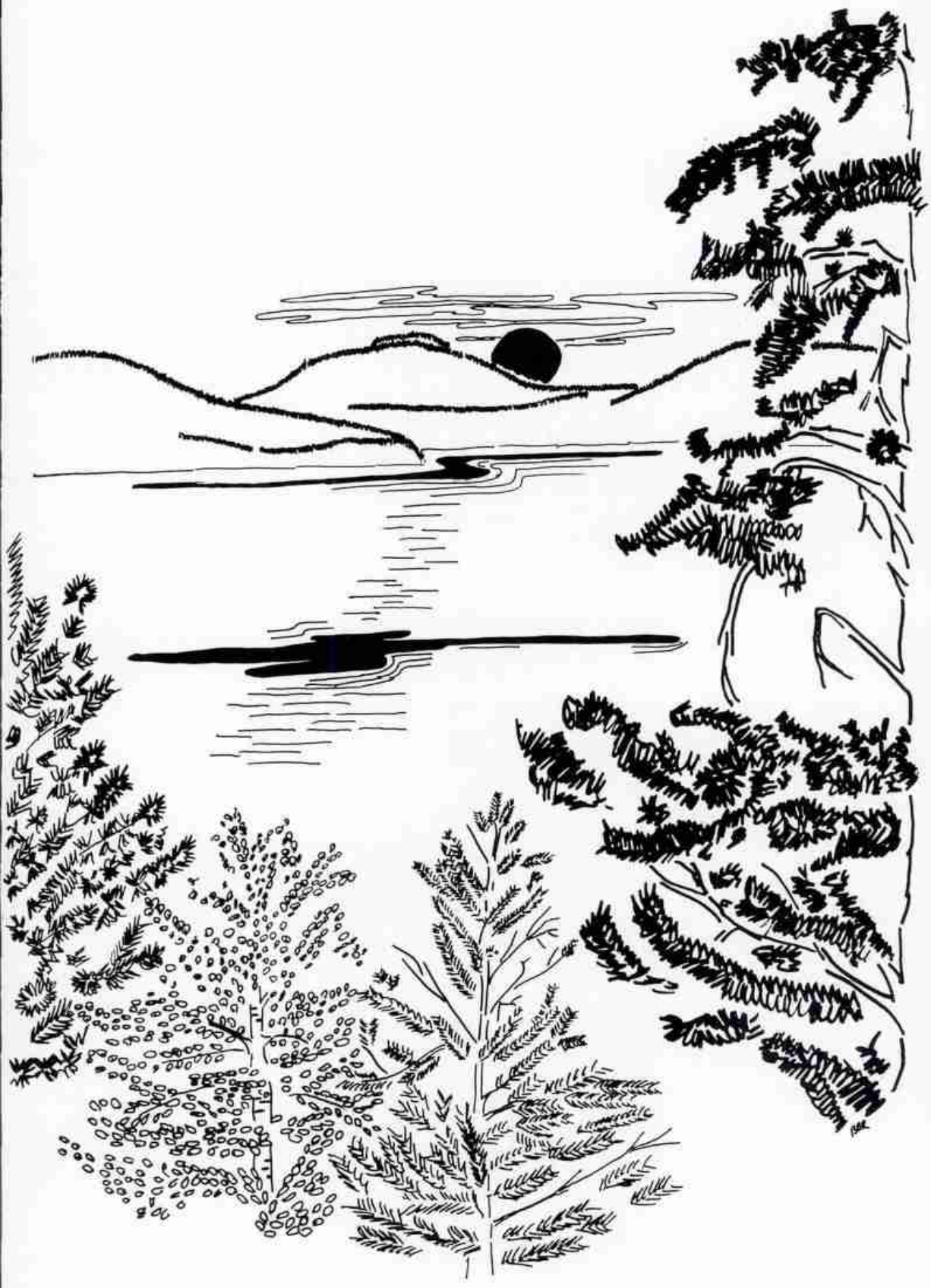
Pollution effects can vary from a slight loss of growth or discolored foliage on a few individuals to death of a complete forest. In recent studies of the effect of O_3 at a fixed concentration on eighteen species of conifers, half the species expressed symptoms of damage and half did not. Within those species which were susceptible, the proportion of damaged individuals ranged from six to sixty-nine percent. At the other extreme are devastating situations such as occured near the Copper Hill, Tennessee smelter around the turn of the century, in which all vegetation on some 47,000 acres was killed by SO_2. The denuded land was then subject to severe erosion and to this day, much of the land is still completely bare. Of interest is the recent observation that SO_2 damage to eastern white pine can be markedly reduced by fertilizing the trees with a complete NPK fertilizer. Damage from other pollutants, however, was not reduced similarly.

Forests themselves can contribute some to air pollution. Terpenes (volatile hydrocarbons) arise naturally from many species of trees and they may combine with NO_x from autos, power plants, etc., and then undergo photochemical oxidation which yeilds O_3 and PAN. Also natural or man-caused forest fires yield large volumes of particulates to the atmosphere.

Trees are also found to be anti-pollution agents in that they both scrub the air of pollutants and enrich the air in oxygen. If the pollutant level is not too high, the trees will markedly improve the quality of the atmosphere. This is of considerable importance in cities.

As we have mentioned, both the species of trees and individuals within species vary in their susceptibility to the various pollutants. This fact is now being used in the development of clones of eastern white pine which are individually sensitive to only one of the three common gases, SO_2, F, or O_3. If an area is suspected of having a pollution problem, these sensitive trees can be placed in the area and within a short time, indicate conclusively whether one of the three gases is present at a toxic level. Pollution abatement begins by problem identification.

Thus we see that trees may be victims, causes, clarifiers or monitors of pollution. Only man, however, has the intellect to perceive the cause-and-effect relationships, and hopefully the wisdom to take corrective action.



FORAGE ADDS TO VERSATILITY OF SOUTHERN FORESTS

Lowell K. Halls 1/

Southern forests are famous for their fast-growing trees and their wide variety of wood products. But amidst the trees is a complex of forage plants that add considerably to the forests' usefulness. This segment of the forest community consists of grass, forbs, and browse. It is the main source of food and cover for livestock and game.

Grass forage forms the bulk of diet for southern range cattle. Yields vary from a few pounds per acre in dense timber up to a ton or more per acre in openings. When supplemented in the fall and winter with feeds high in protein and essential minerals, the native grasses can sustain healthy cattle. Well-managed herds produce calf crops of 75 percent or more, with calves weighing about 400 pounds at weaning.

Grasses are food for game, too. White-tailed deer nibble on them the year around. They especially seek out rosettes of panicums in late winter and relish young grass sprouts in spring. Grass seeds, particularly those of panicums and paspalums, are staple foods for bobwhite quail and eastern wild turkey--two of the most popular game birds in the South.

Forbs are broadleaved herbaceous plants. In quantity they are usually a lesser part of the forage complex, but in quality many of them rate high. For example, the high protein and phosphorus contents of legumes such as common lespedeza and composites such as swamp sunflower help to balance out an otherwise seasonally deficient diet for cattle and deer. Especially valuable to game birds are the seeds of legumes and euphorbs. In fact, without access to a source of forb seeds, game birds would be scarce.

Browse forage includes the leaves, twigs, and buds of woody plants within reach of animals. Many browse species are shade-tolerant and grow well beneath trees to form a conspicuous understory, with yeilds ranging up to 1,400 pounds or more per acre annually. Browse is eaten to some extent yearlong by deer and is probably their most stable supply of food. In times of mast scarcity it is apt to be the sole source of winter food. Of special significance as scarcity diet are evergreens such as yellow jessamine, honeysuckle, yaupon, and big gallberry. Browse plants add variety to cattle diet, especially if cattle remain in the woods over winter.

The fruits of browse plants are a major source of food for many kinds of birds and mammals. In some cases the fruit yields may outrank those of overstory trees. Some species are a source of specialty wood products. Most have esthetic values. Dogwood is a good example of a browse plant with a variety of uses.

Growing forage and timber isn't a one-or-the-other situation. Under good management the two purposes can be combined harmoniously. The result can be expanded opportunities for the utilization and enjoyment of southern forests.

1/ Principal Ecologist, Southern Forest Experiment Station, USDA Forest Service, Nacogdoches, Texas.

A LOOK AT RANGE MANAGEMENT TODAY

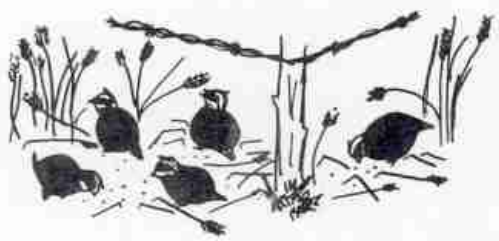
By T. V. Russell, Chief, Range Branch, R-8

Range management today, in the Forest Service, has taken on a new and exciting meaning. We are looking at our problems of management and protection of our rangelands through ecology, and the key to control we hope to achieve is through the ecosystem approach to ecology.

In the past we have inventoried and studied the native rangelands around the central theme of livestock production, within the working concept of good land stewardship. We will continue to work with livestock but with greater emphasis on basic ecology of our natural rangelands. As we approach the job of studying, managing and protecting natural vegetation, we find the system of the range ecosystem quite traditional. The range system is composed of communities of plants and animals in their "natural" environment. It is variable and complex, with innumerable species components -- plants, animals, soil, climate, and topography. The components acquire a dynamic stability due to the diversity of living organisms and the complex interaction of energy and nutrient movement among them. We believe it is this very magnitude, diversity and complexity that has delayed the application of the ecosystem. The Forest Service has long recognized the many values of range resources as well as the complexity of its interacting factors. Its research has been directed at basic ecology as well as at grazing management and direct resource improvement. A thorough understanding of the range system has been our basic objective in our manipulation or management of these wildlands to increase usable products and services.

In this ecosystem approach we will identify and describe the products desired, the inputs we must make and the constraints under which we must operate. Inputs are usually considered disturbance factors such as grazing, soil disturbance, disease and insect control and animal population control. The outputs would include water, air, fish and wildlife, livestock, recreation, natural beauty and open space. When we take a close look at most biological systems, we recognize that they are usually very fragile. So in most cases we will find it imperative to constrain activity. When we place constraints on our activities, we create what we call multiple use zones.

Good management of an ecosystem will, in practically all cases, be synonymous with good multiple-use management. This concept of ecological manipulation is the central element in our approach to multiple-use management. Again, let me stress that range forage is but just one output of our total range system.



TIMBER RESOURCES—TODAY AND TOMORROW

by

Dean N. Quinney
Assistant Director
Southeastern Forest Experiment Station
Forest Service, USDA

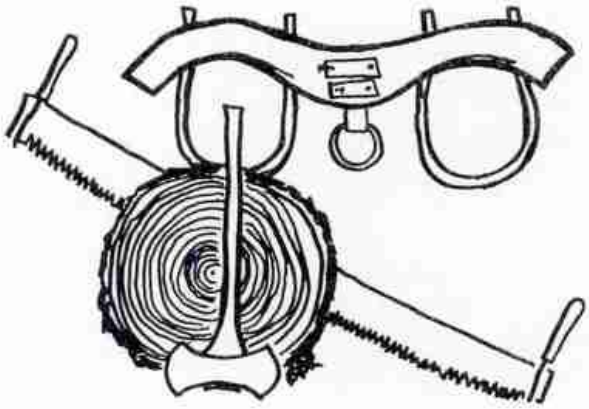
Since 1885, when Sargent's REPORT ON THE FORESTS OF NORTH AMERICA was published as part of the Tenth Census, the extent and condition of the Nation's standing timber resources have been the major determinants of the course of American forest policy.

Over the years, techniques for obtaining data on our timber resources have progressed from what can best be termed "arm chair estimates" to our present systems of forest inventories, which involve continuous sophisticated field sampling, remote sensing devices, extensive use of photogrammetry, and computing procedures which utilize the most advanced automatic data processing hardware.

While the reliability of information concerning our timber resources has increased progressively, the interpretation of these data and the projections of trends, future conditions, and resource adequacy remain a challenging task. It is the purpose of this essay to examine briefly some of the major factors which may influence the adequacy of our timber resources to satisfy the needs of America, both now and in the future.

As the decade of the 1970's begins, it seems obvious that we do not suffer from a shortage of timber. It is true that competition for certain kinds and grades of materials has increased the price both of standing timber and logs or bolts delivered to the processing plants. However, the price of most industrial raw materials has risen substantially over the past several decades, and many of these increases have been as much the result of rising costs in general (labor, transportation, etc.) as the scarcity of the raw material in particular. Of course, there are exceptions to this statement for certain species and specific locations. Overall, it appears that the forestry efforts and programs of the past, both on the part of government and private industry, have molded a timber resource which provides many of the essentials now enjoyed by the most affluent society in history.

But what of the future? Here the outlook becomes less certain. During the past several decades, we have become conditioned to a rapidly expanding population and economy. This expansion has been characterized by some drastic changes in "life styles" for all of us. We have seen the bridging of the Country with a vast network of super highways. We have become much more mobile, both in our willingness to change jobs and residences, and also in our leisure and vacation pursuits. Our large population centers have grown at a fantastic rate, with more and more of our population crowded together in belts of super cities we now term megalopolises. In contrast, some of our rural areas have seen drastic population declines as technology and efficiencies in agricultural production have reduced manpower needs and acreage requirements for food production. While all do not share in the general prosperity, a majority of Americans enjoy an affluence unrivaled in



the world. One-car (or no-car) families of the past now have become two- and three-car families. Our crisis in housing is to some extent a consequence of the fact that most of us expect homes much larger and more luxurious than those deemed quite adequate by our parents and grandparents. The use of fiber materials for packaging consumer products now is being supplemented by a new "disposable era," characterized by more and more products (including items of clothing) designed to be used and then discarded. All of these factors have placed added demands on our forested lands.

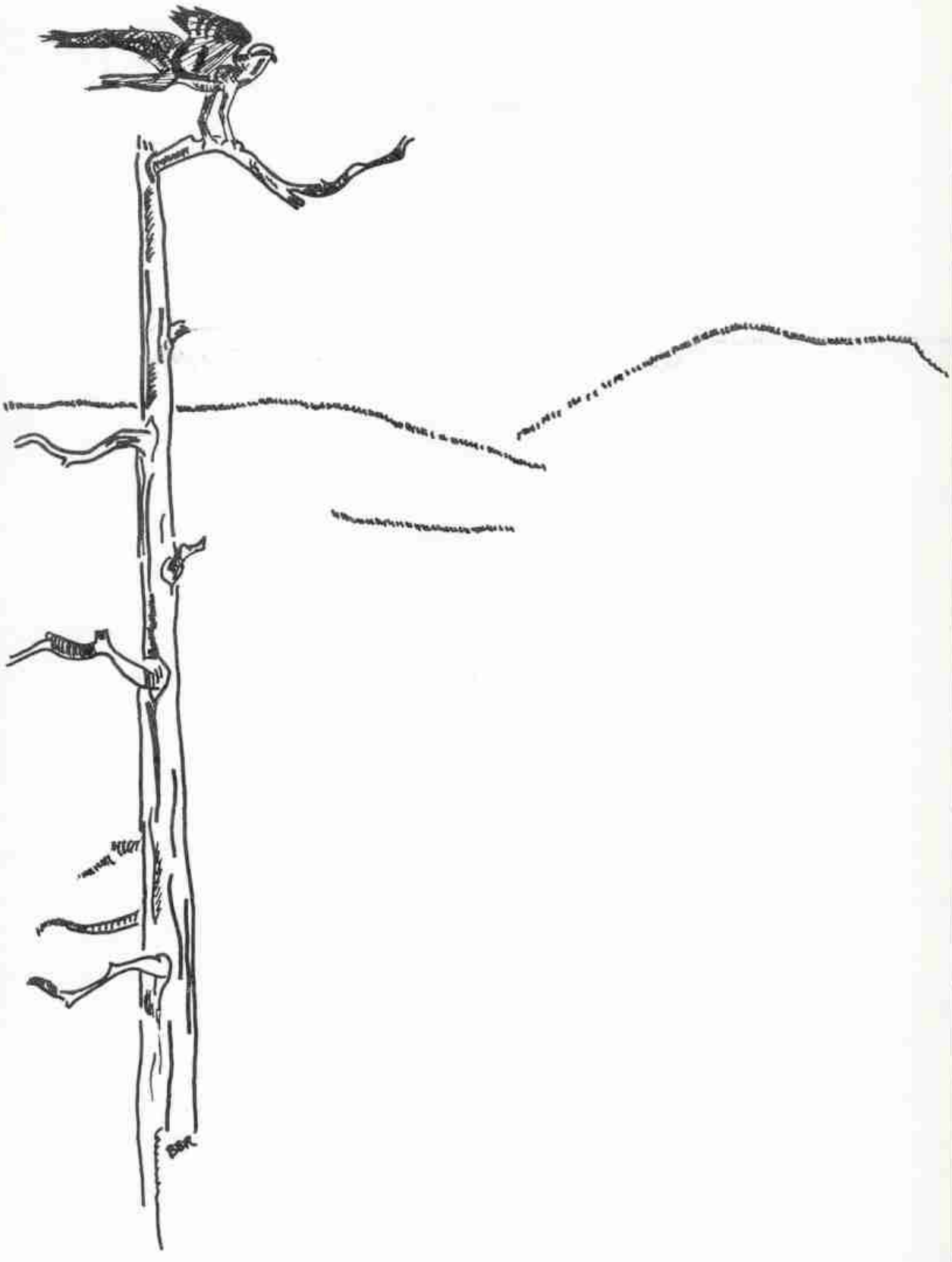
If we project these many trends over the next several decades, the adequacy of our timber resource becomes more questionable. However, we like to believe that man can influence his destiny by anticipating needs and planning actions accordingly. It seems to me that these possible actions can be divided into two broad categories, one involving the timber resource and the technologies of management and use, and the second involving the consumer's demand for the products of this resource.

