FOREWORD

The Staff of the 1962 Ames Forester has attempted to maintain the quality of this publication by including articles and other material which we hope will provide an informative medium of communication between the students and faculty of the Forestry Department of Iowa State, our alumni, and other foresters.

ACKNOWLEDGMENT

We, the Staff, would like to thank everyone who had a part in the publication of the 1962 Ames Forester. The alumni and others who have contributed through their articles and active support deserve special recognition. Without the cooperation of our authors, alumni, faculty, advertisers, and fellow students this publication would not be possible. Also, we are indebted to Professor L. F. Kellogg, our Faculty Adviser, and Mr. William Holmes, Iowa State Press, whose suggestions and advice have a major part in the success of this publication.
BORN to a long line of sea captains, Julius A. Larsen began his life on December 13, 1877, in the small Norwegian city of Drammen. His father, Gustav Waldemar Larsen was owner and captain of the coaster "Mercurius" which he used for transporting building material from Drammen along the coast to Oslo.

With an older brother, Johannes, a seaman, and a captain it was expected that Julius would also take to the sea, and in 1895, at the age of eighteen, he signed with a Captain Johnson aboard the barque "Alf." The first and second voyages were to Quebec, via Scotland, where the cargoes were coal and white pine logs. It was on the bark "Berna" early in 1896 that the sailing career of Julius Larsen ended with a shipwreck in heavy seas off Trinidad. The badly damaged ship finally reached Barbados where it was condemned.

Instead of taking passage back to Oslo, as offered by the Norwegian Consulate, young Larsen asked to be sent to the United States where his sister was living in New Haven.

Through these circumstances Julius Larsen ultimately became known as "Skipper" and ultimately became one of the pioneers in American forestry. Although the "Depression of 1893" was still being felt in the East and even though he was not yet out of his teens and he spoke English very poorly, he supported himself by working first in a bicycle shop and later, for four years, at Winchester Arms.

In 1901 he had saved enough money to go to Eastern Maine Seminary, an Academy at Dedham, Maine, where he was able, in three years, to complete his high school work and thus pass the entrance examinations for Yale.

From 1904 to 1908 Larsen was an undergraduate at Yale. He did so well that, upon graduation, he was awarded a graduate scholarship in Economic Geography at Sheffield Scientific School. But finding his first courses in graduate school to be Physical Chemistry which "... I found interesting but the instructor not," he changed his program to forestry.

In this new course of study he was under the direction of such men as Henry Solon Graves, H. H. Chap-
### Patrons of the 1962 Ames Forester

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The financial success of this publication is due in a large part to the generosity of the above persons. We thank them for their patronage.
# Table of Contents

Foreword and Acknowledgment ........................................... 2
Dedication ............................................................................. 3
Patrons .................................................................................. 4
In Memoriam ........................................................................ 6
The Forestry Department, 1961–62 ........................................ 9
The Wilderness Concept ....................................................... 10
Forest Management as Influenced by Machine ..................... 15
Evaluation of Wood and Pulp Properties Using
Increment Core Samples ...................................................... 17
A Plant Manager Surveys the Forest of Industrial Safety ..... 22
Wings Over the Forest .......................................................... 25
The Faculty ........................................................................... 28
Graduate Students ............................................................... 32
Graduating Seniors ............................................................. 34
ISU Foresters ....................................................................... 38
1961 Summer Camp ............................................................ 40
Departmental Activities ....................................................... 42
Announcing the George B. Hartman Travel Fund ............... 46
Alumni Notes ...................................................................... 47
Alumni Directory and Advertising ....................................... 48

# The Cover

A scene in the Quetico-Superior Canoe Country by Sigurd Olson
In Memoriam

Class of

<table>
<thead>
<tr>
<th>Name</th>
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THE FORESTRY DEPARTMENT

1961-62

By CARL H. STOLTENBERG

THE DEDICATION of this year's AMES FORESTER to our senior faculty member, Dr. J. A. Larsen, brings pleasant thoughts to all of us. To some it brings to mind a warm friend, a contemporary scholar and scientist. To others, it brings pleasant memories of a respected professor. And to some, it will recall one of the high points of the past year—the alumni dinner in Minneapolis at which Dr. and Mrs. Larsen were honored (October S.A.F. meeting). Alumni, students and friends enjoyed both honoring the Larsens and hearing "Skipper" recall a few stories, in his inimitable style. Dr. Larsen, we are proud of you!

Other high points of the year for individual faculty members included professional travel and discussions with forestry alumni. An unusual opportunity for both this year was the international CIF-SAF meeting in Minneapolis. Most of our faculty participated. Other activities during the year took individuals farther from Ames. For example, Dr. Hopkins participated in a panel on the economics of Southern pine forestry, at the American Farm Economics Association's national meeting in Ft. Collins, Colorado. Dr. McNabb presented papers at professional meetings in Mississippi, Kansas and Illinois. Professors Thomson, Kellogg, Goebel and Stoltenberg got "into the woods" (and onto the range!) in the Rocky Mountain region during and after Summer Camp.

Last summer, Mr. Ethington conducted research at the Forest Products Laboratory in Madison, and Mr. Brunden visited numerous logging and milling operations in several western states, collecting data for a wood-quality study that is being sponsored by forest industries and the Forest Products Lab. Dr. Gatherum participated in a regional research conference in Wisconsin. Earlier in the year, before joining our faculty in September, Dr. Ware's research activities took him to most of the states along the eastern seaboard. Then of course Dr. Bensend is getting a unique view of forestry problems—in Indonesia!

My own travels were not extensive but perhaps three should be mentioned. The first was a series of short trips and visits to become acquainted with conditions, problems and forestry activities here in Iowa. Hans Ellerhoff (State Forester), Sylvan Runkel and other alumni were particularly helpful in arranging these. Although we aren't apt to worry Douglas fir producers about excessive competition, forestry is making very significant contributions in Iowa today—and promises even greater contributions in the future.

I ventured into Kentucky last summer to attend the national Forest Products Research Society meeting in Louisville, and to Portland, Oregon in December to participate in the Western Forestry Conference. Both trips were interesting in themselves—Kentucky for its wealth of unusual hardwood-using industries, and of course the Northwest for its extensive land management activities. But most enjoyable for me was becoming personally acquainted with Department alumni. In Portland, Russ Getty, George Hartman Jr., Dick Campbell, and others arranged a very enjoyable evening dinner and alumni get-together. Then, as the week progressed, I had opportunities to meet and visit with several alumni in the field, and with others who came to Portland for the meeting.

In addition to being enjoyable, these trips and the associated personal discussions with alumni are invaluable to the Faculty. They enable us to obtain time-tested reactions to Iowa State's educational program. They help us become better acquainted with forestry in various areas. For example, in Portland during the short time between commitments in Ames, I was able to present a paper at the Conference, attend a number of conference sessions, spend a day with Crown Zellerbach people, a day on BLM field operations, and a day with Forest Service research and administrative people. I did not return as a qualified specialist on Pacific-Northwest forestry! But even trips as short as this one are sought by each of the faculty, they enable us to fulfill our teaching and other responsibilities more effectively.

Faculty personnel have changed, but the University and our faculty are still dedicated to making forestry education at Iowa State a dynamic and vital experience. Several activities will help us achieve this goal:

Faculty travel will help. We plan to continue the "roving" summer camp as long as we can locate adequate facilities. Personal travel and professional activities to gain and maintain acquaintance with current forestry problems and activities in all major forest areas, is an accepted goal. Iowa State students are not narrowly trained to serve one locality—they are broadly educated to serve professionally in many areas.

Close contact with alumni will help maintain a vital program. Some of these contacts arise as alumni visit Ames, others as faculty visit areas where alumni are working, and others are maintained by correspondence. By a combination of these means, alumni experiences, knowledge, and support will be incorporated into our program and thus will be an important determinant of the success of forestry education at Iowa State.

An active faculty research program will contribute to the vitality of our program, too. Faculty members are stimulated by productive research effort and by association with other researchers who also are seeking more efficient forestry techniques. They will be pressed for continued excellence and progress by competent graduate students.

Enthusiastic students, helpful alumni, a cooperative administration, and a competent faculty are the essential ingredients of a vital and effective educational program in forestry. We have these at Iowa State. We intend to continue to have one of the Nation's finest forestry programs—one of which both students and alumni will be proud.
The concept of wilderness preservation is new to Americans. Recently emerged from a frontier period where the goal was to subdue and eliminate primeval country to make room for farms and communities, it is difficult to suddenly look at wilderness as something to be cherished. Now we have reached a stage of cultural maturity where for the first time in our history we can understand its intangible values and the part they play in our lives.

The preservation of sample plots of unchanged nature, rocks and trees, lake, rivers, and mountains, and all forms of life indigenous to them are only the outward manifestations of their real significance. What they actually mean in an age where technological advance has outstripped humanitarian needs is to serve as a spiritual resource.

Man has been on this planet for perhaps a million years having arrived through the slow tortuous processes of evolution some four billion years after the earth was formed. If we were to compress this tremendous time span into one year, man would then be only fifteen minutes of age.

But only during the last 100,000 years, or less than two minutes of this time, has he emerged from the primitive and assumed the stature both physically and mentally of the Homo sapiens we know today. And only during the last 15,000 to 20,000 years has there been any real evidence of cultural advance. During these ten to twenty seconds of his history he built the ancient civilizations of the Near East.

Even a hundred years ago, three seconds from today, he lived close to the earth and though civilization was changing swiftly, it was still predominately agrarian with a pattern of life that with few exceptions was one with the slow rhythms of nature.

Then around the turn of the century, we experienced the first explosions of technological advance. Two great wars added impetus and urgency to scientific research and suddenly we found ourselves literally hurled into the whirring complexities of an industrial age. During the final second of man's span of life on this earth, we have unravelled the secrets of the universe and now are probing space itself.

It is a strange exciting world for man so recently removed from natural things and he is convinced the millenium is at hand. Cut off in a largely urban way of life from direct contact with the earth, for the first time in his long primeval history, he can live without having to hunt food or protect himself, with matters of security and welfare taken care of by a beneficial government. No longer does there seem anything to fear except his own ingenuity in evolving engines of destruction.

In spite of comforts and diversions and a standard of living higher than the world has ever known, evidence is appearing that all is not well. There is wide unrest, frustration, and even boredom with the new life. The fact is that modern man in spite of his seeming urbanity and sophistication may not be ready for his new way of living, that physiologically and psychologically he is still so close to the simplicities and elemental struggles from which he so recently evolved that he cannot forget and that the old fears as well as the basic satisfactions are still very much a part of him.

Even though he is embracing new religious beliefs, new philosophies and nostrums which attempt to explain his relationship to the universe and to God, there is a sense of incompleteness. Within him is a powerful nostalgia, he cannot understand, a gnawing unrest that the new world of gadgetry, and amusement cannot still. He dashes from place to place filling his leisure time with diversions, never daring to be alone with his thoughts. The old sense of belonging is gone and the inherent need of being part of a stabilized ecological complex. In spite of comforts and almost complete control of his environment, he is confused and unsecure.

A strange and violent world is his with the great silences replaced by the roar of jets and the cities he has built vibrating with noise. The smells of woods and fields and forests are replaced by those of combustion and industry, and his senses are bombarded with impressions he has never known before. He has come a long way during the past 100,000 years and were it not for the submerged nine tenths of his subconscious, a subconscious steeped in a racial experience that knew nothing of technology, he might.
make his adjustment more easily. But unfortunately the biological and mental processes of any species refuse to be hurried. Adaptations take aeons of time.

G. M. Trevelyan once said, "We are literally children of the earth and removed from her our spirit withers and runs to various forms of insanity. Unless we can refresh ourselves at least by intermittent contact with nature we grow awry."

The great historian was right. We are literally children of the earth. When modern man steps into a dimly lighted cocktail lounge for a meeting with his fellows, he is back in his cave; when he checks the thermostat of his apartment, he is still kindling a fire; when he steps out on the street at night and sees Orion glowing in the sky even though it is dimmed by the lights of the city, he is doing what men have done since the dawn of the race. Man of the atomic age and its conflicting ideologies is still part of the past.

Such thoughts were much in my mind not long ago when I flew across the North American continent from the Atlantic to the Pacific. As I soared high above the earth, I pictured the country as it was at the time of discovery, whales spouting off Nantucket, the timber tall and dark along the coastal flats, salmon and shad in rivers running clean and full to the sea, the fearsome Appalacians that pinned the first colonists down to their beachhead for over a century. Deer and elk were everywhere then and wildfowl darkened the sky and on the western plains the thundering buffalo herds numbered millions. I flew across the dark and bloody ground of Kentucky and thought of the Wilderness Road, crossed the gleaming Mississippi then the vast plains and foothills of the Rockies and was over the Pacific in a matter of hours.

The colonists had done well. Facing the unknown they had conquered a virgin continent. To them the wilderness was a threat, a power against which they must pit their own puny efforts, a condition with no compromise, something to be tamed and molded to their needs. There was only one problem then, to eliminate the wilderness or die and so they chopped and burned and made clearings for farms and villages, built roads and towns, prospered and multiplied and spread out toward the west.