It is often stated that land is a fixed resource, and this certainly is true. However, we do have options on how we use land. I believe that few would argue that our commercial forest lands cannot be managed to produce more timber. Efforts in this direction have been underway for decades and the results are apparent. However, there still is room for much improvement. Genetics research has produced faster growing, better formed trees, but the amount of forest land planted to these superior strains still is extremely limited. Improved forest protection to reduce our annual losses from fire, insects, and diseases can "stretch" our timber resources. Many of our forest lands available for commercial timber production are nonstocked or poorly

stocked. In addition, changes in agricultural technology have led to the abandonment of farms in many sections of the Country. Not all of these lands will be available for reforestation, but many could represent an opportunity to reforest and expand the timber resource base. In the South, many of the thriving loblolly and slash pine plantations grow on what once were cotton lands. An additional, and by no means insignificant, opportunity to stretch our timber resource is through improved utilization. Breakthroughs in timber harvesting or processing technologies could make the presently nonusable tree or portion of tree the raw materials of tomorrow. An example of this involves the vast quantities of material available in the presently little-used upper stem and limbwood of hardwood sawtimber-size trees. Development of a really efficient and economical method of debarking this material after chipping could vastly expand the amount of hardwood raw material available to the fiber industry. A similar opportunity involves paper and other wood fiber products now discarded as trash. The Forest Service recently has expanded research on techniques to recover and recycle wood fiber from the Nation's municipal trash heaps. It is estimated that reclamation of half the wood and wood fiber now discarded as trash would reduce the drain on our timber resource by 30 million cords a year. None of these opportunities to expand the timber resource is easily achieved. And certainly, judicious planning would be required to ensure that programs and monies were directed toward those efforts or combinations of efforts that would produce the most satisfactory payoff--both in timber production and the production of our national environment. But opportunities do exist.

The second broad course of action concerns the demand on the timber resources by consumers themselves. The rise in urban populations has been accompanied by a new awareness and concern for the environment. There now appears to be a shifting of attitudes on the part of the public regarding our utilization of natural resources. Organizations such as Zero Population Growth, the Sierra Club, and others have raised issue with the direction we are collectively heading. Spokesmen for these groups now call for a slowing-down in population growth and a reevaluation of our consumption patterns. The extent that these propositions will become a reality, or have a significant impact, will depend on their degree of acceptance and implementation by American society. But, if our population does tend to stabilize and if more and more of the public decides to limit consumption, there could be a significant lessening of the anticipated demand on our timber resource. The economic consequences could be very severe for some firms, individuals, and localities. The issue of economic growth in our society is complex, and it is sufficient to say that while some would benefit, others would suffer.

In briefly outlining the foregoing courses of action that our society might take to ensure that adequacy of our future timber resources, it is not my purpose to draw conclusions or editorialize about which path or paths we should follow. The forestry profession, including the graduates of 1971, will have a major role in assessing the feasibility, costs (both economic and social), and consequences of these and other actions. The challenge is great and we must make our best contribution.



DR. F. S. BARKALOW, JR.
Professor of Zoology and Forestry
B.S., Georgia Institute of Tech., M.S., Ph.D.–University of Michigan

Wildlife Today – and Tomorrow (?)

by

Dr. F. S. Barkalow, Jr.

Professor of Zoology and Forestry

Today's wildlife heritage is a legacy from the past - its future is determined by today's events. While the wildlife biologist, the forester, and the ecologist play critical roles in the grim fight against environmental degradation, it is society as a whole that decides the ultimate fate of our wildlife resources. There have been some notable victories - the bison, antelope, and trumpter swans were saved from almost certain extinction by timely public action. Through sound management the beaver, elk, deer, bobwhite quail and wild turkey have made dramatic recoveries from their historic lows and the mourning dove is more abundant today than at any time in history. However, the Carolina parakeet, passenger pigeon, heath hen, great auk, and giant mink are gone forever and others threatened. A total of 102 species appear on the 1970 list of "Endangered Species in the United States" - thirteen more than in 1969. In only a few cases, eg. the polar bear, has overharvesting been a factor in a species' decline. Environmental contamination, habitat destruction, or both, account for the presence of most of the species on the endangered list.

It would be wonderful to be able to predict a bright and glowing future for all wildlife species! Unfortunately, ugly clouds on the environmental horizon grow larger each day. Not only wildlife but man himself may become a victim of the environmental storm.

The "miners canary" of environmental health is our wildlife resource. Because we share the same environment with the birds of the air and the fish of the sea, pollution affects us all. Since most wild creatures, are more sensitive than man to a polluted environment, they often act as an early warning signal of danger. Warnings that are usually ignored until tragedy strikes. Drastic decreases in many bird populations occurred in Sweden prior to the discovery that fish were carrying levels of mercury hazardous to man. Mercury contamination is wide-spread and increasing in our fish and wildlife

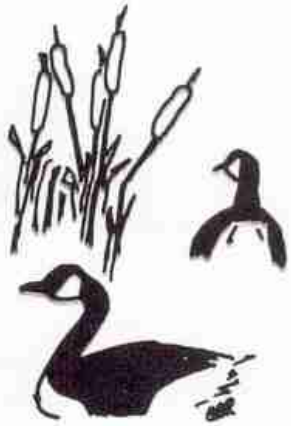
resources - it poses an imminent and serious threat to North Carolina's multimillion dollar commercial and sports fisheries. Mercury constitutes a health hazard to our citizens who are unknowingly eating contaminated wildlife.

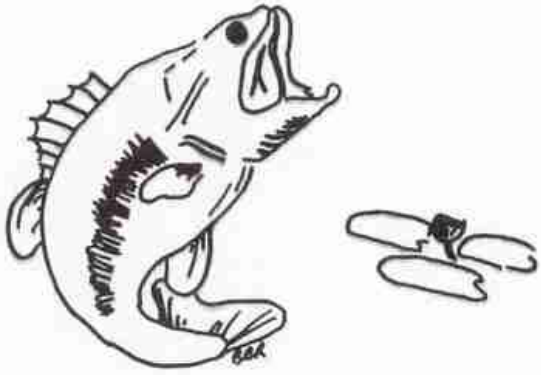
DDT is recognized in wildlife circles as the pesticide of extinction - the bald eagle, peregrine falcon, osprey, brown pelican, Cooper and sharp shin hawks, once common in North Carolina, are now rare and face possible extinction - the victims of pesticides. Among the mammals, bats are the most sensitive to DDT. No longer do the bats of the great Morenci, Arizona maternity colony destroy, as they once did, 40 tons of insects nightly. The colony which ten years ago numbered in excess of 25 million is down to only 30,000 individuals many of whose young - incapable of flight were found to carry excessive levels of DDT and DDE in their body fat.

But environmental pollution - serious though it be - is not the only difficulty facing wildlife today. Habitat destruction is a problem of mounting magnitude which foretells an impoverished wildlife legacy for our children. Our wetland species are particularly vulnerable and face a bleak future in North Carolina where 208 of its 211 watersheds were found in need of "improvement" by the North Carolina Soil and Water Conservation Committee. Past experiences with subsidized "improvements" indicates a loss of up to 90 per cent of the economically valuable wildlife and a deceleration of growth or killing of wetland timber species particularly the tupelo gum and cypress. What future ecological effects changes in the water regime will have is unknown.

Habitat diversity holds the key to an abundant and varied wildlife fauna. As we change our multispecies forests to vast acreages of a single species monoculture we create a biological desert for all but a few forms of wildlife.

I have presented a rather bleak future for most wildlife species - I do not presume to be a prophet - I am merely pointing out the inevitable consequences of our current practices. Society can decree that these practices change - for the challenge of a better environment for man and wildlife is the responsibility of us all. The pertinent question is whether we as resource managers can meet this challenge. How we respond will determine our Wildlife Today -- and Tomorrow.





WILDLIFE AND POLLUTION

By: Clarence Cottam, Director

Welder Wildlife Foundation

America should be concerned about the adverse affects of pollution on wildlife because wildlife contributes immeasurably to human betterment. To deny proper and intelligent husbandry to our natural resources is to commit national suicide. The strength and economic security of our people in large measure depends upon: (a) the quality, strength, character and moral fiber of our people, and (b) the extent, quality and diversity of natural resources of this nation. These include our soils, water, air, forests, lakes, streams & oceans; in short our plant and animal life, including our wildlife and all our renewable and non-renewable resources.

As a nation we are slowly learning that soil, water, air and sunshine are basic and essential ingredients that make life on earth possible. Life is curtailed or handicapped to the extent that any of these basic necessities are made unusable or unavailable. Pollution is a major factor limiting the resource capability and value of water, land and air.

America should be greatly concerned about its wildlife and other renewable natural resources because of their great social, economic, recreational, esthetic, health and spiritual values. It is well to remember that mammals, birds and other vertebrates have much in common with man in their requirements for food, water, cover and total habitat as well as in their physiological and body chemistry processes.

In past years canary birds in little cages were taken into the mines where people were mining coal. The birds were a little more sensitive to the adverse effects of "mine-damp", carbon monoxide and other unfavorable conditions in the mines than were the people. When a canary was made ill and lost its balance in the mines, the miners knew it was time for them to hastely retreat.

When our air, water, food, and environmental factors kill off substantial numbers of fish, birds and other animal forms we should realize that the environment likewise may not be safe for man. Birds and mammals and lower forms serve well as sensitive indicators - a sort of litmus paper or red light that something in the environment may not be good for man.

It may be significant that more species of wild birds and mammals are now in trouble in America than at any previous time in recorded history. Pollution surely is one of these unfavorable factors. The curtain has already dropped on 48 different kinds of America's vertebrates: 9 mammals, 33 birds and 6 fishes. More than 100 additional forms are officially listed as endangered and many other species and races are known to be in distress and decreasing in all or in part of their range.

Consider the percipitous decline and almost total elimination of the Brown Pelican during the past ten years along the north and west Gulf coast from Florida west to Texas and south far into Mexico. Also on the Pacific coast this species has had an almost total failure in reproduction during the past two or three years. Even up until ten years ago the Brown Pelican was so abundant that it had been officially listed as the state bird of Louisiana with its likeness appearing on the official seal of the state and on official

stationary. For several years of the past ten no live specimens of this species were even seen along the coast of that state!

Fifteen years ago this species was abundant along the entire extensive Texas coast. Today only a little over 100 survivors are to be found and reproduction there is indeed minimal. Two young 6 weeks old or over were produced in 1969 and six in 1970. Whether these reached maturity we do not know.

The pelicans and many other fish-eating and predacious birds, such as the cormorants, herons, egrets and other wading birds, the bald eagle our national emblem, osprey, peregrine and other falcons, and most other hawks are examples of these species that are near the top of the food chain pyramid. These are among the birds seriously being affected. The pelican often feeds on fairly large and old or mature fish; this larger fish had fed on smaller fish, and the smaller fish on still smaller and younger ones, and these in turn on smaller aquatic forms such as small crustacea and these on plankton and on smaller plant forms.

An increasing volume of evidence based on research and experimentation give convincing evidence that these birds near the top of the food chain are adversely and often seriously affected by the stable, long lasting and highly toxic family of organchloride pesticides including DDT and its metabolites, dieldrin, aldrin, endrin, heptachlor, and toxaphene. These chemicals are among the most pharmacologically active substances known which trigger body secretions which control other body functions. They tend to prevent calcium from being produced or transported in the birds to cover the eggs to be laid. These pesticides are fat soluble and therefore are stored in body fat tissue and they are very stable or they break down in nature spontaneously only very slowly. These pesticide chemicals are not easily metabolized in the bodies of animals. Thus they tend to accumulate to higher and higher levels as they go up the food chain. This phenomenon is known as biological magnification and it may increase from a few fold to well over 100,000 fold.

Some 20 years ago Lake George in the beautiful Adirondacks of northern New York stopped producing trout yet that Lake historically had been famous for its excellent Salmonid production and fishing. A year or so later the same thing occurred at Lake Sebago, Maine and then in other lakes. Research and experimentation revealed that as the DDT and related organochlorides increased, the point of lethality was reached as the young fish were ready to leave the egg sac. At this point the young died, thus eliminating reproduction. At this concentration the adults could still survive and grow fat.

The history of Lake Michigan's Coho Salmon was a major factor causing the state to virtually prohibit the use of DDT and some related biocides in the state. When the sea lamprey largely eliminated the white fish, lake trout and other Salmonids and most other sporting fish the lamprey were finally controlled. Coho salmon in the spring of 1966 were then introduced. They did exceptionally well in the absence of effective predators and by the fall of 1967 they had grown to the size of about 15 to 20 pounds. Sporting and commercial interests as well as the State anticipated with eagerness the opening season for a great harvest and for the restoration of an important

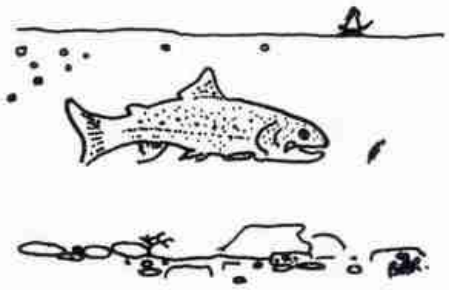
economic resource. Unfortunately DDT got there first. When the harvest was just beginning a federal Food, Drug Administration inspector made a routine check and found most of the fish containing from 10 to 20 parts per million (ppm.) of DDT and some other related pesticides. The agency gave a maximum tolerance of 5 ppm. so the fish could not be transported for sale.

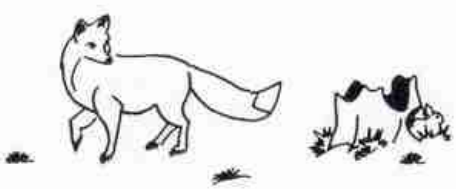
Lake Erie is another very serious example of the public loss through lake pollution. Industrial, domestic and agricultural pollutants have so degraded this Great Lake that scientists believe it cannot be restored to former abundance of productivity within a century even with every effort to restore the lake were made.