This was work for which they are prepared and in spite of great hardships, the frontier to them was one of challenge and deep satisfaction. One has only to sing the songs of those days to know that life was full and rewarding. There was freedom and violence and adventure and men lived and died with the light of far horizons in their eyes. What they did not realize was that in the very process of subduing the continent, they were destroying conditions which gave them character, moral sense, and spiritual strength, all of which they would need in abundance in the years to come.

The pioneer days are over and the entire complex of American life has changed. The land is harnessed now, roads everywhere, telephone and power and oil lines enmeshing more and more tightly the last wild areas. Only in a few places is there any wilderness left, in the mountains or the deserts or in such forgotten corners of lake and river country as the Quetico-Superior up along the Minnesota-Ontario border. The rest is tamed and subject to the will of man and all this taken place in the short space of four hundred and fifty years and most of it actually within the last century.

It is a prosperous land and all the good things of life seem available for everyone. In spite of the tensions of the cold war and the outbursts of violence in many quarters of the globe, there is optimism and hope. Business is expanding and the national income growing by leaps and bounds. Housing and industrial expansion are swiftly filling in the blank spaces between the towns. The face of the earth is being changed and with tremendous ingenuity in the invention and manufacture of earth moving equipment, we are turning loose fleets of ingenuity which are altering the course of rivers, building super highways across terrain that until now was considered impassable. Even in the far north, huge wheeled tractor trains are plowing across the ancient tundras to the very shores of the Arctic Sea. With inexhaustible energy we are not only subduing the last of the wilderness but actually reshaping it to our needs.

As I looked down at the conquered land that day, I wondered how far we would finally go in its subjection, if our goal of unlimited exploitation of natural resources and expansion of our industrial complex would eventually destroy every last vestige of the old America, if our booming population would increase to the point where standing room is at a premium and the old freedoms and satisfactions are gone forever.

No one knows the answers to these questions. It is not easy for a people who are only a few generations removed from the frontier to change the pattern of their thinking swiftly. Millions still refuse to believe that resources are not inexhaustible and the frontiers a thing of the past. Inherently Americans are still part of the boom days with the exploitation of all resources and elimination of the wild the expected course of events. Talk of spiritual values still does not take equal place with the concrete evidence of an expanding economy.

While it might seem that our young nation has never thought seriously about the preservation of wilderness, even as long as a century ago, there was a stirring in many minds and a questioning of the wisdom of our headlong destruction of the natural scene. James Fennimore Cooper prophesied in his novel: The Prairie: “When the Yankee choppers have cut their path from the Atlantic to the Pacific, they will turn in their tracks like a fox that doubles and then the rank smell of their footsteps will show them the madness of their waste.”
The Yankees of the frontier no doubt laughed at Cooper and dismissed him as a visionary, but there were some who believed that what he spoke was the truth. Evidence of the vision of those who believed that conservation of natural resources and the preservation of wilderness was worthwhile was the setting aside during the last quarter of the 19th century of such preserves as Yellowstone National Park, Yosemite and Sequoia, the rest of the 31 national parks and 85 monuments that now comprise the present National Park System. Though less than one per cent of our total land area, it was a beginning. We also established during this period the national forests and eventually set aside within them 83 areas which now include some fourteen and one-half million acres classified as wilderness. Wildlife refuges, state, county and city parks and forests were set aside to meet the need. Canada established its system of national and provincial parks even though her remaining wilderness resource far exceeded ours. It was an encouraging development and a tribute to those with the foresight to envision the future.

However, since these reservations were made they have been challenged and weighed in the light of the old pioneer philosophy that has dominated thought on the North American continent since the days of discovery. Today we are forced to justify them constantly to protect them from industrial exploitation or commercial developments which could destroy them. During the past few years, we have fought invasion of the national parks, national forests, and wildlife refuge systems. Canada had lost to a great hydro-electric development one of its most magnificent areas in the west, Tweedsmuir Provincial Park.

The battles go on constantly and are increasing in intensity. The great task today of all interested in the preservation of natural areas is to justify them in the eyes of a people the majority of whom are still convinced that nothing should interfere with the grinding progress of our mechanical age. Even though many areas have Congressional sanction and are seemingly protected by law and administrative decrees, it has become necessary to justify their protection from every conceivable angle.

Scientists know, for instance, that no program of forestry, wildlife, or soil management can be successful without full knowledge of an unchanged and traditional environment. It is recognized that behavior patterns set by ecological adjustment, interrelationships, and physiological needs can only be studied properly under undisturbed conditions. Plant ecologists point out that range and cover problems arising out of changes in the primitive ecology need control and check plots for proper evaluation of results. For identical reasons, agriculture needs virgin soil for comparisons. Wild areas are vital to all successful research and management and even to the layman such conclusions are valid.

Another argument is the educational value of such areas not only from the scientific point of view, but from the perspective of a history rapidly fading into legendry. It is important to recapture and hold the past, and the wilderness regions of the continent are being seen in the light of living historical museums. Our peers are showing the part the wild played in the development of our social structure and our economy and stress the importance of saving these areas so that we might glimpse the past and see the road over which we have come.

How much more satisfying to travel down the lakes and portages with canoe and pack over the routes of the French voyageurs than to read of their exploits in the dusty volumes of some library, how thrilling to ride the mountain trails of the Rockies and see the old west as the explorers and wagon trains had seen it. This was good for young and old for it not only gave them the rare privilege of primitive experience but a new appreciation of their heritage and the courage and dreams that had prompted the pioneers to leave the comforts of civilization to fight their way across a hostile continent.

Wilderness regions are museums of nature in which all life and geological processes are still unchanged. America, used to the museums tradition and having spent millions on the housing and protection of works of art as well as the reconstruction of historical buildings, understands this aspect of preservation. How much more worthy of protection, say the advocates of wilderness, are the works of the creator which have come down to their present state only through the evolution and perfecting processes of adaption. Here they point out is something to really cherish and protect, exhibits so wonderful that all other museums seem unimportant by comparison, here an opportunity to see the handiwork of God.

But it is the scenery of such areas that draws the millions. Magnificent scenery needs no explanation or justification and the fact that last year some fifty million people, almost a third of the population of the United States, visited the national parks and monuments was convincing proof of their appeal to the mass mind.

So to place a precise value on wilderness is as difficult as to place a dollar sign on the worth of an heirloom or a landmark. There are certain things that cannot be evaluated because of their emotional impact. Wilderness is in this category. While certain areas might have worth as a museum piece or because of certain scenic, scientific, or economic factors, its real worth will always depend on how people feel about it and what it does to them. If it contributes to spiritual welfare, if it gives them perspective and a sense of oneness with mountains, forests and waters, or in any way enriches their lives, then the area is beyond price.

Some can find their wilderness in tiny hidden corners where through accident or design men has saved just a breath of the primeval. I know a glen in
the heart of a great city, a tiny roaring canyon where many seeking solitude and beauty can find release.

But there are also those who crave action and distance and far horizons. No little sanctuaries for them along the fringes of civilization! They must know wild country and all that goes with it, the bite of a tumpline on the portages, the desperate battling against waves on stormy lakes. They must know hunger and thirst and privation and the companionship of men on the outtrails of the world. When after days of paddling and pacing, they find themselves on some bare glaciated point a hundred miles from town and stand there gazing down some great waterway, listening to the loons and seeing the islands floating in the sunset, they know the meaning of communion.

Others find their wilderness in the mountains. There camped in some high alpine meadow with the horses grazing quietly along an ice fed glacial stream and all about them the grandeur of the snow capped peaks of some mighty range, they find their particular ultimate. To them such a setting is the primitive on a noble scale, there a timelessness than cannot be approached anywhere else. The very bigness of the landscape gives them contact with immensity and space. They come down from the hills as men have always done since the beginning time, refreshed spiritually and ready once more for the complexities of life among their kind.

There are those who say that only in the great swamps and flowages of the deep south can one understand what wilderness really is. And in a sense they are right for it was in such places that life evolved. Some men sense instinctively that there conditions approximate the primeval and that a man gets a closer feeling with the past than in any wilderness.

The criticism that only a small minority of the population ever has such intimate physical contact with the wilderness way of life is relatively unimportant. While travelling by canoe, or with packhorses, or on foot may be the ideal way to experience wild country, the fact remains that the very existence of such areas has an enriching effect not only on adjacent terrain, but on all who glimpse them or are even aware that they exist at all.

Stephen Leacock when asked why he persisted in living in Toronto instead of returning to his beloved England, replied that he liked Canada because he was so close to the wilderness of Hudson Bay and that even though he never put foot in a canoe, the very thought of the thousands of miles of barren country to the north gave him a sense of expansiveness of soul that made life richer. In that statement he voiced the feeling of thousands who like him, though they never penetrate the wilderness, nevertheless are conscious of its presence and power.

Because wilderness means different things to people, when the final summary of values is made, the answer will no doubt be a combination of them all. But as yet there is no clear conception or acceptance of what it really means, no concrete understanding of why its preservation is a cultural necessity. If there was, there would be no pressures to exploit their natural resources or to convert the last great sanctuaries into amusement resorts. Only among those who have actually experienced the wild on expeditions into the interiors is there any real conviction of their worth. These people know for they have been shown and there is no doubting in their minds. But until all the people somehow catch their vision and understand its meaning, no natural area, no matter what its designation will long survive on the North American continent.

Whatever their type or wherever they are found, lakes, deserts, swamps, forests or mountains they fill a vital need today as a spiritual backlog to the high speed mechanical world in which we live. Is it surprising when production lines and synthetic pleasures fail to satisfy the ancient needs of modern man that he instinctively turns toward the wilderness to find the naturalness and stability the race once knew? The eighty million who visited the national parks and forests last year thought they went for the scenery and the joy of travel, but what they really went for was to catch a hint of the primeval, a sense of the old majesty and mystery of the unknown. A mere glimpse of the wild set in motion dormant reactions long associated with solitude. The fifty million found that out.

A year ago, Justice William O. Douglas of the United States Supreme Court when on his famous trek down the Potomac River to call attention to the wilderness values of the valley, said: "We establish sanctuaries for ducks and deer. Isn't it time we set aside a few sanctuaries for men?"

While it is doubtful if our primitive ancestors knew much of the appreciation of the intangible qualities of their environments, moderns do have that capacity and powers of perception that make it possible to appreciate the qualities of the earth that gave rise to those creative efforts that lifted man gradually from the dark abyss of the primitive to a state where he was able to express his deepest emotions of awe, wonderment, and religious belief in stone and color and finally in words and music. The wilderness concept has to do with the preservation of these well-springs of the spirit for men of the industrial age.

John Galsworthy said it well: "It is the contemplation of beautiful visions which has slowly generation by generation lifted man to his present state . . . . Nothing in the world but the love of beauty in its broad sense stands between man and the full and reckless exercise of his competitive greed."

In the development of the concept we must ask ourselves what sort of culture we want and whether or not we care enough about the old values to make the sacrifices necessary to preserve them. R. S. Baker said recently in an editorial in Health: The greatest danger lies within ourselves, for who shall preserve
wilderness when we lose our very desire for it. If we allow the hurly-burly of modern life to obscure our deep-seated need for wilderness experience, if we act like a race of spiritual dwarfs, the loss will be a great one indeed.

It behooves all nations therefore, and while there is still time, to look long and searchingly at their last wilderness regions before they abandon them to the maws of industry. In the United States, in Canada, Africa, South America, and Asia, wherever there are still areas of the wild, there is a great opportunity. We must not fail in our engrossment with physical needs to also make provision in equal proportion for the satisfaction of cultural needs. Any nation which today has the vision to set aside sanctuaries of the spirit for the swiftly growing populations of the future is acting in accordance with man's profoundest requirements.

In the days to come, the wilderness concept must be clear and shining enough to capture imaginations. It must take its place as a cultural force with all expression of man's deepest yearnings and his noblest achievements in the realm of the mind. It must be powerful enough to withstand everywhere in the world, the coming and enormous pressures of industry and population.

No greater decision faces mankind today, for in the choices that must be made may lie the future of the race and the road man must follow. If we should lose the very desire for those values that are inherent in wilderness and abandon ourselves to the mechanical robot age of automation, then the holocaust of atomic war might be the end of the long dreams of man and his endless search for beauty and meaning in the universe.

About the Author

Mr. Sigurd F. Olson, from Ely, Minnesota, has devoted most of his life to the preservation of wilderness and natural areas everywhere. Presently he serves as consultant to the President’s Quetico-Superior Committee and the Izaak Walton League of America. Also, Mr. Olson is a member of the Advisory Board to the Secretary of Interior on Parks, Monuments and Historical Sites, on the Council of the Wilderness Society, and belongs to most of the major conservation organizations including membership on the Natural Resources Council of America. While President of the National Parks Association for six years, Mr. Olson was drawn into preservation efforts all over the U.S.

Plus his many news and magazine articles on wilderness, his expeditions and various trips, Mr. Olson has written several books including the Singing Wilderness, Listening Point, The Lonely Land and a new one to be published in 1963 entitled Runes of the North.
To effectively manage any enterprise, an efficient system of compiling as well as handling records must be devised. In the case of a woodlands operation, where the tree is the basic unit of management, this is no exception.

Growth, mortality, timber cuts (past, present and future), stumpage rates, etc. are all items of information that, quite obviously, the manager needs to properly manage his complex plant, the forest.

It is indeed time consuming, error prone, and expensive at today’s economic level to rummage back through old cruise sheets, timber marking records, forest inventory records, etc. to obtain this desired information. Hence, the emergence of various electronic data processing methods, machines and systems into the field of forestry. This movement, peculiar to the present time and new to history, has given the forest manager more complete and reliable information faster than ever before.

What are some of these electronic data processing programs that apply to forestry?

First and foremost are the continuous forest inventory (C.F.I.) or continuous forest control (C.F.C.) programs that have been developed by many companies. An inventory program of this type is not designed to replace the cruising and mapping that is so essential to proper and efficient management. Rather, it is a method that will provide the forest manager with such periodic up-to-date knowledge relating to the species, size, number and condition of the trees that comprise his management area. Upon completion of the first remeasurement of the inventory plots, information pertaining to growth and mortality by species, size classes, etc. is available. Without going into great detail, the basic mechanics of C.F.I. are as follows.

In most cases a series of one-tenth to one-fourth-acre (1/7 to 1/5-acre are in common use) generally circular plots are systematically established on the tract to be inventoried.

Since the total acreage of the sample is normally less than one-tenth of one per cent of the total acreage of the tract, the relationship between number of plots and variability of timber becomes of paramount importance. Therefore, in order to obtain the best answer possible per “sampling dollar” invested, sampling design must be carefully worked out.

Utilizing an I.B.M. Port-A-Punch or Mark Sense card, information pertaining to plot cover — type, size, cutting class and density are recorded. Tree information is recorded on a similar card for all trees 5.0 inches d.b.h. and larger (culs included). Each tree is numbered, recorded by species, and measured as to diameter, height (total or usable) and graded for vigor, product or quality. Additional information may be taken depending on the intensity of the inventory. This raw tree and plot data is now quickly handled and processed by the various electronic machines into a myriad of analytical reports.

Local volume tables and stock and stand tables are an additional dividend realized from an inventory program.

Periodic remeasurements are carried out from three to five year intervals. At remeasurement time each tree is machine-checked against its previous record. Thus growth and mortality reports are readily compiled for the forest manager.

To compile, compute, run a statistical check and issue the many reports available requires approximately 40 hours of machine time for an inventory job of approximately 250 1/5-acre plots. A simplified time comparison of machine-to-hand processing of the data would be like saying, “What are you going to be doing for the next several years versus what are you doing this week?”
A second rather unique use of the electronic methods and machines is made by Marathon, a Division of American Can Company. They own approximately 27,400 acres of selectively cut old growth northern hardwoods. Due to early forestry efforts, 100% cut and leave marking records of these hardwood stands are available for use and study. The records on these lands span a period of 32 years—from 1930 to the present time. It is this 32-year accumulation of data that is dealt with while utilizing various electronic procedures and machines.

From this complex of records, it was understandably difficult and expensive to obtain desired information as to growth per acre per year, volume cut by species, composition at the end of the first selective cut, etc. However, once these records were transferred to I.B.M. cards at a cost of 5.2 cents per acre, the above answers and many more were readily obtainable.

Information concerning log lengths harvested by cutting cycles, stock and stand tables and grade recovery was also obtained.

Due to the fact that Marathon's land is handled forty by forty in terms of taxes, marking of timber, running of lines, etc., but is managed in terms of blocks, a good many of the answers obtained were by block and forty as well as on a per acre basis.

Possibly this system will eventually be integrated with a machine-handled periodic point sample cruise system. This would permit the forest manager to see how the stands recover from logging damage and determine annual growth before the next cutting cycle has rolled around.

By going over the machine issued reports before the cut is made, the forest manager has an actual working plan as to volumes to be removed by species, size class, growth per acre per year, etc. If these figures seem out of line, he can alter the marking to fit various recommendations before a chain saw ever touches a tree.

Marathon has and will continue to obtain much usable information from the 100% tally analysis. Trends that were thought to exist, or to be true, have been proven or disproven. Additional management information concerning growth, stocking, composition and cull volumes present from cycle to cycle, has been revealed. All this comes from records that had previously proven too unwieldy and cumbersome to accurately and fully utilize until they were introduced to the I.B.M. card.

At the present time, foresters must know in terms of dollars and cents the present and potential earning power of their lands, timber depletion rates, interest rates, etc. to manage their land. Thus the working up of a timber cruise can become quite an involved process. Therefore, the time is not far off, due to the development of relatively inexpensive computers with large storage capacities, when even timber cruises will be machine processed.

Some companies now handle their annual forest tax reports and cutting reports with electronic equipment.

Linear programming is a technique for determining, from the interaction of numerous restricted variables, which of the possible lines of action are most workable or "optimum." Many problems of forestry and woodlands management such as those of annual wood projections to a mill as well as wood shipping and supply schedules have been effectively solved using a computer to determine the optimum course to follow.

Computers have also been used in forestry research to fit formulas (or regressions) to data and for calculating several equations of relationships between two variables.

New applications of electronic methods and machines are almost as numerous and varied as management problems currently facing foresters.

By employing these new ideas and machines as they are developed, foresters can realize more time to effectively do the job they were hired for... that of forest management.

About the Author

Gene Meyer graduated from Iowa State University in June of 1958 in Forest Management. He immediately went to work for MARATHON, a Division of American Can Company as an assistant area forester. In June of 1960 he was made research and extension forester for the Company's Lake States Woodlands, a position that at the present time includes all the woodlands data processing programs as well as their basic forestry research.
Evaluation of Wood and Pulp Properties Using Increment Core Samples

by

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Research on wood quality-pulp quality relationships has increased greatly during the past five years. Fiber dimensions, fiber strength and fiber-to-fiber bonding have been shown to be the major wood properties influencing pulp quality. When knowledge of wood quality-pulp quality relationships is coupled with mounting evidence regarding genetic and environmental influence on wood quality, the need for adequate nondestructive wood and paper quality evaluation techniques becomes apparent.

Evaluation of the wood quality of an individual tree from the papermaking point of view makes it desirable to have available information on pulp yield, chemical composition and paper strength based on standard beater evaluations. The paper strength properties most commonly utilized in the evaluation of wood quality are bursting strength, tear factor, tensile strength and zero-span tensile strength. The usual procedure is to compare pulps from different trees or areas at one or two common freeness levels (800 and 500-ml. freeness). A direct approach to the evaluation of wood quality of an individual tree would be to cut the tree, pulp it and measure the pulp yield, chemical composition, and determine the strength of the paper produced. Such a procedure has the disadvantage that this results in the loss of the mature tree and is particularly serious if the tree involved is a valuable parent tree in a tree improvement program or a seed producer in a seed orchard or seed production area.

Another and more desirable approach is the use of a nondestructive sampling procedure that provides a representative wood sample that will furnish information on physical and chemical properties and also provide a wood sample of sufficient size to make a small-scale digestion. Test handsheets produced from such a “microcook” are useful in making a limited number of strength measurements and these measurements can be used to predict a number of the important pulp strength properties.

It is the author’s purpose in writing this article to acquaint the readers with one of the newer techniques being employed in wood and pulp quality evaluation.

Related Studies

Techniques used in preparing small pulp samples, location and method of sampling, and establishing wood quality-pulp quality relationships have been research areas of major concern. Jayme and Koburg (1) and Watson (2) working in Germany and Australia worked out procedures for preparing and testing small pulp samples. The relationship between breast high samples and whole tree values has been studied by Echols (3), Mitchell and Wheeler (4), Wahlgren and Fassnacht (5), and Zobel, et al. (6). Wahlgren and Fassnacht, in studying specific gravity of loblolly and slash pine reported correlation coefficients of 0.729 and 0.499 between single breast high increment cores and determinations made on samples representative of the entire tree. Zobel, et al. reported highly significant correlations between breast high wood samples and total bole values for specific gravity, water-resistant carbohydrates and alpha-cellulose and considered breast high samples were suitable for wood quality evaluation work.

The influence of wood properties on pulp and paper properties is of considerable interest to foresters.
and papermakers alike. Work of Van den Akker, et al. and McDonnell and May (8) demonstrated the important role of intrinsic fiber strength. The importance of fiber-to-fiber bonding was recognized by Keeney (9), Jappe (10), and McDonnell and May (8) in work with slash pine and aspen. A number of other studies such as the work of Tamalang and Wangaard (11), working with fiber dimension and fiber strength, Dadswell, et al. (12), working with cell length, cell wall thickness, pentosan content and lignin content, and van Buijtenen, et al. (13), working with fiber length and specific gravity have been useful in helping point out the complex interrelationships that exist. The recently published TAPPI (14) Forest Biology Committee Two Report, presents a comprehensive and valuable review of wood quality-pulp quality relationships.

**Wood and Pulp Quality Evaluation Methods**

Basically, the wood and pulp quality evaluation method that follows employs four 10-mm. increment cores taken at 4½ feet above the ground. The moist lengths of the cores are determined in the field and this information along with accurate information on the borer diameter is used to determine the volume of the wood sample. The cores are then transferred to the laboratory where information on the age, per cent summerwood, per cent juvenile wood and oven-dry weight of each core is obtained. Because oven drying influences paper strength properties, the cores are held until they come to equilibrium (approximately 14 days) in a constant temperature and constant humidity room. The equilibrium weight and equilibrium moisture content information is used to calculate the oven-dry weight. The oven-dry weight and the green volume information is used to provide an average specific gravity figure for each tree and is based on a total of four cores per tree.

Pulping the increment cores is the next step in the evaluation procedure. Prior to pulping, the four cores from each tree are divided into two parts by cutting them lengthwise parallel to the grain. The smaller portion, which makes up 20% of the cores, is used to obtain estimates of the levels of lignin and alcohol-benzene extractives. TAPPI Standard Procedures T 6 m-54 and T 13 m-54 are followed in making these determinations. The remaining portion (80%) of the cores are broken into pieces approximately ¼-inch long and pulped using a modified kraft cook. The pulping operation is carried out in the multidigester assembly shown in Fig. 1. This assembly contains seven digesters (Fig. 2) which turn end over end in an electrically heated oil bath. Each vessel has a 410-ml. capacity and the cooking is carried out at a 12 to 1 liquor-to-wood ratio. Table I provides details of the cooking conditions.

**TABLE I**

<table>
<thead>
<tr>
<th>COOKING CONDITIONS</th>
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<tbody>
<tr>
<td>Maximum temperature, °C.</td>
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<tr>
<td>Time from 132 to 172°C., min.</td>
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<tr>
<td>Time at 172°C., min.</td>
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<tr>
<td>Liquor concentration, g.p.1. as NaOH</td>
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<tr>
<td>Sulfidity, %</td>
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<tr>
<td>Liquor-to-wood ratio</td>
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At the conclusion of the cooking period, the vessels are removed as rapidly as possible and cooled for 10 minutes in a large tub of cold water. The contents of each vessel are transferred to large battery jars and the pulp slurry made up to a volume of 4 liters. The
pulp is subsequently defibered and dispersed, washed to remove all cooking liquor and made into a rough airdry pulp pad for storage until additional measurements can be completed. For a more detailed description of the cooking procedure see Thode, et al. (15) and van Buijtenen, et al. (13).

Information obtained on the pulp sample prepared in the above manner includes fiber length, yield, and permanganate number. The fiber length information is based upon measurements made on 500–600 fibers. In some studies additional fiber dimension information is obtained by measuring fiber width and cell wall thickness on approximately 150 fibers.

Experimental handsheets are made from the increment core pulp and the measurements made on these unbeaten handsheets include zero-span tensile strength, basis weight, caliper, and apparent density. The zero-span tensile strength measurements are interpreted as being a measure of fiber strength. These measurements are made using either an Instron Universal Testing Instrument or a Schopper Tensile Strength Tester equipped with special clamping jaws. The technique used, which is described in detail by Wink and Van Eperen (16), consists of clamping the test sheet with a zero distance between the clamping jaws. Both jaws are, for a large number of fibers, clamped on the same fibers and the values obtained reflect fiber strength.

Results Obtained on Slash Pine Trees

Evaluation procedures outlined above have been used on over 150 southern pine trees. Early in the evaluation work, the usefulness of the above procedures was checked by making a comprehensive study on 24 slash pine trees from an even-aged stand near Waresboro, Georgia.3 The trees were sampled first by taking four 10-mm. breast high increment cores from each tree and then sampling them again by cutting down the entire tree. The trees were evaluated by the increment core method and by conventional pulping methods using chip samples representative of the entire tree. Table II illustrates the information obtained by the increment core sampling technique. Comparable data were obtained from whole tree samples and the chip sample from each tree was used to obtain information on bursting strength, and zero-span tensile strength.4 Complete details of this work are given by Einspahr, et al. (17). The results of the two methods of evaluation were then compared by computing the correlation coefficients. Space does not permit the presentation of all of the correlation coefficients obtained in this study.