The possible seriousness of pollution through agrochemical biocides may be realized in considering our coastal estuaries. These areas where fresh and salt water co-mingle represent the principal nursury grounds for a major part of finned fish, shrimp and shell fish along our coasts. This area forms the principal nursury grounds for the vast majority of ocean commercial fish harvest. We are startled to learn that in Laguna Madre along the southern Texas coast the more important sporting and commercial species are not now reproducing at all well. Eggs are being laid but obviously the hatch is extremely poor and the ratio between members of adults to young is getting further apart. This obviously is a repitition of the condition that developed at Lake George, New York, Lake Sebago, Maine and in Lake Michigan.

Much of the world is dependent upon the protein harvest from the sea and every effort must be made to prevent the distruction of this indespensible food resource.

Pesticides were developed in response to a public need, yet they have been used with abandon in this country. A billion dollar pesticide industry and a Federal Department of Agriculture have seriously over sold this method of control. Serious contamination of the environment is the inevitable result in far too many areas. Such excessed as Agriculture's proposed $200,000,000 million "fire ant eradication" and its promiscuous and unrestrained use of 30 pounds of 10% dieldrin per acre at public air bases are examples of our own government's excess in this use of dangerous biocides. More restraint and maturity of judgment is called for.





THOMAS I. HINES
Head of Department and Professor of Recreation Resources Administration
B.S., North Carolina State University; M.A., University of North Carolina at Chapel

NATIONAL TRENDS IN MUNICIPAL RECREATION

Thomas I. Hines

In no other area of American life does the park and recreation movement touch the individual citizen more than at the community level. Occasional visits by the average family may be made to the state or national park, but it is the neighborhood community center that is most frequented by the family members.

Many types of agencies administer the municipal recreation programs throughout the United States. In fact, state laws which govern the municipal recreation operations usually permit each local governmental organization to choose the type of managing authority that each locality believes to be best for their benefits. Across the nation management trends, however, indicate a shift from all types to the combined recreation and park authority. According to the latest statistics, the number of combined park and recreation agencies almost tripled in a five-year span. During this same period of time the separate recreation department and the separate park agency have declined in number.

In reference to the national picture, geographically, the heaviest concentration of municipal recreation agencies is in the Great Lakes district. At the other extreme, the Pacific Northwest has the fewest departments. The greatest number of agencies are found throughout the nation in cities of 25,000 population or less.

The most recent available data indicates that the annual operational expenses for municipal recreation within the United States will exceed more than $900 million. These are direct costs and do not include personnel, equipment, facilities, and services that are contributed by other government departments, organizations, or individuals. Park and recreation authorities receive financial support from many sources. Most frequently, taxes and other types of public funds are used. Charges and fees are playing a more prominent role that ever before. Most important is the part participated in by federal assistance.

Key indicators of a well balanced recreation and park program are the number and variety of activities offered. Specific activities are classified in the following categories: (1) games and sports, (2) outdoor activities, (3) water sports, (4) winter sports, (5) crafts, (6) fine arts, (7) performing arts, (8) special services, and (9) miscellaneous. Youth activities usually outnumber adult programs in most categories listed under games and sports. However, adults lead over youth in such activities as gardening, boating, sculpture, band concerts, dancing, and the performing arts. Games and sports is the most popular category by both youth and adults.

The success and effectiveness of park and recreation services depend in large measure upon the employment of qualified personnel. Qualified personnel are dependent upon an adequate baccalaureate degree in recreation. Without question, the most significant trend in municipal recreation is the trend towards professional education. Approximately 25 per cent of all workers in municipal recreation are employed on a full-time, year-round basis while the remaining 75 per cent work on seasonal or part-time schedule. Full-time male professionals outnumber full-time female professionals by more than three-to-one. Approximately one-half a million workers serve as volunteer leaders in municipal programs of recreation throughout the United States. Most of these volunteers assist as activity leaders.

THE FUTURE OF FOREST RECREATION

By Michael F. Brewer

Biologists can find a universe in a drop of water. Land managers and administrators may echo this claim for forest-based recreation, which contains many generic problems that we encounter in other walks of life. Our concerns with campground design, multipurpose silviculture, and our efforts to disentangle the values of such disparate forest products as recreation and timber have relevance for many critical contemporary problems. Forest recreation has spawned concepts for management and conservation which enable us to cope more adequately with what may become the critical issue for land policy over the coming decade--namely preservation *vs.* development of our natural environments.

This debate will affect not only the extent and quality of forest recreational resources available in the United States, but it probably will have profound effects in other parts of the globe--including some of the less-developed countries.

Having suggested the importance of this issue, we might speculate about its resolution over the coming years. For such an exercise, public land management decisions should be distinguished from those undertaken within the private sector. With respect to the former, there are a number of straws in the wind which suggest that recreation values will be considered more fully in future land use decisions by public agencies. One such straw was the defeat of the Timber Supply Act of 1969, which would have exposed recreational land wilderness areas of the public domain to invasion, in favor of increased timber production. This bill failed passage in the Congress. Admittedly, executive branch actions within the Forest Survice were able to augment timber supply, but Congressional action on the bill reflected awareness of the growing importance of recreation.

A second important decision, enhancing the position of forest recreation in the multipurpose pecking order, was taken last year by the Supreme Court which ordered the Federal Power Commission to re-hear a previous decision to license a northwestern power syndicate to develop hydroelectric generating facilities in the Hell's Canyon of the Snake River. The Federal Power Commission was specifically instructed to take into account the recreational values of the Canyon, which would be sacrificed by hydro-development. The logic for these actions argues that either the value of recreation is sold short in public land use decisions, or that its relative value is increasing over time as a result of growing demand.

Within the private sector, we already have seen the introduction of various preservation statutes and procedures. Some of these cede development rights of private land to public bodies, in other instances full acquisition may result. Although this *per se* does not increase public recreation facilities, it does enhance fish, wildlife and other amenities which ultimately benefit the general public.

Perhaps a more significant development is the commercialization of private forest campgrounds. In earlier years, private companies with extensive land holdings often provided public access and maintained campground

facilities--one assumes primarily for public relation purposes. This is now becoming commercialized, and at least one company offers campground franchises throughout the country. In a somewhat parallel development many timberland owning companies also are finding themselves in the business of selling real estate for "second home" communities. This has been both an economic boon and a bane to the corporations, for although prices per lot may be high, public regulations are visited upon such developments and adjoining acreage is accessible--despite "no trespassing" signs--and therefore more vulnerable to fire and other forms of human predation.

In short, we may expect more of our forested lands becoming managed primarily for recreation than has been the case in the past. One can also anticipate larger acreages of federal land reserved from development because of the recreation opportunities they provide.

New planning will be necessary in order to cope with this shift in land use management patterns. A host of related problems will occur, many of which will require new laws and administrative procedures. High on any list of "related problems" would be the effective regulation of recreation vehicles on forested land. These are especially damaging in areas with highly mineralized soils where skid marks or vehicle pathways present serious erosion problems. They also promise to be destructive of wildlife and their habitat. Certain states, for example New York, are making an effort to control these vehicles but generally regulatory responsibility has not been designated to any specific agency. Model legislation and administrative procedures developed for handling this new product of contemporary technology can be expected and will be welcomed.

Behind all of these changes in demand for recreation and the problems created by related technology we still have to reckon with certain basic irreversibilities in developing recreational opportunities in forested areas. One can increase the intensity of an area's development over time, but usually it is hard to move in the other direction. This principle has yet to be fully incorporated into a theory and practice of forested land management for recreation purposes.

DR. L. W. MONCRIEF
Assistant Professor
B.S., Texas Technological College; M.S., Michigan State
Ph.D., Michigan State

CHARLES C. STOTT
Associate Professor of Recreation Resources Administration
B.S., North Carolina State University; M.S., Indiana University

L. L. MILLER
Associate Professor of Recreation Resources Administration
B.S., Wake Forest College; M.A., University of North Carolina, Chapel Hill

M. ROGER WARREN, JR.
Assistant Professor of Recreation Resources Administration
B.S., Wake Forest College; M.A., West Virginia University

DR. WILLIAM E. SMITH
Professor of Recreation
B.S., Western Carolina University; M.A., UNC-Chapel Hill; Ed.D., George Peabody College, Nashville, Tennessee

RICHARD A. CRYSDALE
Research Assistant, Recreation Administration
B.A., University of Wisconsin; M.S., Utah State University

DR. ROBERT E. STERNLOFF
Associate Professor of Recreation Resources Administration
B.S., M.S., University of Illinois; Ph.D., University of Wisconsin

CERTIFICATION OF PROFESSIONAL RECREATORS IN NORTH CAROLINA

Robert E. Sternloff, Associate Professor

Young men and women entering the field of recreation following successful completion of their work in North Carolina State University, and other institutions of higher learning, hold the key to recreation's future rate of progress in climbing the ladder of professional status in the United States. Of major importance in this connection is that the young professional recreators support the exercise of control over those who may desire entrance into the profession by means of certification.

The first state-wide professional certification plan for recreation personnel in the United States was initiated by the North Carolina Recreation and Park Society on July 1, 1954. This plan began with a "blanketing-in" period to cover all of those who at the time of its inception were employed full time in the recreation field regardless of educational qualifications. However, since January 1, 1965, the basic requirement for certification has been the baccalaureate degree together with written and oral examinations of all applicants for either the "Professional Staff" certificate or the "Administrative" certificate.

The stated objectives of the North Carolina Certification Plan indicate that it is to serve as a vehicle for the recognition of professional standards by the recreator and his employer. The plan is meant to serve as an objective measurement of personnel qualifications which would be useful to the employer and motivating to the recreator.

The Certification Plan has achieved its objective in serving as a motivating device to the recreator in admirable fashion. This is clearly demonstrated in the fact that a great majority of the qualified recreation professionals in the State have made application for permission to take the certification examinations, and further demonstrated in the fact that there is a growing demand that a lower level of certification or voluntary registration be established for the full-time recreation employee who does not possess a baccalaureate degree.

Unfortunately, the second objective, ie., that the plan should serve as an objective measurement of personnel qualifications which are important and useful to the employer, has simply not been realized. The fact is that the Certification Plan has not been utilized by employers to identify and hire qualified professional recreation personnel.

In a recent survey it was discovered that only 16% of the city managers in North Carolina include certification as a point of consideration in the hiring of the recreation executive. However, 80% of the same North Carolina city managers felt that certification should be an important "tool" in the hiring of the recreation executive.

Operating counter to the proposition that certification is an important step toward professional status is the fact that there is a wide gap between vacancies in the field and professionally prepared people to fill those vacancies. Presently, certification is a voluntary process left up to the individual and not a requirement for employment in the vast majority of recreation job situations in North Carolina. Nevertheless, as people become more knowledgeable of the problems of leisure and the challenge resulting therefrom, we can reasonably expect today's apathetic public to become aroused and concerned enough to demand well qualified and professionally prepared practitioners. When that time arrives, and I am convinced that it will happen soon, the field of recreation service will more inexorably closer to professional status.

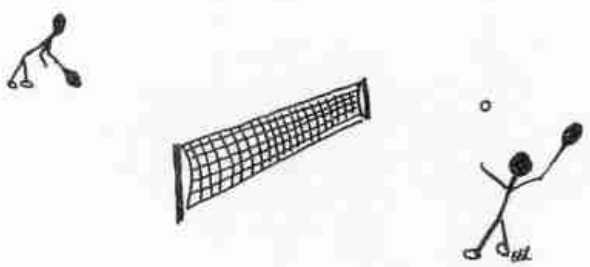
Qualified young men and women recreation professionals entering the field of recreation can help to hasten the day of public understanding and demand for well qualified recreation practitioners in several ways:

First, by demonstration of professional commitment through self involvement in the certification plan.

Second, by assumption of responsibility for the dissemination of information to the public concerning the problems and challenges of leisure and the consequent need for well qualified professionally prepared recreators.

Third, by encouragement of the sub-professional who is employed in the field to become educationally qualified to participate in the Certification Plan.

Finally, by interpreting the importance and encouraging the hiring of certified recreation personnel to city managers and others who are in a position to establish basic minimum requirements for employment of recreation professionals. In other words, doing what is necessary to have "professional certification" included in the employment equation.



GORDON A. HAMMON
Associate Professor of Forest Recreation
B.S., New York State University of Forestry, Syracuse

FOREST RECREATION THROUGH THE LOOKING GLASS

by Prof. G. A. Hammon

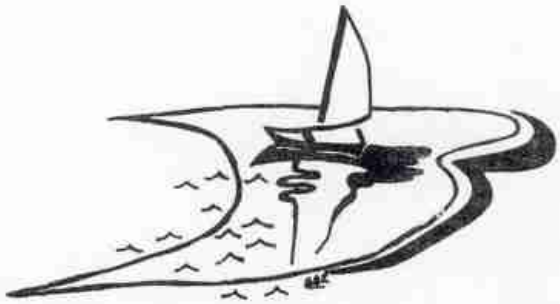
Alice, I'm not sure that a progress report on progress makes much sense. But if that's what the Dutchess sent you after, that's what you'll get. And all because she read that story about "Malice in Wonderland." In the first place the title was a programming error and we charged that to progress.

Progress is really a simulation game we play to occupy our free time now that the work ethic is about washed-up. The game rules include meaningful criteria to help us recognize and quantify it. Change is the main thing and if its more, that's better and better is what progress is all about. A closed system, see?

To simulate progress we use a proxy called Exponential Growth which is a mix of Exponential Economic Growth (EEG) and Exponential Population Growth (EPG) in approximately equal parts. Everybody produces both, but EEG is vocationally oriented and EPG is more of an avocation or "moonlighting" activity. We monitor progress with a set of growth curves and when the EEG curve lags behing the EPG curve we put on a little more heat to insure that both keep headed for infinity over eternity.

Of course this is pretty abstract. As a practical matter, we measure progress in terms of Dollars (symbol ! $!) which multiply asexually from pocket-to-pocket in accordance with the Natural Laws of Economics, over a 12-month gestation period called the Fiscal Year, to produce a statistic known as the GNP. If its more, that's progress. Some people think we ought to include some kind of a quality index here but it's not practical, Alice, the curve keeps turning the wrong way.

I'm glad you asked about price. All this talk about the Price of Progress is a teapot tempest. The secret is all in the bookkeeping system. We just don't use any red ink. To avoid any unpleasantness, the external costs of the non-renewables consumed to produce progress are posted under "accounts receivable" in the names of our neighbor's grandchildren. They can pass the cost on to *their* neighbor's great-grandchildren. This operates on the Peter/Paul principle and is practically foolproof.



Playing the game with unlimited credit, we capture some grand economies of scale and there are no constraints on such things as how *many*, how *much* or how *big*. The general rule is stated as "the More the Merrier and the Bigger the Better." In the simple"Betterness"test, More = Better so Better can be directly equated with More and Bigger. More always introduces Change. Change generates More and Bigger problems and Big Problems are a sure sign of Progress. Problem solving produces positive inputs to the GNP and thus contributes to progress. According to the rules, our advanced technology can dig up, pump out, reach, move, transform, destroy or eliminate all obstacles to Progress, but we have to be careful or it will eliminate some of our best problems.

The new leisure ethic notwithstanding, a lot of energy is required to maintain the backlog of problems essential to progress. There isn't enough breathing, growing, flowing type of energy around to keep our Exponential Growth curves stoked up, so the rules let us produce the difference by taking some old leftover energy out of the earth and burning it. We don't know how to use all we get out and we haven't found a way to put any back so what's left is waste which ends up as pollution which stimulates change which helps us maintain our backlog of problems which is something you can't have Progress without.

We even have a formula for it, Alice, a modification of Dr. Einstein's $E = MC^2$ which we use in the form: -

$$\text{Energy} = \text{More} \cdot \text{Change}^2$$

You can have a bit of fun with this by substituting for some of the terms I mentioned earlier. For instance, substitute Energy for Progress and Change for Problems and you have the classic: -

$$\text{Progress} = \text{More} \cdot \text{Problems}^2$$

We have rules for Politics and Plans too, and I'll be glad to discuss them next time the Dutchess sends you on an errand. At the moment, I have a deadline to meet. The Pinetum folks want *Forest Recreation* encapsulated in 600 words of wisdom. I don't have time to explain it to you as fully as I have explained progress, but you can think of forest recreation as being what you would like to do if you could beat progress to a place where you could spend time mustering strength to enjoy the blessing of high-standard living which progress provides by changing the environment where you are and could have relaxed without going anyplace and worrying about leaving early to beat the rush of traffic leaving late to avoid the rush of people leaving early - - - -

Tell the Dutchess to forget about the Malice, Alice. With progress in Wonderland, who needs it?