Table III illustrates the correlation coefficients obtained when increment core measurements on specific gravity, fiber length, summerwood per cent, juvenile wood per cent, zero-span tensile strength, lignin, extractives, and yields were compared measurements made on whole tree wood samples.

The results obtained indicate that increment core samples used in this study provided a satisfactory estimate of a number of whole tree wood properties. Yield5 was the only correlation that was not signifi-

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1 The wood and pulp quality evaluation techniques described in this article have resulted from the joint efforts of members of the Forest Genetics, Engineering and Technology, and Paper Evaluation Sections of The Institute of Paper Chemistry. The methods described represent the ideas and contributions of a number of research workers in each of these sections.

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3 A co-operative study with Union Bag-Camp Paper Corp.

4 TAPPI Standard beater evaluation methods were used in making and evaluating the test handsheets.

5 Per cent yield of pulp calculated on a weight basis.
cant in the above list and subsequent changes in the method of obtaining yield on increment core samples has improved this correlation.

Usefulness of the Evaluation Procedure

The increment core measurements, in addition to providing straightforward estimates of whole tree wood quality, appeared to provide a method of predicting certain pulp strength properties. Using multiple regression and multiple correlation techniques on the slash pine data cited earlier, satisfactory estimates of tensile strength and bursting strength were predicted from increment core measurements. The prediction of tear factor apparently hinges on knowing more about fiber-to-fiber bonding and it was not possible to predict tear factor from the increment core information available.

Additional studies using the described wood and pulp quality evaluation procedure are under way with *Populus tremuloides*. Preliminary results indicate that this procedure may be equally useful in wood quality work in the genus *Populus*.

### TABLE II

**DATA OBTAINED FROM SLASH PINE BREAST HIGH INCREMENT CORES**

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<thead>
<tr>
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<th>Lignin, %</th>
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<th>Permananganate Number</th>
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<th>Zero-Span Tensile Strength, lb/in.</th>
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<th>Fiber Length, mm.</th>
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*Data not taken from original cores but from comparable samples.

### TABLE III

**INCREMENT CORE — WHOLE TREE WOOD PROPERTY CORRELATIONS**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation Coefficients*</th>
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<td>Fiber length, core</td>
<td>Fiber length, whole tree</td>
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<tr>
<td>Specific gravity, core</td>
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<tr>
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<tr>
<td>Juvenile wood %, core</td>
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<tr>
<td>Lignin %, core</td>
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<td>Zero-span tensile, core</td>
<td>Zero-span tensile, whole tree</td>
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</tbody>
</table>

*Measurements not taken on original core samples but on comparable samples taken later.

About the Author

Dean Einspahr, a native Iowan, attended Iowa State University where he received his B.S. in Forestry in 1949, M.S. in 1950, and Ph.D. in 1955. Mr. Einspahr is presently employed as a Research Associate at the Institute of Paper Chemistry in Appleton, Wisconsin, where he is working as the silviculturist in charge of the Institute’s Forest Genetics Section. His special research interests include: selection, hybridization, and polyploidy in the genus Populus, genetic improvement of wood quality, and soil-tree growth relationships.
A Plant Manager Surveys
The Forest of Industrial Safety
by
KENNETH W. SAUER

THE MANUFACTURE of insulating building board, acoustical tile and allied products from sugar cane bagasse in Hilo, Hawaii may, to the initiate, seem a distant field from the subject of forestry. The experienced forester and wood-utilization specialist, however, will recognize immediately the corollary in wood pulp and wood-fiber products with sugar cane fiber (bagasse) products.

Volumes could be compiled on the many subjects involved in managing a multimillion dollar insulation board plant. Labor relations, contract negotiations, personnel training and management, purchasing, accounting and office management, public relations of a large corporation in a small community, fire prevention, detection and suppression, sales and top-management liaison are a few of several dozen that could serve as titles for these textbooks.

A trained forester must look for the "keys of reason" in the vast undergrowth of silvicultural problems and wooded mysteries if he will know his business well. This basic thought was one that was to race through my mind many times during the next five years after I arrived in Hilo, Hawaii in September, 1950, to serve as General Manager of the Flintkote Company's insulation board plant.

My first visit to the plant, which was at night, showed me that there were many areas for improvement and tremendous opportunities to shed the "light of reason" as well as physical illumination. Flintkote had purchased this complex 7-acre factory situated on 26 acres of land in the heart of Hilo's residential section during April, 1948 from a company largely owned and controlled by residents of the Hawaiian Islands. During the first seventeen years of the plant's existence (1931 to 1948) prior to Flintkote's acquisition, the failure to provide new products for new markets, improve quality standards and to progress with the passing parade of business contributed to a general adverse psychological condition of the personnel. The loss of business, due to lack of customer acceptance of the products, resulted in complicating this picture and kept morale low.

From any viewpoint, the entire operation in 1950 not only looked sick, it was SICK. The equipment, building and grounds were in dire need of repair and maintenance. All personnel needed an infusion of business-life adrenalin, "American style" to rejuvenate their capabilities for operating a large industrial plant. Their many diversified talents were latent, having become dormant through lack of physical and mental activity. As a pine seed in an arid seed-bed requires water, all that was needed to cease this quiescence were the waters of courage, initiative, ambition, hope and faith in someone to administer these vital elements and give the employees encouragement with a few examples of their own successes.

As a student of elementary economics, you were taught that the four fundamental factors of production are: (1) Land; (2) Labor; (3) Capital; and (4) Entrepreneurship. To the inexperienced, this academic statement will sound plausible and even have a ring of finality about its actual meaning. The statement is quite true but not complete because in our present world it is not sufficient to assume that these are the only factors of production. The items often forgotten by the careless individual, but always remembered by the level-headed businessman are: safety; quality; housekeeping; and costs. These four are the other essential factors for the production of all types of goods and services. The one listed first takes priority in importance over the other three because without safety the others are useless or might not even exist; and we should never forget this important fact. If we fail to maintain high standards in any one of these, all of which are bound together by a two-way ganglion, we are soon liable to have poor conditions in land, labor, capital and management.

The accident frequency rate for the calendar year ending December, 1948 was 59.2. That is, they had suffered 59.2 lost time accidents per million man hours worked. Considering the fact that frequency rates in excess of 100 were common in the Island sugar mills, the management of the insulation board plant apparently assumed that by comparison their record was good.
The only thing wrong was their gauge of standards. The National Safety Council's records showed that the average accident frequency rate for all American insulation board plants during that same period of time was 9.5. A manager who loses his overall perspective sometimes finds himself in a position similar to the chef who baked horse-rabbit meat pies and only used one rabbit per horse in his recipe. At the end of two years we had reduced the frequency rate to 9.8. By 1954, after the application of four years of a well-planned program of good housekeeping, fire prevention, maintenance and supervisory on-the-job training, the accident-frequency rate was less than 1/3 the national average, or an enviable 2.7.

During a portion of that period, i.e. from October 13, 1953 to August 15, 1954 three hundred men worked 306 days without a lost-time accident, in plant where practically all industrial hazards known existed. The hazards included those found in high-pressure steam plants, high-voltage power plants, heavy-duty trucking industry, the pulp and paper industry, machine shop, chemical industry and high-speed sawmill and fabricating machinery, together with many others.

Let us consider the human side of accident prevention and see how important it can be in your life. How would you explain to the mother of a five-year old boy "the accident" that caused her to be chopped to pieces in a sugar-cane mill and every bit of his body reduced to a pulp so completely that the largest pieces of bone we could find were less than 1/6" X 1/6" X 3/4"? How do you feel after you have explained to a widow that her husband was scalded to death in a vat of steaming pulp that had been treated with caustic? If you are a God-fearing Christian-American you feel like "fighting back" at all the conditions, people and equipment that cause these horrible accidents and doing everything in your power to prevent a recurrence or a similar tragedy.

How do you explain to a seven-year old boy that his daddy just lost the sight of both eyes in a mill accident? What English words do you use to try to get such a youngster to comprehend that both Management and Labor were negligent in not providing the means to prevent such a horrible travesty to the human body? We who are concerned, are still looking for the adequate adjectives, knock-down nouns and vehement verbs to explain such things to adults in 1962 in order that they might comprehend the terrible waste of human limb, sight and life from industrial and traffic accidents.

The safety of human beings is something that does not just happen. Safety is a condition — whether it be a condition of the mind, body, or the physical equipment. Like accidents, this condition of safety is caused. Most of us are too young to have personally experienced the hazardous conditions that existed in American industry just prior to the American industrial revolution at the beginning of the twentieth century. We have made great strides in industrial safety, as well as safety in all fields of commerce during the past fifty to sixty years. Why? Why was this progress made? Simply because small groups of individuals in various parts of the country became interested in doing something about safety. Their interest alone did not accomplish this task. Someone had to sell safety.

Have you ever called attention of your neighbor to an unsafe stairs, a child's toy on the sidewalk or other hazards that represent an accident about to happen? Did he realize that you saved him from possible financial, physical and other embarrassment? Or, more important, maybe saved his life? Have you ever walked through an industrial plant and found exposed wiring, unguarded gears, unsafe stairs, oil or other liquid on floors, improperly stacked materials, or other poor housekeeping, or obvious unsafe conditions that should be corrected? Have you watched with pride the elimination of these accident hazards by the foreman and on-the-job employees and observed the increased interest and pride they have taken in their jobs with the realization that they have a safer working area? If you have experienced the warm glow of pride from such observations, then you, too, can join the ranks of others who have said, "HALLELUJAH! WE SELL SAFETY!!"

We like to think of the word Management as Management, the handling of man, or a better explanation would be the proper ageing of man, as well as the efficient handling and distribution of materials. The following specific example, though elementary, illustrates this point. When we return home after a day's work, we may sit under a reading lamp that is powered by a 75-watt bulb. As long as the power company furnishes 110 volts and the proper amperage to that bulb and so long as the filament does not burn out, we will continue to receive 75 watts, the rated power of that bulb. The same principle applies to other electrical and mechanical equipment whether it is in an automobile, your house, a hotel or any commercial establishment.

The working man or the working girl, however, has a lot more variables than the electric light bulb, the electric motor, or the mechanical equipment with which we work. One of the fundamental things which should be considered in our associations with people as contrasted to our dealings with mechanical or physical objects, is the factor of safety. The man or woman who reports to work at 7:00 A.M. would normally produce so many units of work in the regular eight-hour working day. But let us suppose he has automobile trouble on the way to work and is late; or let us assume that he has a dispute with his wife or another member of his family before he leaves home. His mind is not in proper condition, and, therefore, will not instruct his body to do the work as efficiently as he would if he had not been perplexed with these problems. His mind is occupied with things other than his specific job and it is im-
possible for him to think clearly with regard to safety, housekeeping, quality, costs and all the other essential factors of production. Is it any wonder that safety directors, insurance men and others throughout the country can prove with factual evidence that many accidents are caused by the improper mental attitude of the worker?

Most of us see dollars and cents signs in a financial statement more clearly than we comprehend the monetary values of emotions or the benevolent returns from charitable or humanitarian acts. Therefore, we desire to list a few ideas that may be helpful to both the students and alumni, the professors and associates and any other person who may not otherwise have pondered this important subject which is so commonplace in our daily lives that it is usually taken for granted.

First of all, let us assume you are a manager of a firm that has an industrial accident which is serious enough to involve many weeks of lost time to the injured employee. The total direct costs of the accident to the company are $5,000.00. The company must pay for all accident costs from net profits after taxes. Further, let us assume that the company made only $50,000.00 net profit after taxes during the fiscal year in which the accident occurred. You don’t need an abacus to show you that ten such accidents would wipe out all profits for that year. Let us take another view of the same hypothetical case. The company manufactures and sells a commodity that brings them a net profit after taxes of $5.00 for each item. This loss from a serious accident means that they would have to sell 1,000 more units to pay for the $5,000.00 accident, or if they were not that progressive or fortunate the firm’s net profit would, in reality, be only $45,000.00 for the year.

Then, how to avoid accidents must be one of the most important questions, and its answer some of the most valuable advice that can be given the young industrialist if he is going to stay in business. That is quite true, and remember, the cost of accidents today can bankrupt you as an individual, or as a firm even if you have made arrangements for insurance and other contingencies.

The application of the following four verbs in the field of industrial management will do more than anything else I know to prevent serious accidents. Whenever you approach any new task use them to their fullest extent in the following sequence: (1) Analyze; (2) Organize; (3) Deputize; and (4) Supervise. The chances of an accident occurring when a task is thus handled are very remote. Take any one of these responsibilities away and chaos and trouble begin.

Couple these factors of management with the other four factors of production, namely, Safety, Quality, Housekeeping and Costs, then link them together with a management team that is vitally interested in the physical well-being of all employees and you will see the accident frequency rate drop and with it a parallel drop in severity rate. On the other side of the ledger, you will witness a satisfied group of employees who will perform better for the company, themselves, their families and their communities.

America needs young men who can intelligently tackle safety problems at home, on the highways, in commerce, industry and in the Armed Forces, so please remember, the difference between being safe and not being safe might mean your LIFE.

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**About the Author**

Kenneth W. Sauer is Managing Director of Fiberpane Corporation, El Segundo, California. He was born near Ottumwa, Iowa in 1914 and came to Ames in September, 1932. His curriculum in Forestry was interrupted for two years when he worked for the Lake States Forest Experiment Station in St. Paul and Ely, Minnesota. He received a B.S. in Forestry at Ames in June, 1938 and began working for a company manufacturing insulation board in Mobile, Alabama that same month. He has spent the last twenty-four years in manufacturing and sales and two years in the Navy during World War II, attached to Military Government. One assignment during that period was a forest and lumber resources survey on the Island of Okinawa.

He has been active in industrial and traffic safety and received the first Industrial Safety Award in 1954 from the Territorial Governor, for outstanding achievement in the field of Industrial Safety.
Wings Over the Forests

by

ROBERT CHAPMAN

Forester Pilot, Weyerhaeuser Company

As the winter rains and snows subside and the sun rises higher in the Northern skies to shorten the long shadows, Weyerhaeuser's flying foresters ready their steel horses and flex their wings, for a new season is about to be born.

A single-engine, high-wing Cessna 180 is the platform for their aerial sleuthing. The two Iowa State Foresters that compose the crew are Paul Lauterbach, Project Forester from the class of '44 who does the mapping and the photography and Bob Chapman, Forester Pilot from the class of '51. Their hunting grounds extend from Northern California through Oregon and Washington to within a few miles of the Canadian border. They begin on the shores of the Pacific and proceed eastward through the lush Douglas fir country in the coastal range and interior valleys, up the western slopes of the Cascades and into the pine country of Southern Oregon.

The coming of spring heralds the search for trees twisted, torn and downed by winter winds. Most windthrow deposited by normal winter storms occurs along cutting lines exposed to prevailing south-

Above:
Mt. Adams (left) and Mt. St. Helens are familiar landmarks to Weyerhaeuser's flying foresters as they patrol the St. Helens Tree Farm.
westerly winds. Occasionally, however, fickle winds coursing over the land well in excess of a hundred miles an hour lay down hundreds of millions of board feet of timber throughout the forest. This damage is detected from the low flying forestry airplane and the location by species, volume and age class is reported to the land managers. Foresters and loggers often accompany Lauterbach and Chapman on these survey flights. Frequently, subsequent flights are made over these areas to take black and white aerial photographs which will be used to expedite salvage of the windthrown timber.

Typical windthrow photography is flown at altitudes ranging from 7920′ to 12,000′ above ground level. The use of a 12″ lens on a vertically mounted 9″ x 9″ K-17B camera produces a scale of from 660′ to 1000′ per inch respectively. Super XX film, exposed for 1/225 of a second through a minus-blue filter and an aperture opening of f 8 normally gives the negative quality desired. Log-Etronic prints on double weight, semi-matte paper are preferred for most photo interpretation work. Additional equipment available includes 9″ x 9″ K-17B cameras with 6″ and 24″ lenses for vertical photography and a smaller aerial camera, 4″ x 5″ press cameras and 35 mm cameras for oblique photography. These cameras permit scales varying from 50′-3000′ per inch. Since photography of high elevation areas requires flight altitudes in excess of 20,000′ the Cessna is equipped with a large cabin heater and oxygen system to maintain crew comfort and efficiency in the thin, cold air high above the Cascades. Scales of 50′ to 200′ per inch are employed for intensive examination of small areas while the 1300′ (plus) per inch photographs are used for forest type mapping and road locations on large areas. Intermediate scales ranging from 400′ to 1000′ per inch are the most common for general forestry purposes. Frequently, enlargements are produced from 400′ per inch negatives for planning and intensive management of relatively small areas. All photography is taken with sufficient end and side lap to permit stereoscopic viewing. Either the naked eye or pocket stereoscope is used in the field, while magnifying, scanning, mirror stereoscopes are available for office interpretation.

In addition to windthrow, current logging is another type of photography that receives considerable attention. From these photos, new roads are easily located and acreage computations are made for logging depletion records. The photos are also valuable for subsequent activities. It is becoming standard practice to aerially seed current logging during November or December following logging. Up-to-date photos are the best possible guide for the helicopter pilots seeding these settings.

Decisions regarding mechanical scarification or chemical control of brush are often influenced by information obtained from aerial photographs. Occasionally, winter or early spring photography is desirable in that certain information is more readily available before hardwood species leaf-out. During the dormant season ground cover is visible under hardwoods and it is easier to distinguish between hardwoods and conifers. Planting areas, nurseries and mill sites are other targets for the aerial cameras to assist in planning, inventory and public relations activities. Photos are also used for planning access into areas and for land aquisition work, for research studies, for assessing fire damages and for log pond inventories. Company personnel in ever increasing numbers are turning to aerial photographs to raise their efficiency and to make their duties easier. These photo users include land managers, foresters, loggers, woods and plant engineers, cruisers and land agents and the research and public relations staffs.

Weyerhaeuser's flying foresters busy themselves during the summer and fall months flying insect and disease surveys, photography and fire patrols. To an experienced forester and aerial observer like Paul Lauterbach, a wealth of information concerning forest conditions is waiting to be uncovered by his trained eyes. Through shape and color, tree species can be identified from the air. Different insects, diseases and animals attack different age classes of different tree species in different patterns at different times of the year. Therefore, while not being able to actually see the destructive organism from the air, the results of its work are readily apparent. All of Weyerhaeuser's ownership in the Northwest (2.8
million acres) is flown, usually twice each year, to detect damage from insects, diseases and animals. Intensive re-flights are made wherever abnormal conditions are found and these observations are reported in the same manner as the windthrow surveys so that prompt salvage may be initiated.

Color photography has been particularly helpful in assessing damage from the above agencies. K-17B cameras are again used but this time the magazines are loaded with aerial ektachrome film which produces 9" x 9" positive color transparencies. Scales vary from 300' to 800' per inch. Emulsion filters are commonly used to obtain the correct color balance for the film and a series of haze filters compensate for atmospheric haze or smoke. For special purposes, high speed ansco-chrome, ektacolor or camouflage detection film may be used. Color photography is currently being used to assess the amount of mortality from a variety of causes; young Douglas fir killed by black bear, second and old-growth Douglas fir killed by bark beetles, ponderosa pine killed and damaged by pine beetles and porcupines, and silver fir attacked by Chermes. Evaluations of the effectiveness of various herbicides are also being conducted with color film. Equipment for color interpretation includes a spectrophotometer and densitometer for critical wave length analysis plus the stereoscopes used for black and white photographs. Color photography is an efficient method for appraising the above conditions. It accurately reproduces the abnormal yellow, red, brown, gray and white colors associated with dead and dying foliage and requires a minimum amount of ground checking.

Fire patrol, which has priority over all other flying, is another important function of the forestry airplane. Company lands and adjacent ownerships are flown as soon as possible after all electrical storms to seek out lightning strikes. On going fires, the air crew is in constant radio communication with ground suppression crews and their close cooperation has been instrumental in containing potentially dangerous fires to small acreages.

Other miscellaneous tasks that fall to the forestry airplane are surveys to plan logging and rehabilitations, to locate research study areas, access routes and rock pits, for preliminary inspection of land acquisition areas, to inspect cone crops, or for any other purpose that will expedite forestry activities.

When weather restricts operation of the aircraft, its crew works with helicopter contractors seeding and spraying Company lands, with research and branch personnel to help activate the fruits of research efforts, and conducts ground evaluations of seeding, planting and brush control projects.

Like the eagles and buzzards with which they share their lonely vigil in the skies, Weyerhaeuser flying foresters seek out the dead, the dying and the weak. The analogy is appropriate in that their purpose is also much the same as these birds of prey. Through aerial survey findings, spawning grounds for the destructive agencies of fire, disease and insects are removed from the forest to help satisfy the ravenous appetites of the ever hungry mills.

The coming of the winter rains and snows bring to a close another season of aerial activities for Lauterbach and Chapman. Time has come for the flying foresters to review and assess the past years performance and to prepare for the year that lies ahead.

About the Author

Mr. Chapman is a native Iowan and was graduated from West Waterloo High in June of 1943. In July of 1943, he went on active duty with the United States Navy where he earned his navy wings and served as a carrier-based fighter pilot with the Atlantic Fleet. After being released to inactive duty, Mr. Chapman attended Iowa State College and received his B.S. degree (Forestry Major) in 1951. For the next two years he was employed as a research assistant by a large eastern Iowa millwork manufacturing company. In 1953 Mr. Chapman joined the Weyerhaeuser Company in Springfield, Oregon where he was employed in the logging and the forestry departments. Since 1957 he has served Weyerhaeuser Company in his present capacity as Forester Pilot. Mrs. Chapman, the former Donna McIntosh from Hibbing, Minnesota, is also an I.S.C. alum having graduated from the Home Economics Division in 1948. The Chapmans and their three children now reside in Centralia, Washington.
THE FACULTY

DR. C. H. STOLTENBERG
Head of Dept.
General Forestry
Advanced Forest Economics

DR. G. W. THOMSON
Photogrammetry
Farm Forestry
Forest Measurements
Advanced Mensuration
Forest Management

PROF. L. F. KELLOGG
Logging & Milling
Forest Protection
Forest Management
DR. F. S. HOPKINS
Forest Economics
Forest Policy & Administration
One-fourth time Research

DR. G. E. GATHERUM
Elementary and Advanced
Silvics & Silviculture
One-half time Research

DR. C. J. GOEBEL
Forest Conservation
Forest Range Management
Forestry Club Advisor

ROBERT L. ETHINGTON, M.S.
Forest Products
Seasoning & Bonding of Wood
Wood Technology
DR. J. M. AIKMAN  
Dendrology

DR. H. S. McNABB  
Forest Pathology  
Wood Deterioration

DR. D. W. BENSEND  
On Leave of Absence  
at the University of Indonesia

DR. W. H. SCHOLTES  
Forest Soils
A new addition to our faculty this year is Dr. Kenneth D. Ware, Assistant Professor, who is teaching Forest Mensuration. Dr. Ware was born August 30, 1935, in Webster Springs, West Virginia. He did his undergraduate studies at Glenville State College and West Virginia University. He received his B.S.F. from West Virginia, and received his M.F. and Ph.D. from Yale University, the latter being granted in 1960.

Dr. Ware is a member of the Society of American Foresters, the American Statistical Association, and the Biometric Society. He also belongs to the following national honoraries: Sigma Xi, a national scientific honor; Xi Sigma Pi, a national forestry honor; Alpha Zeta, the national general agricultural honor; and Phi Epsilon Phi, a national botanical honor.

He has worked for the U.S. Steel Corporation in forest inventory; as a research assistant in forestry and a teaching assistant in statistics at Yale; and at the Northeast Forest Experiment Station conducting research in forest survey techniques with emphasis on the derivation of more efficient sampling designs and measurement techniques. Here he also did informal consulting on statistical methods and assisted station statisticians in teaching courses in statistical methods for research foresters.

Dr. Ware says he became interested in forestry while a high school senior, and mensuration in particular while a senior at West Virginia University.

He is married, and he and his wife, Mary Ann, have no children. In his spare time, he likes to read, hunt, and fish for trout.

He lists as his future goals: learning to be an effective teacher; helping forestry students overcome their "instinctive" fear of things mathematical and statistical; and pursuing research aimed at more efficient forest inventory methods.

When asked of his impression of ISU, Dr. Ware replied: "Fine Institution! I am quite impressed by the strength of the university and by the all-pervading cooperative attitude within it."
JOHN J. BEST
Mr. Best was born in Rebersburg, Pennsylvania, in 1924. His major fields of study are forest management with a minor in forest engineering, and forest economics with a minor in statistics. He received his B.S.F. from Michigan State University in 1956, and his M.F. from Oregon State University in 1958. He has worked in the Willamette National Forest at Eugene, Oregon. In the future he would like to be in teaching, research, or an administrative position in industrial forestry. His hobbies are reading, outdoor recreation, and aviation.

LEE HANKS
Lee was born November 21, 1937. He received his B.S. in Forest Management from ISU in 1960. His major field of study is forest mensuration, and he would like to be a research forester in years to come. He is married, and his hobbies include fishing, camping, and photography.

KEITH F. JENSEN
Keith was born April 9, 1938, in Fontanelle, Iowa. He received his B.S. from ISU in 1960, and is doing graduate work in plant physiology and silviculture. After his formal education, he would like to work for the Forest Service in research. He and his wife, Cheryl, have no children. His hobbies are reading and hunting.

JACK E. KEPLER
Mr. Kepler was born December 12, 1937, in Lewistown, Pennsylvania. He received his B.S. from the University of Connecticut, and is studying silviculture at ISU. He wants to work in research in the future. He and Beverly, his wife, have no children. He spends his spare time woodworking.

JOHN L. KRUSE
John was born February 21, 1939, in Davenport, Iowa. He received his B.S. in Forest Management from ISU in 1961, and is now pursuing a Forestry-Economics split major. He will enter Naval Air Intelligence school later this year. Eventually he hopes to get his Ph.D. and enter administrative work. John is single, and likes sports and playing the accordion for spare time recreation.