THE DEPARTMENT OF FORESTRY

1970-1971

C. B. Davey

As the year 1969-70 was one of curriculum ferment, 1970-71 has been a year of physical ferment as we have planned and finally executed our move from Kilgore to Biltmore Hall. As with the launching of any new ship, the shake-down cruise is full of many interesting surprises, and our early days in Biltmore are as fun as we learn how to operate in this beautiful new environment.

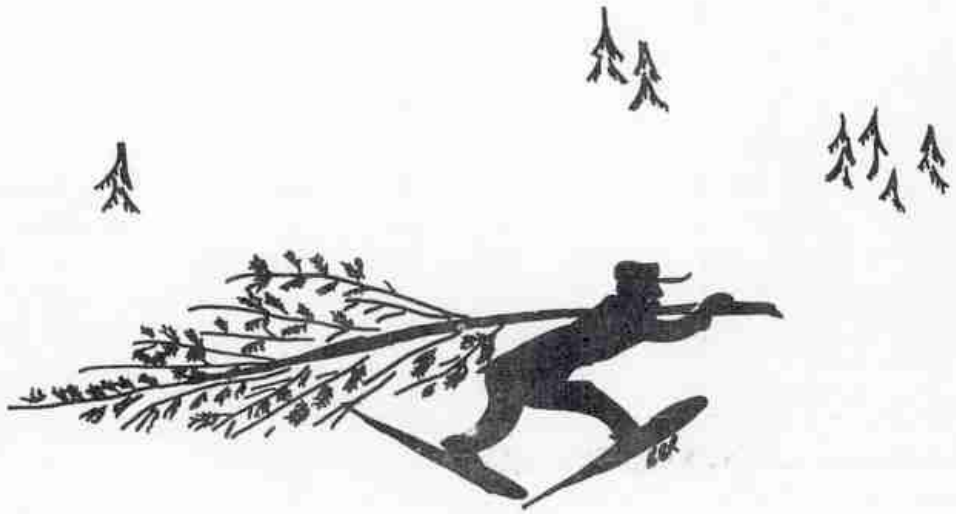
The dedication of Biltmore Hall on 6 November 1970 was solemnized with the Alumni Buffalo Roast at Hill Forest. At the Buffalo Roast, two Distinguished Alumnus awards were presented. One of the recipients is a graduate of the Department of Forestry. He is Steve Boyce, '49, who is current Director of the Southeastern Forest Experiment Station at Asheville. Steve is certainly a very worthy recipient of this honor.

During the dedication ceremonies it was announced that the School had been presented a Ranger, rubber-tired skidder which is manufactured by the Clark Equipment Company. The skidder will be used for research and management of the School's forests.

Faculty members continue to move about the globe in efforts to widen their professional horizons. Dr. L. C. Saylor spent six months at the Institute of Forest Genetics at Placerville, California; Dr. J. O. Lammi went to Switzerland and Finland; Dr. B. J. Zobel went to Chile; and yours truly returned from Oregon. Two other members left the Department, but unfortunately they will not be returning. Both Bill Johnson and Bob McElwee have left after several years of faithful service to the Department while working on their Ph.D. degrees. Bob finished his degree and has moved to the University of Maine, and Bill has completed his research and is writing his thesis while taking over new duties in the Department of Silviculture at Syracuse. Both of these fellows are sorely missed, but our best wishes go with them.

A newcomer to the Department, but not new to the School, is Wayne Haines, who has been appointed Director of our newest N. C. State-Industry Cooperative; the Forest Fertilization Cooperative. Wayne has been on the Forestry Extension staff until accepting the offer to direct the new program. Since the members of the cooperative own land in several states, Wayne spends a good deal of his time on the road.

Since Dr. Maki no longer shuffles the administrative papers for the Department, he and Dr. Bill Hafley have been seen spending quite a bit of time in a boat on Lake Michie, north of Durham. We all know they are fishing, but they keep claiming that they are conducting research for the Water Resources Research Institute on the rate of siltation of the lake as it has been affected by changing land use patterns on the watershed. Fishing must have been bad however, since we caught them with about $40,000 worth of electronic sounding gear out in the boat. We look forward to hearing about their results.



Another headliner this year was Dr. Tom Perry when his paper on mechanisms in the control of dormancy was the lead article in SCIENCE. He showed that red maples from Massachusetts go dormant when exposed to long, cool nights, regardless of whether they are whole plants, root stocks or scions; whereas red maples from Florida don't get the signal and continue to grow under the same conditions, again regardless of whether they are whole, root stocks, or scions. Reciprocal grafting had no influence on the results, thus showing that dormancy is under very local control, and that the controlling substances are not translocated in the plant.

A special honor came to Dr. Gene Namkoong in November when the United States Forest Service created a Pioneering Research Laboratory in Forest Genetics with Gene as Director and Principal Scientist. This will allow Gene to pursue his research on a national basis while still being housed at N. C. State.

As our graduate programs develop and become more complex and as the University itself becomes more computerized and less personal, it has become obvious that incoming graduate students, many of whom are internationals, are really in need of early guidance. In order to meet these needs, Dr. J. W. Duffield has assumed the duties of Graduate Administrator for the Department. In this capacity he handles all correspondence with applicants and then takes care of the administrative details of registration, etc. until a new student's major professor is appointed. In addition, the FRAGS (Forest Resources Association of Graduate Students) have offered their services in getting the new students oriented on campus and in Raleigh. As a result of Dr. Duffield's and the FRAGS' efforts, the newer grad students have gotten started with a minimum of trauma.

Thus we are again united with the entire school on its own mini-campus, and all Departments are together for the first time since the Hodges and Robertson Labs were built. We look forward to moving forward together in our missions in teaching, research and extension.

W. M. KELLER
Forestry Extension, in charge
B. S., N. C. S. U.; M. F., Duke

EXTENSION FORESTRY DEPARTMENT

By W. M. Keller

The combined production of agricultural and natural resource products is the single largest industry and the greatest contributor to the economy of North Carolina. The production of natural resource products will continue to increase in the future. Many challenges and opportunities lie ahead for the wood products industries. Information on new technology is becoming available at a rapid rate, and we anticipate that more changes will occur in the wood-based industries in the next five years than have taken place in the past decade.

A dollar's worth of wood, standing in the forest, is increased almost twenty times as it moves from the stump through harvesting, manufacturing and marketing to the final consumer. This multiplier effect can be significantly increased through more efficient timber management practices, more complete utilization of raw materials, application of better processing technology, and improved marketing and decision making. How to help the forest landowners and the woodbased industries accomplish these objectives and make even greater contributions to the State's economic progress, is the primary goal of the Extension Forestry Department.

During the past year, we lost three men from our Department who had made outstanding contributions to our programs for many years. On July 2, 1970, William E. (Bill) Keppler, Jr., Leader of our Wood Products Section, died unexpectedly of a heart attack in Zurich, Switzerland. Bill, his wife Nancy and daughter Karen were traveling in Europe on vacation at the time. Bill had been a member of our department since 1959, and his role as Leader of the Wood Products Section had brought distinction both to himself and to the University on a national level. His work with the Federal Extension Service establishing wood products extension departments in 28 states is a memorial to his leadership, boundless energy, enthusiasm, and dedication to the profession of Forestry. On August 31, 1970, Hugh Fields resigned his position as Wildlife Specialist to accept a teaching position on the faculty of Elon College. Hugh was the first wildlife specialist here, and had made significant contributions to our program. His loss is a severe one to us, and he will be difficult to replace. On July 31, L. H. (Dixie) Hobbs retired from our

Department after 14 years of outstanding service to the University. Dixie worked directly with all segments of the forest-based industries. His activities included locating new enterprises, plant design and layout, business financial organization and management, and a wide array of solutions to technical problems which were material and process oriented. Much of the state and national recognition and reputation which the Extension Forestry Department enjoys resulted from the dedication, sound judgement, extensive knowledge, and cooperative input which Dixie applied to his duties across a broad range of activities.

We did, however, add one new man to our staff during the year when Leon Harkins joined us on January 1, 1971. Leon is a forestry graduate of the University of Georgia and had served as a County Agent in Moore County before returning to school for graduate study. He received his Master's degree from Colorado State University, and has just completed his work for a Ph. D. at Utah State University. Both of Leon's graduate degrees are in outdoor recreation, and he will provide leadership in this same area to our Extension Forestry program.

THE SCHOOL FORESTS

by Larry Jervis

The past year has been most eventful on our peidmont properties. As always, the forests played a vital role in the instructional and research programs of the School. The Hill Forest was completely re-inventoried by the senior class as part of their coursework in management planning. Watershed management studies continued on the Hill and Schenck Forests, and a number of silvicultural research plots were re-measured and given scheduled treatments.

Ice storms, which have become a perennial problem, again caused extensive breakage on the Hill Forest. Conditions were worsened in the spring by a severe *Ips* beetle infestation in the damaged stands, and salvage operations lasted through mid-summer. As in the past, the heaviest breakage occurred in recently thinned loblolly pine plantations which have developed from a close initial spacing. It is hoped that the wider spacing now being used, in conjunction with earlier thinnings, will substantially reduce the severity of the problem.

No ice damage occurred on the other properties, but three separate southern pine beetle infestations posed a threat on Schenck Forest. Cutting and spraying operations by the work-scholarship crew and Forestry Club successfully contained the outbreaks, and prevented further spread.

Some 56 acres on the Goodwin Forest and 12 acres on the Hill Forest were replanted during the year, partly with genetically-improved stock. A heavy cone crop has been harvested from the Schenck Forest seed orchard, and should provide enough improved planting stock to meet our total needs next year.

Members of Xi Sigma Pi took as a project this year the installation of picnic tables and charcoal grills at the memorial area on Schenck Forest. These modest facilities represent our first attempt to encourage recreational activities on the forest. Use of the area is, at present, restricted to University groups, but we anticipate that demand for such activity will continue to increase, and are contemplating further developments.

The high point of our year here on the forests was the "buffalo roast" at Slocum Camp, following the dedication of Biltmore Hall. With copious supplies of good food and fellowship, tours of the forest, and a chance to renew old acquaintances, a fine time was had by all. During the festivities, Clark Equipment Company presented to the School an articulated rubber-tired skidder for use on our forest properties. This piece of equipment greatly increases our capability to establish and adequately maintain effective demonstration areas and specialized research plots, and should substantially improve the efficiency of our management activities.

G. E. JACKSON

PROGRESS REPORT FOR THE HOFMANN FOREST FOR 1970

By: G. E. Jackson, '35, Forest Supervisor

North Carolina Forestry Foundation, Incorporated.

A historical marker for the Hofmann Forest is located on highway #17 at the Deppe Headquarters. It reads as follows: ("C" 46-Hofmann Forest). Named for J. V. Hofmann. Research forest of 80,000 acres in Jones and Onslow Counties. Acquired, 1934, for use by North Carolina State University. Our thanks to Voit Gilmore, a member of the Board of Directors of the N. C. Forestry Foundation, for obtaining this marker.

THE HOFMANN FOREST, a history of the North Carolina Forestry Foundation was published in 1970. The information was compiled by our own Dr. William D. Miller. This covers the period from 1794 to 1970. This publication is being distributed by the School of Forest Resources at NCSU.

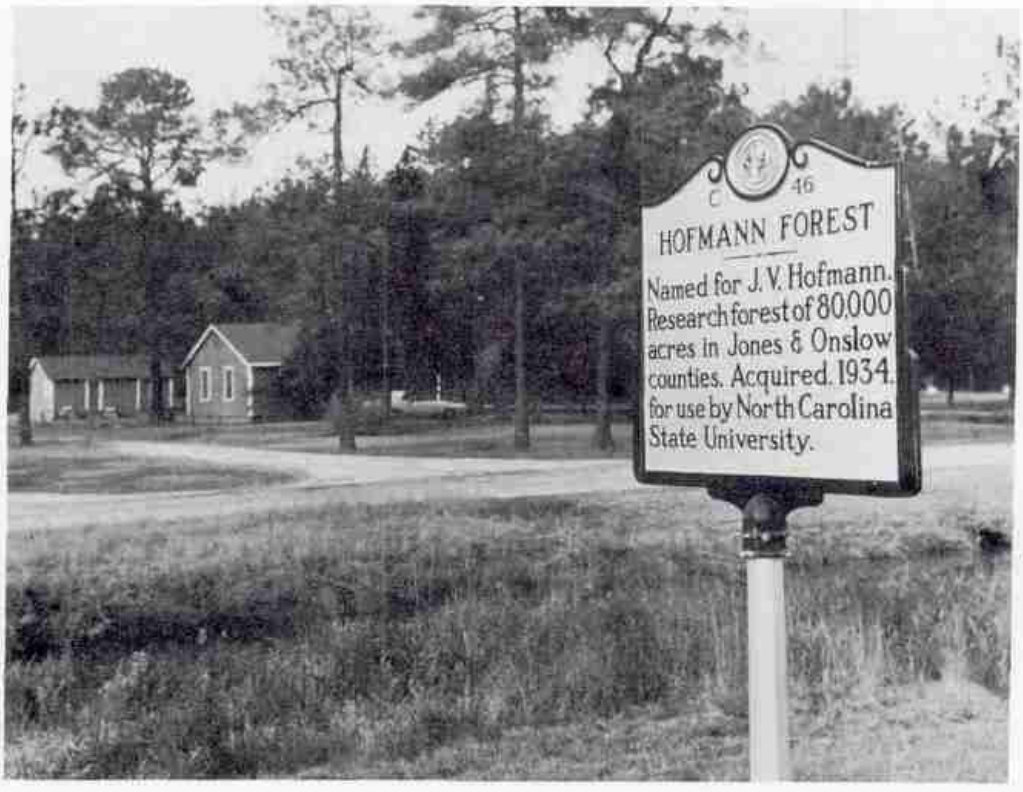
Construction work for the year ending October 31, 1970 is as follows:

Backhoe ditching	39 miles
Dragline ditching	4 miles
Right of way clearing	40 miles
New Road construction	8½ miles
Chopping	1497 acres
Burning	985 acres
Bedding	925 acres
Planting	322 acres
Re-planting	129 acres
Farm Clearing	700 acres
Farm crops (Soy Beans)	500 acres

This covers the work on the entire Hofmann Forest.

A three acre pond pine test plot was established during 1970. This plot contains 1300 plants representing 23 superior pond pine crossed in Dare County by Westvaco. The Carolina Power and Light Company has asked for a right of way across the forest on the east side of the Roper Road for a distance of 8 miles. This is to be 100 feet wide and covering 98.8 acres.

The deer population is increasing on the forest. There are four local hunting clubs that lease portions of the area. A portion is in refuge area and about 30,000 acres is open to public hunting. Within the near future, the Hofmann Forest should be one of the outstanding hunting areas in the state.



A lightning fire in July burned 80 acres of three year old pine plantation. This fire burned in the ground for a week. Two other wildfires burned a total of five acres during the 12 month period.

The cutting program was below schedule for the 12 month period. The Company logging operation was closed down during the year and independent producers were all busy at other locations. There seems to be a surplus of stumpage available in and around Hofmann Forest.

Visiting groups during the year included the County Commissioners of Jones and Onslow Counties and 250 FFA students from Onslow County. During the Summer a fire school was held for students from State, Duke, Clemson and VPI as a part of their forestry training and this Fall the NCFS held its fire fighting training school on the forest at the new air-strip area at Cypress Creek. The Board of Directors of the North Carolina Forestry Foundation met on the forest on April 16, 1970.