PETER L. LORIO, Jr.
Mr. Lorio was born April 10, 1927, in New Orleans, Louisiana. He did his undergraduate work at Loyola University in New Orleans and Louisiana State University. He received his B.S. from the latter, and obtained his M.F. at Duke University in 1954. He was employed by the Standard Fruit Company of New Orleans from 1954-1959, for whom he conducted soil surveys and agronomic research in Honduras, Guatemala, Costa Rica, and Ecuador. He is studying silviculture and soils at ISU, and plans to do research work in plant growth and factors affecting plant growth. Pete is married, and he and his wife, Pilar, have two girls: Maria and Patricia, and one boy: Charles. His hobbies are sports and fishing.
FLOYD MANWILLER

Floyd was born May 8, 1934, in Bailey, Iowa. He received his B.S. from ISU in 1961, and is currently studying in the field of wood anatomy. Upon completion of formal education, he hopes to either teach or do research in industry. Floyd and his wife, Mary, have no children. He likes to spend his spare time hunting and reading.

C. DUDLEY MATTSON

Mr. Mattson was born February 11, 1915, in Mansfield, Ohio. He received a B.S. degree from Hillsdale College in Michigan in 1937, and a B.S.F. from the University of Michigan in 1941. He returned for some graduate work in 1945-1946. He is presently studying forestry and economics. Mr. Mattson was an Army Air Force pilot from 1941 to 1945, and has since been employed by the Mansfield Hardwood Lumber Company, the Kirby Lumber Corporation, and the Forest Service. He lists as his goals: 1) receiving a Ph.D. in forestry and economics; and 2) teaching and/or research, preferably at a school like ISU. He is married and has seven children, whose ages range from 9 through 18. His hobbies are fishing, camping trips, and reading. He comments: "School is exciting — but tough on an 'old' man who has forgotten how to study. I get the impression forestry is coming of age and getting set to really go places."

DAVID G. MARTENS

David was born September 19, 1939, in Persia, Iowa. He received his B.S. in Forest Products from ISU in 1961, and is continuing to study in the same field. He hopes to receive a Ph.D. and work in research in the future. He and his wife, Joyce Elaine, have a 19-month-old son, Donald. His hobbies are sports and horses.

DALE VOLKMAN

Dale was born February 2, 1938, in Jackson, Wisconsin. He received his B.S. in Forest Management from ISU in 1961, and is pursuing graduate work in wood anatomy. His goals are to receive his M.S. and Ph.D., and ultimately teach at the university level. Dale and his wife, Bea, have no children, and his hobbies are fishing and reading.

DWAYNE WARRICK

Dwayne was born May 28, 1938, in Ringgold County, Iowa. He received his B.S. in Forest Management at ISU in 1961. His major field of study is forest range management with a minor in statistics. He would like to conduct research in range management after he receives his Masters degree. He has a wife, Shirley, and a son, Gregory David, who is four months old. Dwayne's hobby is quarter horses.

Graduate Students

Manwiller, Volkman, Martens, Hanks, Best, Lorio, Warrick, Mattson, Jensen
Melvin D. Berg, Forest Management, hails from Shelby Iowa. Mel attended the 1960 summer camp and has worked one summer in Oregon. He likes to do things that are not required of him and do not become monotonous. Mel would like to work for industry or the federal government.

Louis V. Bertshofer, Forest Management, comes from Burlington, Iowa. He attended the 1960 Wirt, Minnesota summer camp. His summer work included four summers on the Medicine Bow National Forest in Wyoming and one summer in the Gunnison National Forest in Colorado. Lou is secretary of the Forestry Club and secretary-treasurer of Pearson House. He plans to get a job in forest management.

Don Michael Bolinger, Forest Management, is from Bettendorf Iowa. His hobbies include, fishing, hunting, canoeing, and ice skating. Don has spent three summers in Oregon and Washington working on inventory for the Forest Service. He was at the 1959 summer camp in Wirt Minnesota. He plans to go into consultant work for a private industry. Extracurricular activities include, secretary and vice-president of the Forestry Club, Public Relations Director on the Student Religious Council, Publicity Chairman and Co-chairman of Campus Chest, and Alumni Editor for the Ames Forester.

James R. Boyle, Forest Management, comes from Council Bluffs, Iowa. He has worked on the Mt. Hood National Forest. Jim was Faculty Editor of the 1961 Ames Forester and is Editor of the 1962 edition. He is a member of Phi Eta Sigma, Alpha Zeta, Phi Kappa Phi, Ski Club, and the Forestry Club. He also worked on 1959 Homecoming and Veishea and is an I. F. C. court justice. Jim plans to enter graduate school in forest soils.

Gerald F. Christ, Forest Products, comes from Elgin, Illinois. He attended the 1958, New Mexico, Summer Camp. Gerry has worked at Rinehimer Bros. Millworks, and on the Rogue River National Forest. He likes music, basketball and reading current events. Gerry was scholarship chairman of Louden House and was Senior Editor of the 1961 Ames Forester. He plans to work in private industry after graduation and spend some time in the U.S. Army.
J. P. CLINE, Forest Management comes from Aurelia, Iowa. He attended the 1959 summer camp and has worked two summers with the T. V. A. Hunting, fishing and golf are his hobbies. Pat has served as Forestry Club treasurer, has worked on Veishea Open House as chairman, and on the Game Banquet Committee. He would like to work for some federal agency upon graduation.

VERN R. CORPORON, Range Management, is from Sheffield, Iowa. He attended the 1960, Minnesota, summer camp. Vern was a forestry-aid on Region-4, working out of Moab, Utah. He enjoys hunting and fishing. After graduation he would like to work in Regions 4 or 2, with the U.S. Forest Service.

RICHARD C. DOOLITTLE, Forest Management, is from Charles City, Iowa. He attended the 1959 Minnesota summer camp. He has worked on the Mt. Hood and Sawtooth National Forests. He enjoys amateur radio, camping, canoeing, swimming, and dancing. Dick has been on the staff of the Ames Forester for two years. He has been Vice-president and social chairman of Alumni Hall, and a member of the Forestry Club. He will probably enter O. C. S. with the Navy.

TERRY L. HIGHLEY, Forest Products, from Marion, Iowa. He was a member of the 1960 Minnesota summer camp. Photography, weightlifting, stamp collecting are his favorite pasttimes. Terry has worked as a forestry research aid with the Rocky Mountain Experiment Station. He was president of the M. R. A. weightlifters and is a Forestry Club member. Terry plans to enter graduate school.

RICHARD A. HOWARD, Forest Products, is from Decatur, Illinois. He was a member of the 1959 Minnesota summer camp. Dick has worked for the Weyerhaeuser Research Center and the Forest Products Laboratory. He was Editor of the 1961 Ames Forester. He was also president of the M. R. A. Toastmasters Club, a member of Alpha Zeta, and a member of Phi Eta Sigma. Dick plans to enter graduate school after graduation.

CALVIN L. NORTON, Forest Management, calls Maxwell, Iowa home. He attended the 1958 summer camp in New Mexico. Cal worked one summer on the Shawnee and Mark Twain National Forest. He has been treasurer of the Forestry Club, and treasurer for the Ames Forester. His hobbies are hunting, fishing and photography. Cal was co-chairman of Veishea Open House, and is member of the Forestry Club. He wants to work with the U. S. Forest Service upon graduation.

RICHARD C. PIERCE, Forest Management, came from Kewaskum, Wisconsin. He attended the Minnesota 1959 summer camp. His work experiences include a summer on the Gifford-Pinchot National Forest and one summer with the Pacific Northwest Forest and Range Experiment Station. R. C. has been an Ag. Council Representative and Holst Tract Chairman. He likes woodworking, pipe collecting, canoeing, and writing. He plans to work in either state or federal forestry after graduation.
RONALD C. PRICHARD, Forest Products, comes from Belle Plaine, Iowa. He worked for the Pacific Northwest Forest and Range Experiment Station during the summer of 1961. He was a 1960 Minnesota summer camper. Ron likes hunting and fishing but is undecided about his plans after graduation.

RONALD RYDBERG, Forest Management from Shenandoah, Iowa was a 1960 Minnesota summer camper. He worked one summer with the Pacific Northwest Forest and Range Experiment Station. Ron was business manager at the 1961-62 Ames Forester. He likes to hunt, ice skate and bowl. He is also a member of Phi Kappa Phi, the Forestry Club, and is president of Boyd House. Ron's plans are open.

GERALD F. SCHNEPP, Forest Management, from Rock Rapids, Iowa. He attended the 1961 Colorado summer camp. Gerry has worked three summers with the U. S. Forest Service in Idaho. His hobbies are hunting, fishing, boats, woodworking, skiing and flying. He is the National Advertisement Manager for the 1962 Ames Forester. Gerry is a member of Sigma Nu social fraternity, the Forestry Club, and was open house chairman of the range display for Veishea. He may go on to graduate school or into the service.

ELBERT W. SPENCER, Forest Management, hails from Ames, Iowa. He was a 1959 Minnesota summer camper. El has worked on the Umpqua National Forest at Tiller, Oregon. He likes hunting, fishing, and sports. He has been president and vice-president of the Forestry Club. El has worked on Veishea openhouse, and is a member of Sigma Theta Epsilon, men's service fraternity. He plans to work for the B. L. M. or Forest Service.

JIM SHADLE, Forest Management, is from Iowa City. He attended the 1959 summer camp in Minnesota. Jim has worked for the U. S. Forest Service in Montana, for two years. His hobbies are golf, hunting and fishing. He is a member of the I. S. U. orchestra and was editor of the Driftwood. Upon graduation Jim plans to enter the Navy.

LORIN P. SCHWARTZ, Forest Management, calls Clinton, Iowa, home. He attended the 1960 Minnesota summer camp. He has worked as a forestry research aid for the Rocky Mountain Forest and Range Experiment Station. Lorin likes hunting, fishing and fictional reading. He was summer camp reporter for the 1960 Ames Forester and The Driftwood. Lorin is a member of the Forestry Club and a student member of the Society of American Foresters. He plans a career with the U. S. Forest Service.

THOMAS STATE, Forest Management, calls Muscatine, Iowa, his home. He attended the 1960 summer camp in Wirt, Minnesota. Tom has worked as a fire control aid on the Los Padres National Forest. He likes hunting, fishing and photography. Tom plans to work for the U. S. Forest Service after graduation.
DEAN STEFANEK, Forest and Range Management, is from Cedar Rapids, Iowa. He is a 1959 Wirt, Minnesota summer camper. His experiences included two summers on the Lewis and Clark National Forest. Deans' hobbies are fishing, hunting and golfing. He plans to work for the U. S. Forest Service and later enter the military.

DENNIS L. VERMILLION, Forest Management, from Mason City, Iowa, had his summer camp in Wirt, Minnesota 1959. Denny has worked with the U. S. Forest Service, and as a woods worker in Michigan. Hunting, fishing, trapping, woodworking and reading are his hobbies. He is an active member of Alpha Chi Rho social fraternity and plans to work into public relations or personnel management after graduation.

RONALD LEE VOSS, Forest Products, is from Marne, Iowa. He was at the 1960 summer camp in Wirt, Minnesota. His hobbies are hunting, fishing and trapping. Ron has spent a summer working for the Tahoe Timber Company and plans to work for them after graduation as a log buyer. His activities include scholarship chairman of Norman House and he is a member of the Forestry Club, plus being cover editor for the Ames Forester.

KEITH D. WHERRY, Forest Products, is from Muscatine, Iowa. He was a 1960 Wirt, Minnesota summer camper. His hobbies are hunting, woodcraft, and fishing. Keith has worked as a forestry aid in the Northwest and plans a career with private industry upon graduation.

BRUCE A. WITTRUP, Forest Products, is from Elk Horn, Iowa. Bruce is married and attended the 1954 summer camp. His hobbies are hunting and woodcraft. He has worked two summers on the Gunnison National Forest. Future plans lean toward private industry or graduate school.
Row 1 — Hamilton, Lindblom, Koltz, Reynolds.
Row 2 — Harrison, Robinson, Miller, Crow, Zwald.
Row 3 — Abbs, McCay, Heng, Harcharik, Nelson, Cargill.
Row 4 — Holliday, Everson, Eichkorn, Hatch, Koch, Sieren, DeVault.
Row 5 — Johnson, Ossian, Polcer, Riessen, Griffith, McKay.

Freshmen
Sophomores

Row 1 — Foreman, Nilles, Ebert, Lindsay.
Row 2 — Johnson, Young, Cambell, Murphy, Nelson.

Juniors

Row 1 — Lawrence, Mitchell, Kesselring, Hall.
Row 3 — Blott, Ticknor, Foley, Netherton, Siex, McGuire.
Row 4 — Shattuck, Spinner, Rocca.
1961 Summer Camp
The forestry summer camp of 1961 was located at Winter Park, Colo., in the plush surroundings of a ski resort area. This was the first time camp has been held in this area for quite a number of years and everyone seemed to enjoy it, despite the daily shower of rain, the mosquitoes, the sack lunches, and the truck rides.

We were fortunate in having a ranger station located a mile from camp; but we also heard representatives from the Bureau of Reclamation, the Park Service, and Bureau of Land Management as well as from the Forest Service.