THE PRESTON ERA

By John T. Caldwell
Chancellor

North Carolina forestry education has been blessed by many distinguished leaders. The pioneer was Dr. Carl Alvin Schenck, who established the first forestry school in America near Asheville in the late 1800's. Later was Dr. Julian V. Hofmann, who began the first formal forestry program at N. C. State and built a strong base for its fullest development.

The time has come to make yet another milestone in the fabulous history of forestry education in this State.

History will record it as the "Preston Era"--one of unprecedented growth for the dynamic programs of forestry education, research, and public service at North Carolina State University.

The "Preston Era"--the years 1948 go 1971--mark the period of service of Richard J. Preston as director and subsequently as dean of N. C. State's forestry programs.

As the time for Dean Preston's retirement draws near, several thoughts come to my mind that typify this dedicated scholar and administrator.

Dean Preston believes in hard work, and once he sets his goals, his efforts are untiring toward reaching these objectives. Because of these qualities, he has increased his faculty from 6 to more than 100 full time or associated, and his school is now headquartered in a cluster of three buildings instead of a small portion of one building where the school originated. Annual research dollars have soared from practically zero to $700,000, and the fruit of this effort has paid rich dividends to the forest and forest-related industries of this State and the South.

Dean Preston is a disciple for scholarship--for his faculty as well as for his students. The School of Forest Resources is well endowed with distinguished teaching and research scholars as illustrated by such outstanding professorships as the Conger Distinuished Professorship and the Carl Alvin Schenck Professorship. Student scholarship is rewarded by a number of named scholarships and an Honors program.

Dean Preston has a special talent for gaining the cooperation of others. This is because he is such a cooperative individual himself. An example of this was his efforts in the establishment of the Pulp and Paper Foundation, where pulp and paper industries were banded together in a cooperative effort to support teaching and research efforts for a pulp and paper curriculum at N. C. State. And it was through his leadership that the N. C. State-Industry Cooperative Tree Improvement Program was born. This program in forest genetics was revolutionary in nature and is destined to bring untold millions of dollars to this State and region.

There are many other fine qualities that are part and parcel of Dean Preston's being -- dedicated, constructive, generous, compassionate and gracious. North Carolina State University has indeed been fortunate to have had an individual of such high stature to follow in the historic footsteps of Schenck and Hofmann in guiding the fortunes of forestry education in North

Carolina during a most significant period in the technological development of this field.

On the eve of his retirement, I am pleased to have this opportunity to salute Dean Preston and to express on behalf of myself and the University our deepest gratitude for his outstanding contributions to the high purposes of this institution. For without people of the character and dedication of Dean Preston, North Carolina State University could not have attained the stature it now enjoys or be able to reach for even greater achievements. Our fondest good wishes go out to him in his richly earned retirement.

R. J. PRESTON

BILTMORE HALL
AFTER TEN YEARS OF LABOR PAINS

by R. J. Preston
Dean of the School of Forest Resources

When the School moved from its "temporary" location (1929-1952) on the third floor of Ricks Hall into the west half of Kilgore Hall in 1952, few, if any, on the faculty anticipated the growth which resulted in funding and completion of Robertson Laboratory of Pulp and Paper by 1956 and Hodges Wood Products Laboratory of 1958. Even these buildings were inadequate to meet the pressures of continued growth, and this resulted in the 1961 legislature including funds for a new general forestry building in a bond issue that unfortunately was voted down in the ensuing general election.

The University continued to place this new building in top priority in its 1963 budget request and hopes were high that it would be funded. However, the Governor became very enthused over the need for a food science facility and before we realized it, the forestry building was out and the food science building was in. (As someone at the time stated: "in this business, you can be bleeding before you know you are being operated on.") Fortunately the top priority position held and in 1965 funds were appropriated for a new and enlarged facility which would include a general forest resources building as well as a third story to Robertson Laboratory. The appropriation required federal grant funds to complete the facility and $300,000 was first secured from the National Science Foundation and later $190,000 from Health, Education and Welfare to bring the total for the facility to $1,705,000.00.

The securing of grants and the preparation of plans delayed actual construction of the building until the fall of 1968, with completion scheduled for February 1970. The building was accepted in October 1970 with the dedication held on November 6th and the move into the building taking place in December.

The new facility totals 55,000 square feet and provides fine new classrooms, laboratories, offices, seminar rooms, lounges and a working library. It brings all the campus facilities of the School together and this will prove a unifying factor in our now diverse programs.

The dedication program was held on a beautiful fall day with the members of our Forestry Foundation and Pulp and Paper Foundation joining our

returning alumni for the event. The annual meeting of the North Carolina Forestry Association also included the dedication as a part of its program and in all some 440 people participated in the luncheon which followed the ceremony. Chancellor John T. Caldwell presided at the dedication, the Reverend Oscar B. Wooldridge offered the invocation, Voit Gilmore gave the dedicatory address, and President William C. Firday accepted the building. The Dean was honored by the unveiling of a flattering portrait presented by Mr. G. E. Jackson on behalf of the alumni.

The dedication was climaxed by a chuck wagon buffalo roast at the Hill Forest (real buffalo and tender after 20 hours in the oven) attended by well over 300 alumni, students and friends.

At the dedication the faculty had hoped to have an alumnus of the Biltmore Forest School or Mr. Reuben B. Robertson of Champion Papers, explain the reasons for naming the building "Biltmore Hall." As they could not be present, the Dean gave the following explanation:

The Biltmore Forest School, the first forestry school in the new world, was organized by Dr. Carl Alwin Schenck in 1898 in the heart of the North Carolina mountains. Discontinued in 1913, this school continued to be a vital force in American forestry through the distinguished records of its alumni.

Upon receiving an honorary degree from North Carolina State University in 1952, Dr. Schenck commented that he looked upon the School of Forest Resources as a continuation of his pioneering school. This event kindled the interest of Biltmore alumni and friends and through their efforts the Biltmore tradition has become firmly associated with the School of Forest Resources.

In 1955 the Carl Alwin Schenck Professorship of Forestry was endowed; this professorship is currently held by Dr. T. E. Maki. Following Dr. Schenck's death in 1955, the Trustees of the University renamed the Richlands Creek School Forest the Carl Alwin Schenck Memorial Forest and an endowment fund was established for its maintenance. This memorial forest was dedicated in 1957 and Dr. Schenck's ashes were scattered here among the trees he loved.

In 1958, through the generous gift of $30,000.00 by Mr. E. F. Conger, Mr. George W. Merck, Mr. Carl F. Rehnborg, and Mr. Verne Rhoades three Biltmore Scholarships were endowed. A fourth tie between the schools, past and present, was the establishment of the Biltmore Library collection in the University's D. H. Hill Library. This collection includes Dr. Schenck's personal library, the Schenck papers held by the Forest History Society and the records of Biltmore alumni. More than seventy (70) Biltmore alumni and friends contributed over $5,000.00 to attractively furnish the Biltmore Room in our new building.

The most recent binding tie was a magnificent gift from Mr. E. F. Conger consisting of two-fifths of the proceeds from the sale of his "Conger Woods" near Aiken, South Carolina. These funds established the endowed Edwin F. Conger Professorship in Forestry, currently held by Dr. B. J. Zobel, and several endowed Conger Scholarships.

In recognition of these major contributions to the quality of our programs, we are proud to help perpetuate the proud Biltmore record through naming this fine new building Biltmore Hall.

ELLWOOD NAMED SECOND FOREST RESOURCES DEAN BY NORTH CAROLINA STATE UNIVERSITY CHANCELLOR

An Australian wood scientist who has headed the wood and paper science department at North Carolina State University since 1961 was named as dean of the large School of Forest Resources at North Carolina State.

Dr. Eric Louis Ellwood, 48, was named by State Chancellor John T. Caldwell as the new dean succeeding retiring Dean Richard Preston.

Ellwood becomes the School's second dean in forest resources history at State. Preston became the first dean when the forestry program became a separate School in 1950.

Ellwood has an extensive background of wood science education and research in Australia and the United States. In 1968 he was named a Fellow in the International Academy of Wood Science.

——EXTENSIVE PROGRAM——

In his new post Ellwood will administer the 5th largest forestry education program in the United States and one of the world's most extensive forest resources research and extension programs.

The School embraces five education programs; about 120 faculty and staff, including a 14-man extension staff; five operating research and education forests, including the 80,000-acre Hofmann Forest in Southeastern North Carolina; and a student enrollment of about 800, including 80 graduate students.

The School's research program totals about $700,000 annually. Its 13-state Tree Improvement Program is the best known of its programs internationally. The TIP program, begun in the mid-1950's, now produces about 100 million improved tree seedlings annually and has about 2,500 superior parent tree stock for seed production. Some twenty-three major corporations are cooperating in the TIP work.

—NATIVE OF MELBOURNE—

Ellwood is a native of Melbourne, Australia, and received his early wood sciences education in Victoria institutions. He earned his basic forestry degree from the Victorian School of Forestry in 1942, and his bachelor's and master's degrees from the University of Melbourne in 1944 and 1951.

In 1951 he came to the United States and enrolled at Yale University. He earned the Ph.D. there in 1953.

From 1953 to 1957, he was a research officer in the Division of Forest Products, Melbourne. In 1957 he was appointed to the staff of the Forest Products Laboratory at the University of California.

He came to North Carolina State University in 1961 from California to head the Department of Wood and Paper Science.

The department includes programs in wood technology and science and pulp and paper production.

Ellwood held Fulbright and Sterling Fellowships while at Yale University from 1951-53. He is the author of some 70 scientific reports, most of them concerning the physical characteristics, processing and ultilization of woods.

He is a member of the Forest Products Research Society, American Society of Wood Sciences and Technology, Society of Wood Science and Technology, Pulp and Paper Institute, and the Scientific Society of Sigma Xi.

Ellwood's appointment is effective July 1, 1971, after Dean Preston's official retirement.

—NEW FACILITIES—

The School moved into its new 4-story Biltmore Hall this year. The Hall was dedicated in early November and named after the first forestry school in the Western Hemisphere. The Biltmore School operated at the turn of the century on Biltmore Estates at Asheville.

The Forest Resources facilities on the campus now includes three major buildings and laboratories, Biltmore Hall, the Robertson Pulp and Paper Laboratory, and the Brandon Hodges Wood Science and Technology Laboratory.

The degree programs include undergraduate and graduate degrees in wood and paper science, forestry, recreation resources administration, and conservation.

SENIORS

"1971"

DAN ALLEN ADAMS–*Clifton Forge, Virginia*

Pulp and Paper Science and Technology

Xi Sigma Pi, Forester; Fourdrinier Society, Secretary; *Pinetum*, Ass't. Editor, Assoc. Editor; Pulp and Paper Foundation Scholarship; Dean's List; Intramural Sports

"If you have to work to get a 4.0, it isn't worth it."

ROBERT WILLIAM ALLISON–E. Palatka, Florida

Pulp and Paper Science and Technology

Kappa Sigma Fraternity, Treasurer

"Sorry Bob, a member of the same sex is not considered a date."

JERRY BERNARD BAKER–Greensboro, N. C.

NRA – Commercial

City league basketball, advisor for youth at Methodist Home.

Jerry's Fun loving, but serious when the job on occasion calls for it.

ROBERT F. BALL–Indianapolis, Indiana

Wood Science and Technology

Don't worry Bob, The Forest Products Research Society will rise again! Besides, you never know, the Army might have one.

DONALD LARKIN BOYETTE–Kenly, N. C.

TPA – Municipal

Don is full of hopes and dreams and looking for a way to accomplish them.

JOHN ROBERT BRADSHER–Roxboro, N. C.

RPA Municipal

Varsity Football

John has got to love football the way he bangs heads like he does.

ALLEN M. BRAWLEY–Mooresville, N. C.

RRA – Municipal

Wrestling: 1, 2, 3, 4, Monogram Club; 2, 3, 4, Monogram Club Vice-President 3. Student Social Committee 3. Student Member NPA

Al is eager to get ahead, without leaving himself behind.

DAVID R. BROWN–Boonville, N. C.

General Forestry

Xi Zigma Pi, Forestry Club Treasurer 1970.

The "crazy man" with the exceptionally dry sense of humor.

PETER AMICK BURGESS–Burlington, N. C.

RRA – Municipal

Varsity Football

Pete's another "headknocker" who just wants to get through soc 416.

MICHAEL CAMPISI–Manchester, Vermont

RPA Parks Option

Forestry Club, A. U. S. A., R. O. T. C.

Now that it's over, it was a hell of a joke.

FREDERICK CARSON–Newtown, Conn.

Forest Management - Watershed

Varsity Soccer - 4 years

What can one man do?

NELSON W. CHADWICK– Cary, N. C.

Forestry - wildlife mgmt.

ARO, SAF, The Wildlife Society, AFA

"What copperhead?"

JAMES FRANKIE COBLE–Snow Camp, N. C.

RRA – Municipal

Intramurals, sports (football and basketball)

Frankie is just rolling along nice and easy and dying to get out.

WILLIAM HODGES COTHERN–Washington, N. C.

Pulp and Paper Science and Technology

Delta Sigma Phi Fraternity; Phi Eta Sigma Honorary Fraternity

Just because he doesn't make it to the 412 quizzes doesn't mean he's dropped out of school.

JOHN MAURICE DETRE–Southington, Ohio

Forest Management; Dual degree; Conservation

S. A. F., Dean's list, Technician; Intramural sports (Genesis)

Alias "Deter" the Ohio buckeye definite group I material.

CHARLES RAYMOND EANES, JR.–Thomasville, N. C.

RRA Rural

Dorm Activities

Charlie is a "glad to be out" vet who is looking forward to a bright future in rural recreation.

JOHNNY F. EARO–New Castle, Delaware

Duel Major: Forestry (Business Operations) and Agricultural Economics.

Phi Theta Kappa; Xi Sigma Pi; Forestry Club; Agricultural Econ. Club.

The Indian strikes again! "Who was that masked man?"

MIKE D. EVERETT–Fuquay Varina, N. C.

FOR/Wildlife and SWB

SAF; Wildlife Society

Mike would be lost without his camera and his pipe.

CHARLES M. FOVE–Smithfield, N. C.

Wood Science and Techology

FPRS; Xi Sigma Pi; AFROTC, Flight Instruction Program; Pi Kappa Phi

You're kidding. . . ."No Charlie, I'm not kidding."

DAVID EARL FOWLER–Jacksonville, Florida

Pulp and Paper Science and Technology

Fourdrinier Society, Treasurer; Phi Eta Sigma; A.I.Ch.E.; Engineers Council Representative; 1970-1971 Southern Pima Award; Xi Sigma Pi

"I can't understand it David, all the smart people got it right off." Just ask Kelly about For 471.

CARROLL EDWARD FRYE–Georgetown, S. C.

Pulp and Paper Science and Technology

Fourdrinier Society, Intramural Sports

The only guy who moves his wedding date up a week at a time with each passing day.

BRUCE EDWARD GARNER–Wendell, N. C.

RRA – Municipal

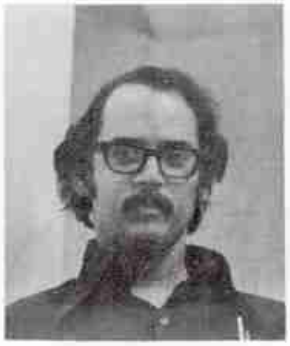
Bruce is a fair man and gets along well with everyone.

EDWARD McIVER GERRINGER–Greensboro, N. C.

Forestry - General Management

Xi Sigma Pi, Dean's List

"Alias Edward McGerringer, IV when will that computer ever get my name right?"



GEORGE F. GOBLET, JR.–Wilson, N. C.

W. P. S. and W. S. T.

Photographer for Agromeck

George just craves the paper that the Agromeck is printed on.

LARRY GORDON GRIFFIN–Mackeys, N. C.

Pulp and Paper Science and Technology

Intramural Sports; Forest Hills Baptist Church College Group; Methodist Orphanage College Staff; Pulp and Paper Foundation Scholarship; Phi Eta Sigma; Xi Sigma Pi; Fourdrinier Society

Graduate school, as long as it's close to Cathy.

DAVID HANKINS–Kinston, N. C.

FOR and Wildlife Management

It seems as though Dave is going to make a career out of trying to match trees with good old Odocoelius Virginiana.

LESTER A. HARMON–Bloomfield, New Jersey

Recreation and Park Admin., Parks Option

House Council Representative and Chairman, Tucker Hall; Floor Assistant, Tucker Hall; Alpha Phi Omega; Milkman; Forestry Council.

Les is the "smitties" boy who had the fantastic luck to marry a beautiful Raleigh belle. He was always lucky, even at good old P. S. C.

FRANK LEE HAYES–Boone, N. C.

Forest Mgt. and Watershed

Forestry Club, (Secretary), Intramural Sports, Program Chairman.

Frank is trying to convince his draft board that what the Army needs is foresters in S. E. Asia – not soldiers. (Poor Frank)

CARROLL T. HAZELWOOD–Toano, Virginia

Pulp and Paper Science and Technology

Fourdrinier Society, Vice-President, President; Forestry Council, Vice-Presdient; Xi Sigma Pi; Dean's List

How did you know a top-less dancer well enough to arrange special attention for Gary for only $5. Evidently not all of your time is spent in lab.

DAVID HENDERSHOTT –Arlington, Va.

Recreation Resources Adm.

President of N. C. S. U. Recreation and Park Association (Majors Club), Vice President of N. C. S. U. Recreation and Park Association.

Accomplishments grow greater with age. We know Dave, we know.

ERIC HINESLEY–Sanford, N. C.

Forestry: Wildlife

Xi Sigma Pi, Band, Phi Kappa Phi, Forestry Council, Forestry Club, Wildlife Club.

A monkey would have trouble keeping up with Eric on a pole.

JAMES HOBAN–Annapolis, Maryland

Forestry – Forest Management

S. A. F.

Nothing like a man in Forestry living next door to the U. S. Naval Academy.

EDWARD LEE HOBSON–Godwin, N. C.

Institutional

Ed has a budding family of a wife and two boys. Now he's looking for a way to support them.

LARRY EDWARD HORNE–Hartsville, S. C.

Pulp and Paper Science and Technology

Kappa Sigma Fraternity, President; Fourdrinier Society; Intramural Sports

How are you going to make it at work without Bob?

HARRY GLENN HOUPE JR.–Morganton, N. C.

General Forestry

Forestry Club, Xi Sigma Pi

Harry is a big "weekend man" if there ever was one. Have fun Harry.

GARY RAY HOWELL–Hampstead, N. C.

Pulp and Paper Science and Technology

Xi Sigma Pi, Sec.-Fiscal Agent; Fourdrinier Society, Program Chairman; Alpha Zeta

Don't forget your three month meeting with Paula to compare notes; shake 'em for me.

PAUL DOUGLAS HYLTON–Pleasant Garden, N. C.

Mgt. Watershed

Forestry Club, Intramural sports

"Smuggs" – one of the weaker boys in forestry. Boy, you should see him toss a piece of pulp.

JOE HUFF–Roanoke Rapids, N. C.

Forestry and Business Operations

Forestry Club, Xi Sigma Pi

"Red" – the guy who always gets volunteered.

KENNETH JOEL HUMPHREYS–Hollywood, Florida

RPA (parks)

Alexander Dormitory Vice President 1970, Intramural Handball, Attendant Union Craft Shop.

Life is climbing mountains and sailing oceans, simply to see the other side.

RANDY JAMES–Westfield, N. J.

Forestry – General

Intramural Sports, Beer Drinking

Randy is the "Bear" of the woods around these here parts,"y'all".

WILLIAM BROWN KEENER, JR. (Buck)–Cary, N. C.

Rec. (RPA)

Musician, All sport activities

Long-haired musician making a career out of going to school and catching grief from the recreation department.

BARRY THOMAS KELLY–Georgetown, S. C.

Pulp and Paper Science and Technology

Band, Fourdrinier Society

He's the one man who can imitate Bowen by saying, "You pulp and paper boys cause so much trouble---."

LEN KETNER–Concord, N. C.

RRA – Industrial

MB4; Varsity Men's Glee Club

Len is easy to get along with, a hard worker (?), musically inclined, and best of all, engaged to a Meredith girl. (Watch out Meredith!)

THERESA ANN KOONTZ WILLIAMS–Lexington, N. C.

RPA Municipal

Dean's List; Vice President of Rho Phi Alpha

Happiness is life, marriage, and graduation!

RICHARD THORNTON LASATER–Durham, N. C.

Pulp and Paper Science and Technology

Baptist Student Union

Ahhhh, Sir, I missed what final?

WILLIAM F. LEON–Wilmington, N. C.

FOM

Forestry Club

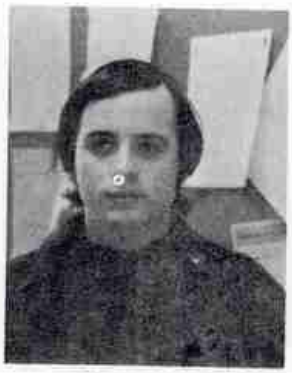
Bill, the "poor man's Clint Eastwood," looks more like Pancho Villa than an E. C. S. V. forester.

RICHARD C. LEVER–Lake Geneva, Wisconsin

Pulp and Paper Science and Technology

Judicial Board Member, Social Chairman, House Council Member, Floor Assistant, Dean's List, Bowling Club, Contact Football

Our man from the North seems to be content to stay in the South. Why?



ROBERT ERVIN LUTFY, JR.–Greensboro, N. C.

Natural Resource Recreation Mgt. and Conservation (dual degree)

Inter Varsity Christian Fellowship, Xi Sigma Pi, (Forestry Club, Wildlife Club, Recreation Club) – occasional participation.

Bob loves God, Nature and all the women in the world.

DOUG MEIER–Winchester, Va.

Forest Management

Scabbard and Blade, Association of the U. S. Army (AUSA)

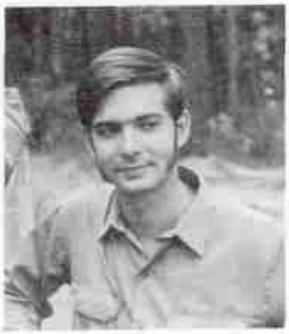
Frazier Almonds' are immediately superior.

ALBERT DALE MOORE–Statesville, N. C.

Forestry: General Forestry and Conservation

Xi Pigma Pi, Intramurals, Dean's List

"Ping Pong", "Hearts", and "Wanda" are Al's favorites.



J. TOM MORGAN–Corapeake, N. C.

Forest Mgt. Business Option Dual Degree Econ.

Forestry Council President 1970-71; Forestry Club program chairman, spring 1971; Secretary Spring 1969, Vice President Fall 1969; Floor Assistant Lee Hall 1969-70 and 1970-71.

The outspoken young forester who's a stickler for rules. Go get'em Tom!

MARY ALICE MORRIS–Colerain, N. C.

RPA – (Industrial)

Rho Phi Alpha - President and post corresponding secretary; Rec Club, Alpha Delta Pi Society, Vice President and past treasurer Forestry Council - Secretary; Athletic Director.

The curly headed kid of the Rec. Dept.

GEORGE FERRILL PARRISH–Randleman, N. C.

Forestry – Business Operations

Phi Eta Sigma, Phi Kappa Phi

"The Owl" has worked diligently for his B. B. (Bachelor of Billiards degree.)

TONY EUGENE PARSON–Roseboro, N. C.

Pulp and Paper Science and Technology

Fourdrinier Society, Intramural Sports, Southeastern PIMA Scholarship Award

Now wait a minute guys, you just don't know how touchy she is.

WARREN STANLEY PARTON–Rutherfordton, N. C.

Pulp and Paper Science and Technology

Fourdrinier Society; Forestry Council Treasurer,; University Chorus; Intramural Sports

"You boys just don't know how to say Stanley."

JOHN EDWARD PICKARD, JR.–Burlington, N. C.

Forest Resources – General Management

Dormitory Treasurer, SAF, Forestry Club

John is a man of varied talents and about a million tastes.

PAULA LEE SCOTT PRATT–Fair Bluff, N. C.

RRA, Sociology

Intramural basketball and softball

SERINA, I'm an old married woman who would just like to get out.

JAMES LEON QUARTERMAN–Brunswick, Georgia

Pulp and Paper Science and Tehcnology

Fourdrinier Society, Dean's List

Ever notice how outgoing Jim has become since he got married?

BRUCE B. RICHARDS–Falls Church, Va.

RAP – Park Option

Woodsmen's Team, Secretary Forestry Club, Forestry Council, Senior Senator to Student Government for School of Forest Resources

Paul Smiths transfer who hopes to see more of the Adirondack Mountains after being liberated from "Gritland" and Uncle Sam.

BRIAN A. ROBBINS–Wilkesboro, N. C.

RAP (Private)

Intramurals, Inturnship

Commercial Recreation made interesting in what's happening and going to happen.

ERIC EUGENE SCHWALL–Zanesville, Ohio

RRA – Municipal

Swimming Team

All Eric seems to care about is swimming and women.

ROBERT RAYMOND SERINO–New York City, N. Y.

RPA

President and Vice President of Forestry Club; President of Recreation Club, Assistant Editor and Editor of the Pinetum; House Council; Forestry Council; Counter – Guerrilla Unit. Deans list 1 semester.

Another "Smitties" boy who's dying to get back north to Alaska, to the land of snow. Besides my jeans and boots will fit in perfectly.

JOHN L. SHARPE–Cary, N. C.

Forest Management, Biology

Assistant Editor – Pinetum, Business Manager – Pinetum; Forestry Club.

I will become an alumnus of N. C. S. U. in August, 1971. . . . . "Hey John, where's the copy? Did you get that letter out?"

WILLIAM ADAM SHAVER–Richfield, N. C.

Forestry and Conservation

A back row boy from the World Famous (?) High Rock Lake Region.

RANDALL DELRON SHIRLEY—Belton, S. C.

Pulp and Paper Science and Technology

Forestry Senator; Forestry Council; Alpha Zeta; Xi Sigma Pi; Dean's List; Pulp and Paper Foundation Scholarship

If a car wreck comes with every job, you better start walking Delron.

CHARLES DANIEL SKINNER—Ayden, N. C.

Pulp and Paper Science and Technology

Intramural Sports; Union Library Committee

Make sure you keep your binoculars clean, Chuck—and watch.

SMITH—Asheville, N. C.

Wood Science and Technology

Peace Retreat, FPRS Student Chapter, etc.

I love beautiful people.

EMMETT (MAC) MCBRYDE SMITH—Raeford, N. C.

Forestry and Conservation (dual degree)

SAF, Forestry Club, Genesis (intramural basketball team)

Appears to be a long haired degenerate, but he is in fact a loyal GRITT who is a parasite on corn bread, collard greens, and chitterlings.

HOWARD CARLTON SPENCE–Bladenboro, N. C.

Forestry - Wildlife

Forestry Club, Dean's List (Fall, 1970)

A Bladen County farm boy who has cultivated enough small grain crops to know what Crotalaria looks like, even if it is found on Catawba Lumber Company's Timber land.

WALDON CHRISTOPHER SUGGS–Whiteville, N. C.

Pulp and Paper Science and Technology

Phi Eta Sigma; Gamma Sigma Delta; Xi Sigma Pi; Fourdrinier Society; Pulp and Paper Foundation Scholarship

The only college senior to fail the Naval O.T.S. test try again in six months, Chris.

JOSEPH LANE TAMSBERG–Georgetown, S. C.

Pulp and Paper Science and Technology

Fourdrinier Society; Kappa Alpha Fraternity, President

Confucius say, "Never put glass door between Jody and beer keg.

HENRY T. TAYLOR–Rockingham, N. C.

RPA Municipal

Tom is a brand new married man and really looking forward to active duty in Outer Mangolia in August.

HARRY RUDOLPH THOMPSON–Plymouth, N. C.

Pulp and Paper Science and Technology

Fourdrinier Society; Intramural Sports

Playing Basketball is more fun than a stupid computer lab.

TIM S. WAGNER–Winston-Salem, N. C.

Forest Management

Forestry Basketball Team, S. A. F. Member

If they could only combine basketball and Forestry, Tim would have it made.

JOSIAH ANTHONY WEBB, III (TONY)–Edenton, N. C.

Forest Management (Option - General)

Jo is a "Flatlander" from way back.

JIM WELLBORN–Monroe, N. C.

Forest Management - Business option

Deans list, social fraternity, intramurals

Jim is one of the "brainiest" socialites in Forestry.

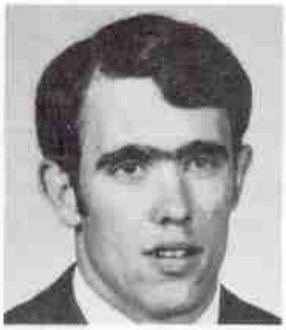
ED NICHOLAS

ANDY SOLNOSKI

BRUCE GOLLINICK

FRED WILSON

RICK ANHOUSER



JACK WHITLEY

SAM LONG

CONCLAVE 1970

by Jim Sitts

On a warm, Thursday afternoon in April, "Mac" and the Forestry Club departed in the "green F & P supermarket ramrod" for V.P.I. The team arrived on V.P.I.'s campus around 5:00 P.M. and set up camp alone, Oklahoma being the only other team to have previously arrived.

Friday, while most of the other teams were arriving and setting up their camps, our team was busy practicing. Team spirit grew very strong that day, and by evening we were labeled as the team to beat; however, there was no over confidence.

With the coming of Saturday morning, came the closest contest in the history of the Southern Conclave. By noon, we were in a near dead heat with Arkansas. They were a stronger team and heavily favored to win after their run away victory at Auburn in 1969. However, our superior equipment and techniques helped even the score. As the contest came to a close that evening, Arkansas held a nine point lead in the skill events. It appeared that we might have to settle for a second place, but the still unknown results of the technical events were to change the score.

We broke two records that day—one in the crosscut sawing and the other in bowsawing. Both times were previously held by N. C. State. In the crosscut "Doc" Folk and Gerald Coggins cut the 12 x 12 cant in 11.4 seconds, and Tom Botkins bowsawed through an 8 x 8 cant in 11.4 seconds, a magic number. The team also took first in speed chopping, dendrology, and d.b.h. estimation. Second place was earned in wood technology, chain throwing, knife throwing, and log rolling.

The banquet was fabulous and everyone ate and drank (B.B. and Arkett) until they couldn't move. When the announcer began to release the results of the technical events, it became apparent that the contest was closer than anyone had thought. The final tally gave State a first in the technical events and the overall victory, beating Arkansas by a mere 1¾ points.

After the cheering was over, the team retired to the campsite for 25 kegs of refreshment. The biggest event of the evening was when long time prohibitionist, John Roberson, took his first drink. The evening ended with Craton Stephens singing the "Outhouse Blues" to C. J.'s guitar strumming.

A TRUE FORESTER

SUMMER CAMP SEVENTY

by

Cecil J. Saunders, Jr.

As rosy-fingered Aurora touched the confines of Camp Slocum on the Hill Forest, Durham in June of 1970, she beheld a gathering of some 45 would-be-foresters in the mess hall. This motley crew of rising Juniors was engaged in a discussion of the importance of summer camp experience, and each in turn echoed the forebodings manifest in the acronyms on the wall.

"Click-click. SCREEEEEEEEEEEECH!!! MAIN CLASSROOM, MAIN CLASSROOM. EVERYONE TO THE MAIN CLASSROOM." The directive that was to become so familiar thundered through the Flat River bottom and across the forest-covered terrain. The group sauntered into the lodge and found seats in the rustic classroom. Here they were told what was expected of them at camp, of the physical operation of the camp, and of the material to be covered in the courses given. Summer camp '70 was underway!