A number of long trips were taken in the trusty, old, red Iowa State “coaches.” We went as far north as Laramie, Wyoming and took an overnight trip to a ranger station near Colorado Springs. We also took a couple of trips to Denver as well as a number of shorter journeys.

Due to lack of a smooth, level area, not much time was devoted to sports except for the horseshoe pits. Instead, a great deal of time was spent trout fishing and camping out on the week-ends. One of the highlights of the camp was the skiing trip we took one Sunday in July. George Ingle, the Winter Park Ski Instructor, furnished the necessary equipment, acted as our guide, and gave us a lesson for $1.00 per person. At this time Dr. Thompson reached the peak of his athletic career and surged into the limelight.

The final night at camp was spent at a nearby guest ranch where we attended a steak fry and were entertained by the singing of Blaze White.
DEPARTMENTAL ACTIVITIES

Row 1 — Bolinger, Doolittle, Fuller, Rocca, Holliday, Foley, Bassett.
Row 2 — Cline, Koltz, Spencer, Bertlshofer, Schwartz, Polcer, Harcharik, Scott.
Row 3 — Goebel, advisor, Terry, Hommema, Lindsay, Johnson, Hunziker, Young, Abbs, Cargill, Shepherd, Nelson, Kesselring.
Row 4 — Norton, Griffith, Robinson, Meyer, Gerdes, Riessen, Penitt, Highley, Lawrence, Ticknor, Lindblum.

FORESTRY CLUB

Fall Spring

President ...................... Elbert Spencer ...................... Don Bolinger
Vice-President ............... Don Bolinger ...................... LeRoy Scott
Secretary ..................... Louis Bertlshofer ...................... Ron Kesselring
Treasurer ..................... Cal Norton ...................... Dick Bassett
Sr. Ag. Council Representative ...................... R. C. Pierce
Jr. Ag. Council Representative ...................... LeRoy Scott
Faculty Advisor ...................... Dr. Carl Goebel

This has been a busy year in Forestry Club activities. Last Spring the club played host to the Mid-West Foresters’ Conclave held at the 4-H camp south of Boone. There were about 100 guests from the other member schools, including Missouri, which recently joined the group. The Conclave committee had their hands full with arrangements for sleeping quarters, meals, prizes and entertainment. Despite the rain, the Conclave was an unqualified success with the possible exception perhaps being that ISU didn’t rank very well in the final standings.

Fall quarter, as usual, was a very busy time and the National Convention of the Society of American Foresters was held in Minneapolis in October. A large number of club members attended the convention and the Alumni Banquet honoring Dr. Larsen. As a result of the full Fall schedule, the Fall Foresters’ Day was postponed until Spring when better preparation can be given to it.

Because of the excellent job the Christmas Tree Sales Committee performed, the venture showed a very good profit this year. A large part of this was due not to tree sales but to the sale of cones that club members gathered while on summer jobs. Because of the demand for the cones (sugar pine size) shown this year, plans are now being formulated to have summer workers in the West spending their free time and weekends playing like squirrels and gathering cones.

The Forestry Club is especially grateful to Dr. Carl Goebel for the outstanding job he has done this past year as our faculty advisor.
Last spring the Forestry Student Wives Club changed its name to the Iowa State Lumber Jills. This name is being widely used for similar wives clubs around the country. Presently, the club has 30 members and holds regular monthly meetings in the lounge of the Women’s Gym. A special program is planned for each meeting. This year’s programs have included talks by Mr. Russ Dvergsten on “Mental Health” and Mrs. Marilyn Twitchell on “Charm.”

Every Christmas, candy and cookies are sent to the Polk County Home and toys are sent to the Woodward Home for retarded children. With the cooperation of the men’s Forestry Club, diplomas are given to the wives of graduating seniors. Last spring these diplomas, known as “P.H.T.’s” (Putting Hubby Through) were given to the wives at a breakfast get-to-gether.

The purpose of the Club is to bring the wives of the forestry students closer together through social activities. An extra social meeting was a mixer which enabled husbands and wives to become better acquainted with fellow forestry pairs. One of the highlights of the Club’s social activities is the tea given the forestry faculty wives each spring.

This year’s officers are: Joan Bassett, president; Ann Chapman, vice-president; Ardis Pritchard, secretary-treasurer; Virginia Lundstrum, historian; and Mrs. George W. Thomson, faculty advisor.

The Driftwood

The “Driftwood”, the newspaper of the Forestry Department, is a spasmodical (as opposed to periodical) publication of news about activities, students, instructors, and general forestry information. Entertainment is the purpose, humor the highlight, and irregularity the interest-holding factor.

One of the feature articles in each fall issue is the coverage of the past Summer Camp, and the “spread” last fall by Jim Rocca was a fine job of humorous recollections and “ribs” at the instructors. Incidentally, this ribbing of instructors seems to be a well-established part of every issue, and hasn’t resulted in too many flunk-outs as yet. Another feature of the “Driftwood” is the opportunity it provides for students in the Department to try their journalistic skill and to express their ideas and opinions on topics of current and pertinent interest. An editorial by R. C. Pierce on the relationships and obligations of students and instructors was a fine example of this type of writing. Other articles of professional and news interest make the “Driftwood” an enjoyable and entertaining publication, and Jim Shadle, Editor, and his staff have done a fine job “meeting the deadline”?? this year.
1961

The 1961 annual Game Banquet was held March 14 at the Collegiate Presbyterian Church. As traditionally done, the meal was planned around a type of wild game. For 1961 it was “Texas Longhorn” direct from an Iowa feedlot due to lack of wilder fare. After the meal the Farmhouse Four provided some barbershop harmony for the entertainment. The guest speaker for the evening was Dr. Robert Dills, Professor of Watershed Management at Colorado State University, who spoke on the importance of watershed management in our nation today. Presentation of the new Forestry Club Officers and awards to students for scholarship and achievement rounded out the enjoyable evening.

1962

For the 1962 Game Banquet we once again had real game, venison provided by Ken Benda ('40) and student Dale Netherton, and antelope from Extension Forester Bob Davidson. Keith Jensen ('60) Ph.D. candidate in silviculture and plant physiology was presented a plaque in recognition of a $600 fellowship grant he received for his research from Koppers Foundation of the Koppers Company, Inc., Wood Preserving Division, Pittsburgh, Pennsylvania. Keith is doing research on seed source and photoperiod relationships of Scotch pine.

Part of the entertainment for the banquet was provided by Perry Bolin’s renditions of some popular ballads and folk songs which everyone thoroughly enjoyed. The rest of the entertainment was included in the program by Dr. Wayne Scholtes, Professor of Agronomy and Forestry and “Chief Knocker,” who gave a spicy and very interesting account of his research on the pedological importance of the Indian burial mounds at the Effigy Mounds National Monument in northeastern Iowa. The record-setting crowd of one hundred forty attendents will surly agree that they had an enlightening, entertaining, and filling evening, and will be looking forward to Game Banquets of future years.
On April 29, 1961 the Iowa State Foresters were host to the 8th Annual Midwest Foresters’ Conclave at the Boone 4-H Camp Grounds. The participating schools were: University of Michigan, Michigan State University, Michigan College of Mining and Technology, University of Minnesota, University of Missouri, Purdue University, and Iowa State. The conclave is held each year to promote good relations between the six accredited forestry schools in the Midwest and to give the aspiring foresters a chance to test their basic forestry skills.

The conclave day was started off right with a big breakfast, then the competition began with dendrology, pacing traverse, match splitting, and tobacco spitting for the morning’s events. Chain throwing, log throwing, log chopping, log rolling, one and two-man bucking, and the special pole climbing event kept the “eager beavers” busy for the afternoon. In the evening Dr. Stoltenberg gave a talk, and the awards were presented. The Michigan Tech men walked away with top honors, followed by Michigan U., Purdue, Missouri, Michigan State, and a tie between Minnesota and Iowa State. Both competitors and spectators thoroughly enjoyed the day, and all are looking forward to the 1962 Conclave at Michigan Tech.
Open House

Visitors at Veishea inspect the displays of the various aspects of our profession at the Forestry Department Open House.

Tug-'O-War

The “Woodchoppers” grunt and groan as they successfully strain to overcome the “C.E.’s” in the traditional tug-o’-war across Lake LaVerne. A mighty effort by our brawny heavy-weights won back the coveted broad axe trophy from the civil engineers, our campus rivals.

Announcing The George B. Hartman Travel Fund

A new award for forestry students will provide a ten-day visit to a major forest area for three upperclassmen in the company of two staff members. The funds to provide for these awards were donated by Iowa State Forestry Alumni and friends at the time of Professor Hartman’s retirement as Head of the Forestry Department. These funds will be adequate to make this award annually for the next five years.

There are several purposes of the award.

a. To extend the influence of Professor Hartman, and to honor him.
b. To recognize worthy upperclassmen in a unique way.
c. To extend the name and “personality” of the Iowa State Forestry Department in the United States.
d. To maintain first-hand contact between alumni and the award winners and staff members making the trip.
e. To promote student participation in class discussions by drawing on those student observations gained while making the trip.

Students to be awarded the honor of going on the trip will be selected by the teaching staff from a slate of six or eight students nominated by a three man committee of staff members.

The students selected shall be those who embody the personal qualities of Professor Hartman, and who will reflect honorably on his name.

Award winners must have:

a. Enthusiasm for the profession and loyalty to the Forestry Department of Iowa State University.
b. Good, but not necessarily highest, academic scholarship.
c. Sincere interest in representing the Forestry student body and participating in all phases of the trip.
d. Achieved Senior standing in one of the options of the forestry curriculum.
e. Completed 150 credit hours toward graduation.

The trip will be carried out under the direction of the Head of the Forestry Department and one other member of the Forestry Faculty. Their expenses will be covered by funds from other sources.

Travel will be in one automobile. The general operation of the trip will be as follows:

a. The trip will be in conjunction with annual national meetings of SAF, FPRS, NLMA or such regional meetings as may be held in key geographic areas, or in conjunction with any worthwhile invitation.
b. Faculty members will guide the students to a forestry activities in the area of the meeting. Both land management and industrial processing activities will be observed and discussed.
c. No geographic restraints will be placed on the trips except that available funds must be made to last at least five years and the areas visited will be those which will do the most good in carrying out stated objectives.

The first trip is scheduled for the Atlanta SAF meeting, Fall, 1962.

It is the belief and sincere hope that this new award will be much coveted and will do much to honor the name of Professor Hartman and to stimulate enthusiasm for competence among forestry students.
Alumni Dinner

Many of your fellow foresters and classmates were present at the joint S.A.F. — C.I.F. meeting in Minneapolis this fall. They turned out 108 strong for an alumni dinner held at the Edgewater Inn.

The guests of honor at this dinner were Dr. and Mrs. J. A. Larsen. Dr. Larsen exhibited some of his witty humor and views on the I.S.U. Forestry Department along with comments on the life of a forester in general. After the Dinner Dr. Larsen was presented with a book of 70 letters compiled from those received from his former students and associates. Also, he was presented with the first "Frudden Award" in recognition of his outstanding service and contributions to Iowa Forestry. This award is to be given yearly to a person exhibiting outstanding leadership in the promotion of Iowa Forestry. The Forestry Department Faculty presented Dr. Larsen with a book of Norwegian art which he had admired for some time.

Citation Awarded

George J. Pecaro, class of 1930, "in recognition of outstanding professional achievement by preeminent contribution to education, government, social welfare, science, agriculture, finance, general business or the home," was presented with the "Distinguished Achievement Citation," donated by the Iowa State Alumni Association.

At the present time Mr. Pecaro is president of the Flintkote Corporation in New York. His devoted interest in the alumni program coupled with his service on the Iowa State Foundation Board of Governors, truly make him well qualified to be the first recipient of this citation.

Thanks from Skipper

October 24, 1961

Dear I.S.U. Forestry Graduates and Friends:

My heart is suffused with gratitude for your great kindness, fond rememberances, good wishes and kind regards, expressed in your letters given me on the occasion of the Alumni Dinner in Minneapolis October 9. The letters are now alphabetically bound in beautiful red leather. This collection is, and always will remain, one of my most prized possessions. In case I ever get stuck in the quagmire of discouragement and despair their wonderful words of cheer will yank me right out and set me back where I was or ought to be. Thank you very, very much!

To those who were present on that memorable evening, and to all whose greetings came via letters, we proclaim that it was great joy to experience your warm and sincere friendship, to be recipients of your hearty congratulations and good wishes.

Allow me to repeat that we of the Staff are ever deeply interested in you and proud of the advancement and signal contribution you have made to the progress of forestry in our land. In this way only through your achievement and personality, a well deserved credit and recognition can accrue, year by year, to our School and to us all.

Affectionately yours,
"Skipper" Larsen
Alumni and Advertising

1899
Mast, W. H., Deceased.

1904
Merritt, Melvin L., Deceased.

1907
Balthis, Russell Forest, 2301 Bomar St., Vicksburg, Miss. Self employed.

1908
Harker, Henry, 4242 Northeast Failing St., Portland 13, Ore., Retired.

1909
Allen, Shirley, Rt. 2, Box 159, Fallbrook, Calif., Professor of Forestry, Emeritus, University of Michigan.

1911
Freeman, Frank C., 928 Greenleaf St., Santa Anna, Calif., Insurance.
Koepke, W. C., Address Uncertain.
Smith, Percy T., 309-29th St., Sioux City 4, Ia., Animal Feed Department, Cudahy Packing Company.