In the four weeks that followed, the students came into first-hand contact with the diverse subjects necessary for developing into that versatile creature called a forester. Surveying, mapping, dendrology, photogrammetry, silvics, silviculture, entomology, and utilization were covered in the classroom. This steady flow of information was met many times by sleepy eyes and yawning mouths. Sack time became secondary.

The forest itself was the laboratory, and one could hear shouts of "Are you plumb? and "What is it? Do we need it? at any time of day or night. Surveying stations became points of reference as the group made its seemingly endless clockwise rotation around the traverse course. Dendrology field trips became more frequent, and occassionally a curse could be heard rising above the tree tops. Utilization trips to various commercial plants offered piles of information to those who were observant and those who could hear above the workings of machinery. Under such strenuous circumstances, teamwork became a virtue, and in those four weeks the group became a "we".

Although our practical experience during the first few weeks of summer camp was limited to the Hill forest and the surrounding regions, the experience of our instructors carried us to such places as Yugoslavia, Colorado, and the alluvial regions of the Mississippi River.

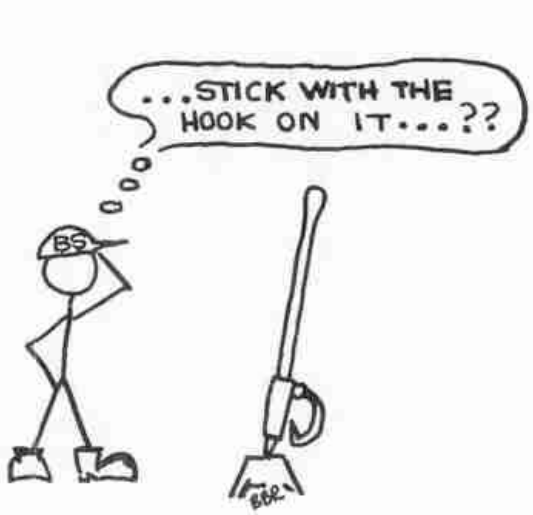
The first week of July saw us headed by convoy to Stallings Air Field in Kinston, N. C. Awaiting us there were veterans of many project fires and long hours of training in forest fire prevention, presuppression, and suppression. Suppression was presented to the greatest extent and included a field problem on the control of a mock fire. Teamwork became all-important in the organization of the attack, and, despite garbled radio traffic and misdirection of certain equipment (pumper trucks), the fire was held---after losing Deppe Airfield in the Hoffman Forest and utilizing a fourlane highway as a fireline. After showers and a critique, we ajourned to the barracks for a session of relaxation and much-needed sleep. The next day began Fourth of July holidays.

Upon return to camp, the routine resumed and many incidents stand out as milestones for memory. No one will forget the biting fish in the pond nor the luxury of a shower. The walkingsticks-on-the-outhouse-at-12-o'clock incident will never be forgotten. Tests became more frequent, and one pop-test in particular caught us unprepared. This was an omen of the tragedy that was soon to strike.

The cruise, where every bit of knowledge that had been assimilated was put into practice, was a time of trial and vexation. Forty-five adventurous young foresters sallied forth into the wilds of Block E, and none of them were to return unchanged. It was during this time that the question presented itself with full force, and the question was "Do I really want to be a forester if this is what it means? The question was indeed verbalized, but each had to answer to himself in his own way. It was during this time that friendship and competition became strongest and the die was cast for each individual.

After final exams in dendrology, mensuration, and silviculture, we began our ninth and final week of Summer Camp on the campus of Western Carolina at Cullowhee. The mountains exposed their richness to a caravan consisting of the Green Hornet and two hunter-green buses (one of which was soon to encounter an awning). Trips to the Natahala National Forest, recreation areas, Coweeta Hydrological Research Station, and Champion Papers were highly informative, as were various field trips into the cool forests bordering the Blue Ridge Parkway.

On the final day of Summer Camp '70 we stopped at the historical landmark known as the Biltmore School of Forestry. Here we saw what at first appeared to be another movie of tourist interest on the founding of the School by Carl Alwin Schenck. As the film progressed, however, it seemed as though each one of us had just lived through an experience comparable to that of the students who had attended the first forestry school in the New World. Even the physical make-up of the camp was reminiscent of Slocum. The place reeked with the heritage of bygone days, and somehow we felt that we had grown close to the beginning of it all. Our "suffering" was considered in a different light, and each and every one felt the better for it. There could have been no more fitting ending.



Rolleo 1970

by Gerald E. Coggins

When your spirit is nourished by the sight of new fallen leaves and nippy breezes, you realize that something special is in store for you. It is the time of year when your dedication to studying seems to be in conflict with nature's urge to be out of doors. You say to yourself, "Oh, what the heck," and grab your books, a plug of chewing tobacco, and head for Hodges lab. Crawling through the bushes behind the lab, you notice that several of the fellows have started practicing for the Rolleo. Standing there, somewhat in a daze, you hear many familiar sounds such as the twing of the crosscut as it zips through the wood or the dull thud of a throwing axe as it sinks into the target. A few occasional moans and groans seem to come from deep inside the logroller's chest. You hear someone shouting obsenities because the speed choppers cut the wrong logs. All of a sudden your daydreaming is interrupted by a big splash on your boots. Someone has spit toabacco juice all over them. Now that we have returned to reality, it is time to discuss the big day of the 1970 Rolleo.

The Rolleo was made up of four teams of which each class, Freshman through Senior, was represented. These teams competed against each other in thirteen different woodsmen's events. This year two new events were created and another was drastically changed. The new events were the rolling pin toss and the pulp toss. The rolling pin toss is for women only and is characterized by throwing a rolling pin fifteen feet and hitting a dummy. The second new event, pulp toss, consisted of tossing four sticks of pulpwood until thirty six points were scored. The pole felling event was changed as of this year. In the past, thirty foot poles have been used in the felling contest. This year sixty foot trees were felled and twitched by a six man crew to make-up this event. This is the first time that whole trees have been used in the South and the second time in the history of the Eastern United States woodsmen's events.

There seemed to be an exceptional amount of team effort and spirit this year. Everyone tried very hard, but the Juniors managed to win. It is hoped that these returns to the old logging days will continue to show true enjoyment and team spirit for those participating and for those who come as spectators.

XI SIGMA PI

by Dan Adams

Forester: Dan Adams
Associate Forester: Jim Rhodes
Secretary-Fiscal Agent: Gary Howell
Ranger: Delron Shirley

Mu Chapter of Xi Sigma Pi, the largest national honor fraternity, was established at North Carolina State University on April 17, 1940. The objectives of this fraternity are: to secure and maintain a high standard of scholarship in forestry education, to work for the improvement of the forest resources profession, and to promote a fraternal spirit among those engaged in activities related to the forest. It is the intention of the chapter to honor and encourage individuals who excel scholastically and have an active interest in the promotion of the forestry profession.

During the fall semester of 1970, Dr. Davey, one of the new brothers, spoke at the initation of new members. Among the fraternity's activities is the presentation of the "Freshman Axe Award" honoring the student with the highest freshman average in the School of Forest Resources. The presentation this year was made to Pulp and Paper Science and Technology student Donald Thompson.

Activities planned for the spring semester include the annual Xi Sigma Pi picnic and the senior picnic.

The Forestry Council

by Mary Morris

The Forestry Council was first established in the fall of 1966. Its purpose was to serve as a channel of communication between the administration and the students of the School of Forest Resources.

Membership in the Council has grown from five members in 1966 to twelve members this year. Initially, the Council consisted of the presidents of the five student organizations in the School. Membership now includes organizational representatives, student government senators, and department representatives.

The Council establishes a budget for the use of student fees each academic year. The budget for this year totalled approximately $2,700. *The Pinetum* was allotted $2,100 of this amount. The remaining money was allotted to the Department Fund and to General School Fund. The Department Fund was further subdivided according to the number of students in each department. The General School Fund was used for the senior picnic and other general funds.

The Council amended the constitution this year to change elections from the fall to the spring of each year. This was done in hopes of eliminating the confusion that results each fall in trying to form a new Council.

Due to the increasing cost of publishing *The Pinetum,* the Council is presently looking into the idea of changing the entire format of the publication. It is hoped that the Council can come up with a proposal for doing this by the end of the spring semester.

Now that the new Forestry Building has been completed and the School is more consolidated, it is our hope that the Council can serve as a unified voice of all those in the School.

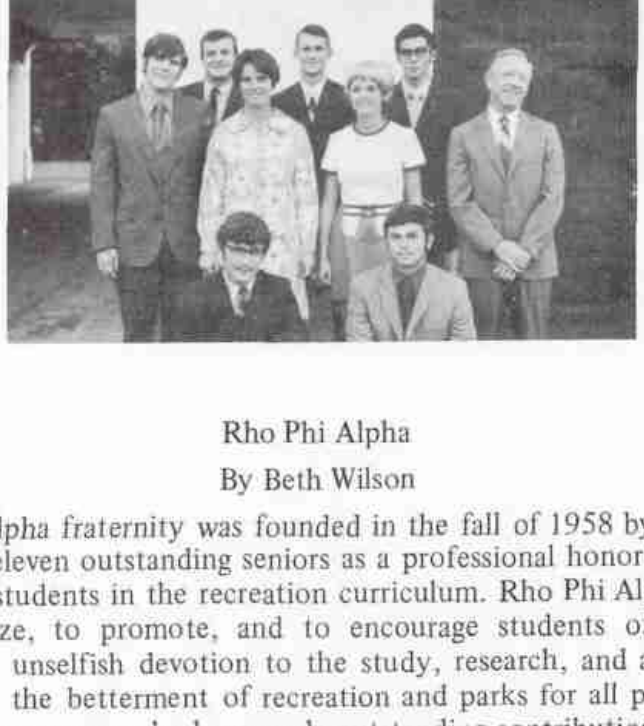
THE FOURDRINIER SOCIETY

President: Carroll Hazelwood
Vice President: Randy Taylor
Program Chairman: Gary Howell

Secretary: Dan Adams
Treasurer: Dave Fowler
Coordinator: Charles Atkins

The Fourdrinier Society is the technical organization of the Pulp and Paper Science and Technology curriculum. The purposes of the society are: (1) to present technical lecture to supplement the information presented in the classroom and to acquaint the students with new developments in the pulp and paper industry and, (2) to strengthen friendship, communication, and service in the pulp and paper curriculum. To aid in the purpose, visiting lecturers from the industry speak to the society on a bi-monthly basis. The Fourdrinier Society is currently applying for recognition by TAPPI (The Technical Association of the Pulp and Paper Industry).

To strengthen friendships and increase participation, the Fourdrinier Society sponsors a variety of recreational activities. This year the society represented the pulp and paper curriculum in intramural sports by entering teams in the football, basketball, and softball competition. In addition to this, many of the members of the society sat together in block seats at the home football games. Again this year, everyone enjoyed the fall and spring picnics.



Rho Phi Alpha

By Beth Wilson

Rho Phi Alpha fraternity was founded in the fall of 1958 by Professor T. I. Hines and eleven outstanding seniors as a professional honorary fraternity for qualified students in the recreation curriculum. Rho Phi Alpha's purpose is to recognize, to promote, and to encourage students of high moral character and unselfish devotion to the study, research, and application of knowledge to the betterment of recreation and parks for all people, and to recognize those persons who have made outstanding contributions to the field of recreation and parks.

This fall, Rho Phi Alpha has iniated eight new members; four students in the Recreation and Park Administration curriculum, and four professors who received the associate membership. At this time there are ten active members: Mary Morris, Pres., Theresa Koontz, V. Pres., Lewis Hodges, Trea., Beth Wilson, Sec., David Sutton, Sg.-at-Arms, Matt Lyle, Ron Austin, Phil Lownes, Richard Helman, Bob Serino, and John Stokes. Rho Phi Alpha is basically an honorary fraternity, but is active in service functions and works in conjuction with the Majors Club. This fall the fraternity was in charge of the Recreation and Resource Management booth for Career's Day during the Agriculture and Forest Resources "Open House". This spring, Rho Phi Alpha will work jointly with the Majors Club in sponsoring the traditional spring picnic, and Rho Phi Alpha will again present the "Outstanding Senior" award, which is presented on the basis of enthusiasm, leadership, and active participation in school activities.

WOMEN IN FORESTRY (?)

by Judy Baldwin and Jo Anne Ernst

"Hi! . . . "What's your name?" . . . "Where ya from?" . . . "What's your curriculum?" . . . "FORESTRY!! You're kidding!?!

This is the usual reaction we get each time we meet someone new. Why? Because we are the first female Freshmen in Forestry and Dorothy Hundley, a transfer student, is the first female Sophomore. Besides, everyone knows girls are fit only to be wives or secretaries, not foresters. But who wants to cook or type all day when you could be doing more exciting things like cutting trees or learning dendrology.

One of our first experiences with Forestry was when we joined the Forestry Club. Each Saturday the Forestry Club goes to Schenck Memorial Forest to cut pulpwood and so did we. The First Saturday the guys were skeptical, and we did very little but get in the way. Gradually they let us work. Now, we have learned to cut pulpwood with an ax, crosscut, or powersaw. We can haul pulpwood, file axes, and do almost everything but drive the pulpwood truck. Our favorite piece of equipment is the crosscut saw which we used for the Freshman competition in the 1970 Rolleo. Even though we didn't win, we tried and gave the guys some competition (?)

Being associated with so many guys leads to some unusual situations and unusual comments. Want to hear what the guys have to say about all this?

"Look at that darn hard hat with a daisy on it!"

"They've got on skirts. I knew something looked funny?"

"Never saw a woman run a powersaw before!"

"Ha, Ha, Ha, Ha, . . . "

"It's those darn girls!"

"Hey, you guys . . . "

"Sure I believe women are equal. They should draft every d--- one of you!"

Whether we suffer through summer camp, pass our courses, and last until graduation is unclear. For the present we will try our best. We wish to thank everyone for their help and kindness, but we especially want to thank Jim Sitts, C. J. Saunders, and Bob Serino for their confidence and help.

INTERNSHIP HOLLYWOOD, FLORIDA

by Joel Humphreys

During the past summer, I performed my RPA internship with the Hollywood Recreation Department in Hollywood, Florida. Hollywood is a coastal community of nearly 105,000 persons, located on Florida's Gold Coast between Fort Lauderdale and Miami. Due to its mild year-round climate Hollywood's recreation is of prime concern.

My first day on the job was June 8, at which time I contacted Miss Phyllis Dewey, the assistant director. Miss Dewey discussed the events and roles I might be involved in during the following summer. Later, a similar conference was held with Mr. P. J. Heneghan, director of the department. Since the summer program was still two weeks away, I reported daily to the David Park Teen Center where I was assigned to a supervisor and a new task daily. During this period, I mainly traveled with the supervisors from area to area and observed operations in the field and in the office. Also during this period, I attended several orientations for staff members and new employees hired to help in the summer program.

My first assignment after the start of the summer program was to a small neighborhood park in a poor white area. This was one of the more trying places I worked, but it was an asset especially since it came early in the program. Later, I was placed in a black area, which was one of the more rewarding experiences of the summer. The people I encountered there were among the most cooperative and friendly people I have met. Another portion of my summer was spent at the Beach Community Center, where I learned procedures to take during emergencies, how to open and close the beach, and of the special factors encountered in beach operations that are not encountered in other recreation operations in the city. As in any other department, I found myself involved in tennis, softball, track, and other typical sports and games. However, some of the surprises I found were lawn bowling, great cooperation between the department and school system, and a tremendous emphasis on the cultural arts.

One of the philosophies of the department is that cultural arts are as much a part of a good program and department as other activities. In this way, the program is well rounded and reaches practically all the wants of the community. Two bandshells are maintained by the department at which musical programs, plays, and talent shows are presented. The beach bandshell, known as "The Theater Under the Stars", holds concerts nightly with the Hollywood Symphony and other feature programs. Ballet is also a highly participated in activity brought about through the cooperation of the department and the Hollywood Ballet.

The internship program of the last summer has contributed a great deal to my preparation for a job in the field. It afforded a first hand learning experience and a relationship with others I shall not soon forget.

Forestry Club

by Bruce B. Richards

Since the last issue of the Pinetum, the Forestry Club has had a very successful year. At the first meeting of the 1970-71 school year, Treasurer Dave Brown reported a total of $2468.52, which is close to the 1975 goal of $3,000 that is needed to sponsor the Conclave here at State.

The club once again sponsored a Big Brother program this past fall. The committee, chaired by Joe Huff, tracked down all the new forestry freshmen which even included three young ladies. Volunteers from the club visited the bewildered freshmen and discussed campus life, the Forestry Club, and the forestry curriculum.

John Roberson and Gerald Coggins did an outstanding job as Rolleo co-chairmen. The Rolleo was a tremendous success despite the traditional rainfall, and hats off to the strong junior team which swept the events for the second year in a row.

The club received much praise, including a letter from Dean Preston, for the outstanding part they played in this fall's annual open house. The exhibit of forestry from seed to finished product and a tour of Biltmore Hall, the new forestry building, attracted the eyes of many high school students.

The theme of the Homecoming Float this year was "Obscure Dates in History." Mike Campisi's version of George Washington felling the cherry tree on top of the Virginia Cavalier took first place again in its class. Congratulations to Mike and all who helped build the first class float.

Pulpwood chairman Cecil Saunders, assistant Jim Arnett, and their work crews have cut and stacked a great deal of pulpwood this fall. They have added over $500 to the club's treasury this semester through their weekend operations. Thanks again go to Dr. Bryant and the management classes for their support in marking trees for the club's pulpwood operation.

We are looking forward to the club's spring activities. The Logger's Brawl and the Conclave are the club's two big spring events. A lot of hard work is cut out for the Woodsmen's Team if they are to retain the Conclave championship at Arkansas in April.

The attendance records have been exceptional this fall, and we urge anyone interested to stop by 2010 Biltmore during our Tuesday night meetings.

Officers

Fall	*Spring*
President–Jim Sitts	Bob Serino
Vice President–Bob Serino	Gerald Coggins
Secretary–Bruce Richards	Judy Baldwin
Treasurer–Dave Brown	Jim Goebel
Sgt.-at-Arms–John Roberson	Mike Cusimano
Pulpwood Chairman–Cecil Saunders	Jim Arnett
Asst. Pulp Chairman–Jim Arnett	Jim Smith
Program Chairman–Frank Hayes	Tom Morgan
Asst. Program Chairman	John Gurganus
Advisor–Dr. Bryant	"Mac" McLaurin

SCHOLARSHIPS AND AWARDS

PULP & PAPER FOUNDATION SCHOLARSHIP

Adams, Dan Allen
Adkins, Charles Edward
Allison, Robert William
Betts, Richard O'Dell
Bickett, David Mark
Black, Adrian Keith
Boone, James Edward
Botkins, Thomas Grey
Brafford, Harley Wayne
Bryan, Donald
Bryan, Ronald
Chadbourne, Douglas Joseph
Cherry, Marvin Roy
Crean, Mark Dennis
Creech, Harold Steven
Davidson, Steven Lanier
Dawson, Thomas C., Jr.
Drew, Kenneth E.
Fowler, David Earl
Gailey, George Chadwick
Griffin, Larry G.
Hall, Harry Probert
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Siegfried, Winston T., II
Smith, George Lewis
Solonski, Andrew S., Jr.
Whitley, Eugene F.
Whitley, Heber T., III
Williams, Boyd Horace, III

This year the faculty of the School of Forest Resources voted to establish Distinguished Alumnus Awards to be presented to not more than two recipients each year. The first awards were made at the alumni gathering on the Hill Forest on November 6, 1970, at the Chuck Wagon Buffalo Roast following the dedication of Biltmore Hall.

Two alumni who had distinguished themselves by outstanding achievement in their professional careers were selected by the faculty:

Walton R. Smith
Stephen G. Boyce

STEPHEN G. BOYCE

A native of Ansonville, North Carolina, Dr. Boyce received the Bachelor of Science degree in Forestry in 1949, the Master of Science degree in Forestry in 1951, and the Doctor of Philosophy degree in Ecology in 1953. All three degrees were earned at North Carolina State University.

Upon completion of his educational program, Dr. Boyce was appointed Assistant Professor and taught biology at Ohio University. In 1957 he joined the U. S. Forest Service as silviculturist at the Carbondale Center of the Central State Forest Experiment Station and was promoted to Assistant Director of that station in 1964. In 1966 Dr. Boyce was transferred to the Washington office of the Forest Service as Chief of the Branch of Forest Genetics Research. Then in 1967 he was promoted to Assistant to the Deputy Chief for Forestry Reserach, a position he held until his appointment this July as Director of the Southeastern Forest Experiment Station in Asheville,

North Carolina. As director he will be responsible for Federal forestry research in five Southeastern states and will administer the research adtivities of 120 scientists.

Dr. Boyce is a noted scientist, having authored or co-authored 53 scientific articles. Major fields of interest include black walnut cultural practices, improving growth and quality of hardwood species, reclamation of land strip-mined for coal, and genetic improvement and intensive culture of poplars. He represented the United States as observer in 1962 at the 11th Session of the International Poplar Commission in Yugoslavia and more recently spent five weeks in India developing a forest research program for that country.

It is with great pleasure that the faculty of the School of Forest Resources confers upon you this first Distinguished Alumnus award.

WALTON R. SMITH

A native of Charlotte, North Carolina, Mr. Smith attended Davidson College for one year before transferring to North Carolina State College, where he received the Bachelor of Science degree in Forestry in 1934.

That year Smith embarked on a distinguished 33 year career with the U. S. Forest Service, starting and finishing his various assignments in North Carolina, including a two-year period when he ran his own lumber company at Mebane, N. C. Since his retirement in 1969 as Associate Director of the Southeastern Station at Asheville, N. C., Mr. Smith has been active as a forest products consultant. Among his outstanding contributions have been development of two new systems for grading southern pine logs, revitalization of forest surveys, promotion of the use of hickory, and construction of low-cost housing.

Mr. Smith is author or co-author of more than 40 scientific articles. He is a charter member of the Forest Products Research Society and in recognition of his service to this Society, he was awarded the Gottschalk Award in 1967 and the Borden Award in 1969. In 1969, Smith received the U. S. Department of Agriculture Superior Service Award "for exceptional leadership in developing, implementing, and bringing to fruition, research in marketing and utilization of forest resources."

Mr. Smith has been an active and loyal alumnus of the School of Forest Resources, where he now holds appointment as an Adjunct Professor. He is currently President of the North Carolina Forestry Foundation, an organization whose purpose is to further the goals of the School of Forest Resources.

But perhaps he will be remembered most for his enthusiastic encouragement of new approaches to practical problem solving in wood technology, his vigorous ability to identify the meaningful and act on it, his contributions in furthering the development of his junior colleagues; and his "young at heart" fellowship and energy which catalyzed all he met. Never the complete organization man and always the individual, it is with great pleasure that the faculty of the School of Forest Resources confer upon you this first Distinguished Alumnus Award.

DEMMON AWARD

Dr. Roger Lee Blair was selected by the faculty to be the 1970 recipient of the Elwood L. Demmon Award for Outstanding Research.

Established in 1957 to honor Dr. Demmon, who was retiring as Director of the Southeastern Forest Experiment Station, this award has been granted to ten earlier student recipients whose research achievements were deemed significant by the faculty of the School.

Dr. Blair received his Bachelor of Science degree in Forestry at the University of Illinois in 1964 and completed his Ph.D. program in January of 1970. The subject of his dissertation was "Quantitative Studies of Inheritance in Loblolly Pine."

The recipient of the 1970 Homelite Scholarship is Donald Wayne Simmons, a Senior in Forestry. Every year since 1955, Homelite has awarded a $500 scholarship to someone who, in the opinion of the faculty, has demonstrated outstanding qualities in forestry.

Mr. Simmons has been active in the Forestry Club, Xi Sigma Pi, and is as officer candidate in ROTC. With all these activities he has been able to maintain as excellent academic record and has applied for admission to graduate school.

Mr. James Ira Sitts, for his outstanding contribution to forestry in North Carolina, has received the 1970 North Carolina Forestry Association Award. On November 6, he and seven other recipients were honored at a dinner and social hour at Raleigh's Downtown Holiday Inn.

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F. E. WHITFIELD

R. S. DOUGLAS

LEON H. HARKIN

W. M. STANTON

DR. J. H. HARDIN

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MR. DONALD FOGUS

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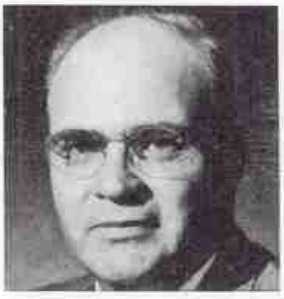

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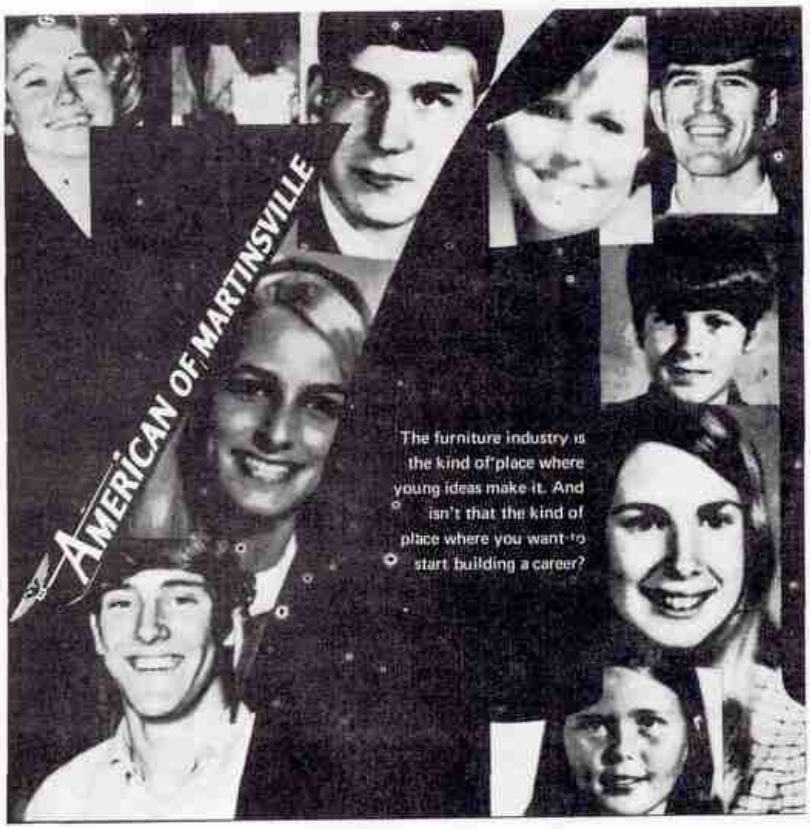

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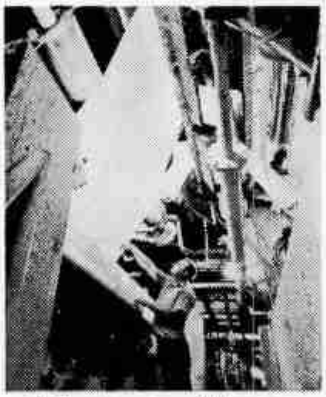

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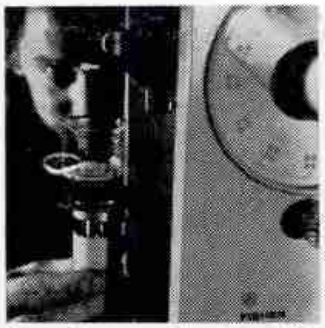

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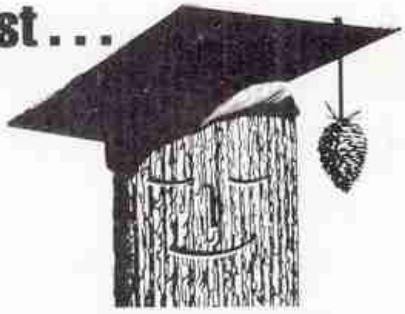

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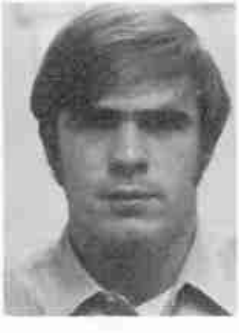

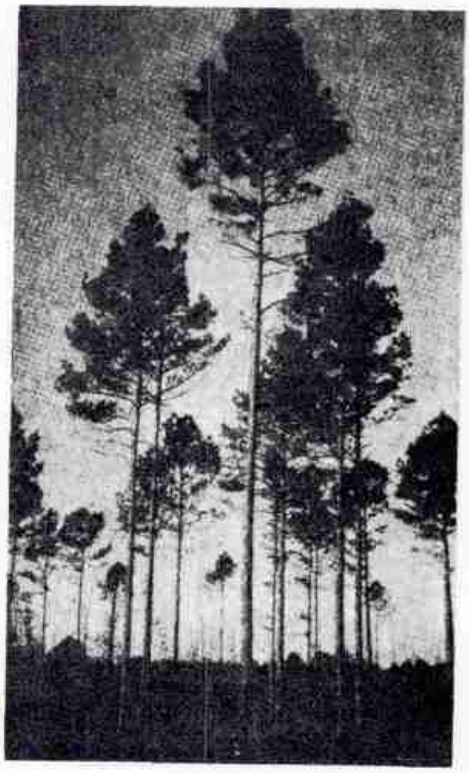

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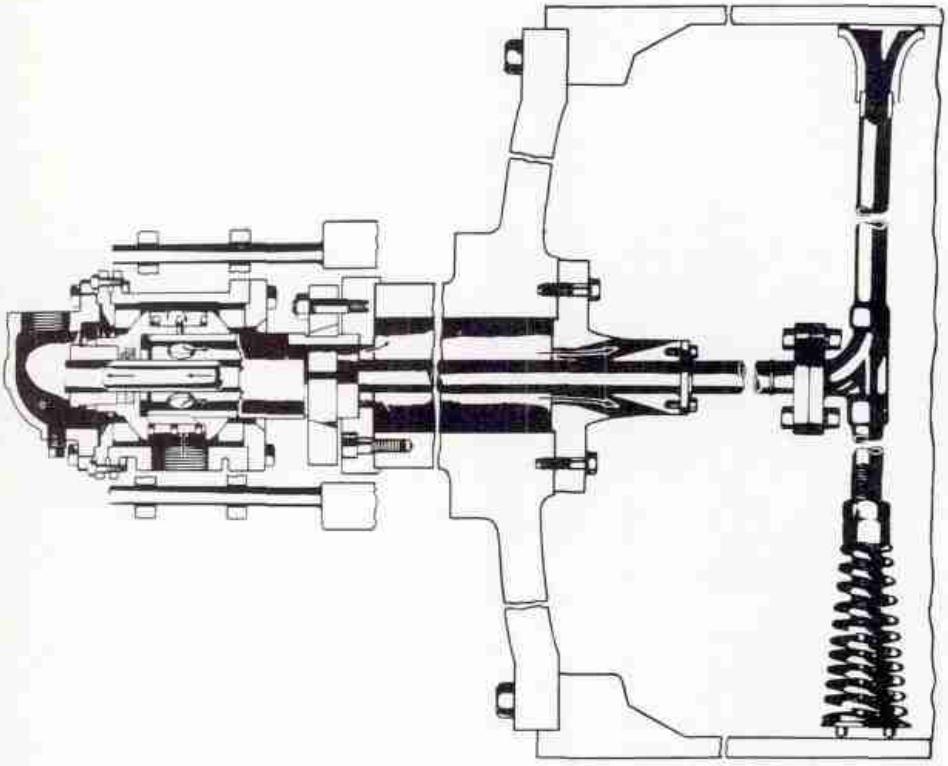

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It is unreasonable to permit a small emotional segment of the population to lock up timberlands in endless wilderness parks limited to a single use. The answer lies in establishing a working balance of commercial and recreational needs — a multiple use of the forest.

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