1912
Lessel, L. R., Deceased.
O'Banion, A. C., Farmer, Minn.
Ringheim, H. L., Box 23, White Rock, B.C., Canada, Retired.
Richmond, Howard H., Cass Lake, Minn., (U.S. Forest Service).
Smith, William A., Address Uncertain.
Truax, Thomas K., 3815 Council Crest, Madison, Wis., Retired.

1913
Baxter, L. J., Galva, Ia., Farming.
Clark, H. B., 6001 Nicholas, Omaha, Neb., District Manager, A. E. Robinson Company, Irrigation Engineers.
Hessel, R. L., Address Uncertain.
Ringheim, Horace L., Box 25, White Rock, B.C., Canada, Retired.
Watkins, Lyle E., 1428 N.E. Thompson St., Portland 12, Ore., Retired (U.S. Forest Service).

1914
Hassel, W. C., 1158 J. Ave., N.W., Cedar Rapids, Ia., Penick and Ford, Incorporated.
Hayes, Ralph W., Baton Rouge, La., Retired (School of Forestry, Louisiana State University).
Nagel, William M., Address unknown, Retired.
Sterrett, John C., 249 S. Villa Ave., Villa Park, Ill., Real Estate.
Van Boskirk, S. S., 115A North 12th St., Fort Pierce Fla., Retired (U.S. Forest Service).
Wolf, F. T., 12022 Nelson St., Garden Grove, Cal.
Wolvin, Ray M., 1022 West 19th St., Santa Ana, Calif., Retired.

1915
Bode, Irwin T., Beverly Park Apt. 2-D, 730 West Beverly Blvd., Whittier, Calif., Retired.
Hicks, Lowell E., Address Uncertain.
Schreck, R. G., Deceased.
Smith, R. P., Address Uncertain.

1916
Cassidy, H. O., Deceased.
Cornell, Harvey H., 1462 Diolinda, Santa Fe, New Mexico, Chief Landscape Architect, National Park Service.
Geisler, Max, 925 Wesley Ave., Evanston, Ill., Sales Promotion.
McCarthy, C. C., Webster City, la., City Manager.
Jones, G. G., Address Uncertain.

1917
Hartman, George B., Deceased.
Henry, A. S., 6530 Roosevelt Road, Oak Park, Ill., Sales Manager, Austin Brothers Construction Co.
Quint, J. Harley, Deceased.
Veatch, Claude H., 10521 Waller Road, Tacoma 44, Wash.

1918
Davis, E. M., 2121 Oxford Road, Madison, Wis., Principal Wood Technologist, U.S. Forest Products Laboratory.
Donahoo, John F., 730 Captain Cook Ave., Honolulu 14, Hawaii, Retired.
Haddock, Frank D., Route 1, Rummerfield, Pa., Retired.

1920
Baker, C. J., 1500 Clinton Ave., Minneapolis, Minn., Teaching.
Deming, Milo H., 804 Oakwood Div., Falls Church, Virginia, Range Conservationist, Research, B.I.M.
Loe, F. C., Deceased.
Moorhead, John W., Deceased.
Morrill, Fred W., Deceased.
Wall, Lloyd A., Box 392, Taos, N. M., Retired.

1921
Avery, N. A., Laramie, Wyoming, Assistant Supervisor Medicine Bowl.

1922
Buck, K. J., A.P.O 28 N.Y., N.Y., Battalion Officer.
Ing, Wen Ming, Chengtu, Szechuan, China, Vocational Agriculture, University of Nursing.
Morfett, J. E., 5236 Southwest Burton Drive, Portland, Ore., Retired.
Pohle, Edwin W., 14466 Oakplace, Saratoga, Cal., Owner Southern Lumber Co.

1923
Boigen, A. J., Address Uncertain.
Dunn, Paul M., Apt. C-17, 377 South Harrison St., East Orange, N. J., Technical Director of Forestry, St. Regis Paper Co.
Prou, Clarence W., 5322-24th Ave., South, Minneapolis 17, Minn., Deputy Commissioner, Minnesota Department of Conservation.
Trenk, Fred B., 2006 Gregory St., Madison 5, Wis., Retired (State Extension Forester, University of Wisconsin).
Wattkins, E. W., 4532 Southwest Lota St., Portland 1, Ove., Bureau of Construction, Public Works Department, City of Portland.

1924
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Miller, Allen E., 5155 Nebraska Ave. NW, Wash. 8, D. C., Assistant Chief, Division of Recreation and Lands, U.S. Forest Service.
Rutter, Frank J., 623 Echo Lane, Glenview, Ill., Hus Lumber Company.

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1931

BENSON, ELLSWORTH H., 3824 Apple, Lincoln, Nebr., Assistant State Extension Forester Uni- versity, Neb.

BOEGE, HAROLD R., 205 E. Spring, Dayton, Wash., Work Unit Conservationist, Soil Conservation Service.

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HOUGH, JOHN P., 1097 Ivy Lane, Fortuna, Calif.


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1932

ANDERSON, HELMER, 711 N. Bridge St., Chippewa Falls, Wis., Wis-
sconsin Soil Cons. Serv.

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KLINE, GEORGE, Lone Tree, Iowa, Creamery Operator.

POPTER, Ewert D., 606 Melrose Court, Clinton, Iowa, Partner, Andrew Bather Company, Florists.

SCHAFER, ARTHUR O., 714 Margaret St., Rhinelander, Wis., Assistant Superintendant, Nicolet National Forest.

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1933

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ter National Forest.

DUNN, MILFRED R., Address Uncertain.

GIBSON, LAWRENCE M., 7th Avenue & 7th St. So., Park Falls, Wash., Sulphite Superintendent, Flambeau Paper Division, Kansas City Star Co.

GRAY, EDWIN H., 719 Shattuck, Greensville, Miss., Woods Operating Superintendent, U. S. Gypsum Co.

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Officer, National Park Service.

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Tow, Edwin E., 1649 Finley St., Dubuque, la., Manager, Standards Dept., Farliv and Loocher Manufacturing Co.


William, George F., 744 North Grove Ave., Oak Park, Ill., Vice President, R. S. Bacon Company.

1938


Beyer, Francis, 727 South Chestnut, Jefferson, Iowa, Soil Conservationist, Soil Conservation Service.

Burma, George B., 4356 Morrope Lane, Sacramento 25, Calif., Range Manager, U. S. Bureau of Land Management.

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Miller, Homer E., 4538 Waukon Pike., Des Moines 15, Iowa, Col. (Ret.)

Mullen, Franklin H., Box 37, Donnelsen, Iowa, Work Unit Conservationist, Soil Conservation Service.

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Scoltock, Joseph D., 2901 Raymond Dr., Des Moines, la., Continental Forest Products, Inc.

Scott, Samuel J., Box 807, Zwolle, la., District Forester, Inter- national Paper Co.

Secor, James B., Address Uncertain.

Smith, Walter P., 1142 West End, Chester, South Carolina, Manager, Chester Memorial Gardens Inc.


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Von Gillem, Robert F., 1421 Locust St., Des Moines, la., Manager, Canada Dry Bottling Co.


Wulf, Wilbur A., 1611 - 9th St., Lake Charles, La., Dist. Sales Manager, Curtis Companies, Inc.

Yoder, Ralph E., Jr., 3609 9th Ave. S. Seattle, Wash.

1939

Aker, Darrel P., Route 1, Hudson, la., Farming.

Babe, John S., Address Uncertain, Military Service.

Baxendale, Howard E., P. O. Box 124, Stapleton, Ala., Forester, Tenn. Coal & Iron Div., U. S. Steel Corp.

Beuk, Clayton A., Route 1, Box 1, Boring, Ore., Forest Inspector, Oregon State Board of Forestry.

Bjornson, Harold B., 290 2nd St., McMinneval, Oregon, Pastor First Baptist Church.

Blase, Robert A., 504 Harvard Road, Flagstaff, Ariz., Division Manager, Southwest Forest Products.

Blount, Jay VanWinkle, 525 4th Ave. So. Fl. Dodge, la., Vice President, Central Iowa Service Co.


Collister, Laurens C., 1914 Sims, Topeka, Kansas, Manager, Tie Plywood Co.


Cox, Royce G., 1124 Burrell, Lebanon, Idaho, Chief Forester, Patlach Forests, Inc.

Coxwell, Truman G., Box 220, Nacogdoches, Tex., General Manager, East Texas Wood Treatment Co.

Flick, Francis D., 251 Iowa, Ames, Iowa, Animal Disease Lab.

Froehlich, John L., 1821 South Mobile Ave., Chicago 39, Ill., Assistant Chief Forester, Forest Preserve District of Cook County.

Gates, Earl W., 1106 Overbrook Dr., Marion 10d., Sales Representative, Aetna Plywood & Veneer Co.

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Gral, Robert B., Box 157, Elkader, la., Owner, R. Grau Logs & Lumber Co.

Gunderson, Omer J., Decayed.


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HENRY, WILLIAM E., Address Uncertain.
HICK, LYELL K., 6407 Lewis Farm Road, Raleigh, N. C., Management Forester, North Carolina Division of Forestry.
HIRK, ROBERT EDWARD, 327 Mary Lane, Eugene, Ore., Partner, Hirik and Wood Lumber Co.
HOGELIN, MILFORD C., Forester, Tennessee Coal & Iron Division, Hirik Steel Corporation.
HOSKINS, ROBERT N., 7603 Cornwall Road, Richmond, Va., General Forestry Agent, Southwest Lumber Road Co.
HURD, RICHARD M., Star Route—Riverside Park, Juneau, Alaska, Northern Forest Exp. Sta.
JAMISON, GLEN M., Col., Ia., Farming.
JOHNSON, FLOYD A., 1406-64 S.W. Goodal Road, Oswego, Ore., Assistant Pacific Northwest Forest and Range Exp. Sta.
LEHMANN, CARL T., Address Uncertain.
MARSH, ALBERT R., Box 122, Forks, Wash., Consulting Forester, Marsh Forest Services.
MELVIN, JAMES K., Address Uncertain.
PHINNEY, HARTLEY K., 53 Decon Hill Road, Stanford, Conn., Technical Representative, Bakelite Division, Union Carborundum Carborundum Corp.
PROCTOR, ROBERT E., 1458 Nutwood Ave., Coos Bay, Oregon, Forester, Bureau of Land Management, Coos Bay, Oregon.
REISTRUPP, LIEUT. ROBERT J., Address Unknown, Military Serv.
SCHOLTES, WAYNE H., 543 Forest Glen Ave., Ames, Ia., Professor of Agronomy (Soils), Iowa State University.
STILL, JAMES H., 613 Tower Road, Barrington, Ill., Manager, Ponterosa Pine Sales, Edward Hines Lumber Co.
TICHELL, CHARLES L., 705 Homer Creek Parkway, West Allis 19, Wis., Chief of Survey Branch, U. S. Corps of Engineers.
WEBER, JOHN L., 9320 So. 55th Ave., Oak Lawn, Ill., Manager, Bion Millwork & Supply Co.

1940

ALLEN, JOHN C., Box 480, Norris, Tenn., Staff Forester, Tennessee Valley Authority.
APPLEquist, MARTIN B., 161 W. Crescent Dr., Flagstaff, Arizona, Associate Professor, Dept. of For., Arizona State College.
BAGLEY, WALTER T., Assistant Forester, Rt. 3 Lincoln 7, Nebr. Agr. Exp. Sta., University of Nebraska.
BEBENSEE, BRUCE M., 3205 15th Ave., Meridian, Miss., Assistant Plant Manager, Sylvania Paper Co.
BENDA, KENNETH J., Hartwick, Ia., Executive Vice President, Hartwick & Sons.
BISHOP, CLINTON G., The Narrows, Grayling, Mich., Assistant Professor, Agricultural College.
BRANDU, WILLIAM H., Uncertain.
BROWN, FERDY J. C., 615 Orchard State Rd., Redding, Calif., Forester B.L.M.
BUSHING, RICHARD W., 949 Rose Lane, Annandale, Va., Col.—Air Force.
CAMPBELL, LESLIE W. A., Box 796 RR. 10, Holliston, Mass., Chief, Station Engineering Service.
FRIDIAN, JOHN R., Box 42 Millwood Movers.
COUNTRYMAN, DAYTON W., 614 E. Ave., Nevada, Iowa, Attorney.
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DEVERD, HAROLD J., Rt. 1, Box 304, Pineville, La., Research Forester, Specialist Army.
DORMAN, MERLE R., Rt. 1, Perris, Ia., Farming.
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ELLISON, MARIAN L., Dept. of Botany, Univ. Kansas, Lawrence, Kansas.
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WITTWER, CARROLL R., Shimek State Forest, Farmington, Iowa, District Forester, Iowa State Conservation Commission.
SCHNABEL, LOUTS F. (Lt. Col.)

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1941
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54

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1959

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To The Woods!