EDITORS NOTE:
the 1985-1986 school year marked the centennial for Michigan Tech. All over campus Tech was like in the beginning. We have followed this trend to some extent, except that we have chosen to depict things in the Forestry department as they were "then," at the inception of the FORESTER and "Now," in the eighties. How have things changed? What remains the same? We figured that the best way to look at the changes was with pictures, and while we searched through the FORESTER archives we realized how different some things were around here in the fifties. Other things have gone through cosmetic changes, but deep down they are still the same. We hope that you enjoy this "trip back to the past" as much as we enjoyed putting it together.

Deb and Sue
We started out in the old Hubbard School. In 1968 we moved “up the hill” to the new forestry building, complete with labs and spacious classrooms. In the mid-seventies our numbers were so great that lectures were given in the big lecture rooms in Fisher Hall. Now we cannot fill the one large room in the Forestry Building and it has been taken over by business classes. The Forestry Building still says foresters, though, with its wooden doors, beams, and floors. No other place on campus does the building reflect the major of its students. We are unique.
Salute

In the past 12 years, the Forester has honored one faculty member in a "Salute" for his contributions to the Forestry Department at Michigan Tech. As part of our "Then and Now" theme, we would like to take this opportunity to thank those instructors one more time for their outstanding leadership and teaching. Thank you again!

1968 — Charles Neilson

1969 — Gene Hesterberg

1970 — Gordon Trombley

1971 — William Todd

1972 — Norm Sloan

1973 — Robert Sajdak

1974 — Eric Bourdo, Jr.

1975 — Boswell Miller

1976 — Michael Coffman
Department Faculty and Staff

Dr. W. F. Frayer
Dean of the Forestry Department
B.S. Penn State, M.F. Yale
Ph.D. Yale

James B. Pickens
Assistant Professor
B.S. Eastern Montana
M.S. University of Georgia
Ph.D. University of Georgia

Robert L. Sajdak
Associate Professor
B.S. Michigan Tech
M.S. University of Minnesota

Mary L. Frantii
Administrative Aide
A.A.A. Suomi College

Dr. Paul Berrang
Research Scientist
B.S. Suny, M.S. Penn State
Ph.D. Penn State

Dr. Roswell K. Miller
Associate Professor
B.S. Syracuse University
M.S. Syracuse University
Ph.D. University of Michigan

Gary W. Lenz
Research Associate
B.S. Southern Illinois University

Dr. Gary W. Lyon
Assistant Professor
B.S. University of Washington
M.S. University of Washington
M.A. University of Washington
Ph.D. University of Washington
Dr. John Kotar
Assistant Professor
B.S. University of Wisconsin
M.S. University of Minnesota
Ph.D. University of Washington

Dennis A. Baril
Teaching Assistant
A.A.S. Michigan Tech

Peter Cattelino
Research Associate
B.S. Michigan Tech

Dr. Alex Diner
Research Scientist
B.A. Moorhead State University
M.S. North Dakota State
Ph.D. Auburn University

Dr. Glen D. Mroz
Assistant Professor
B.S. Michigan Tech
M.S. Michigan Tech
Ph.D. North Carolina State University

Dr. Bernard C. H. Sun
Associate Professor
B.S. National Taiwan University
M.S. University of British Columbia
Ph.D. University of British Columbia

Ann Strickler
Research Associate
B.S. Michigan Tech
M.S. Texas A&M

Dr. David Reed
Assistant Professor
B.S. University of Arkansas
M.S. Virginia Polytech. Inst. and State Univ.
Ph.D. Virginia Polytech. Inst. and State Univ.
Dr. Martin F. Jurgensen  
Professor  
B.S. Syracuse Univ., M.S. Syracuse Univ., Ph.D. North Carolina State Univ.

Dr. David Karnosky  
Professor  
B.S. Univ. of Wisconsin, M.S. Univ. of Wisconsin, Ph.D. Univ. of Wisconsin

Dr. Norman R. Sloan  
Professor  
B.S. Michigan Tech, M.S. Univ. of Wisconsin, Ph.D. Univ. of Wisconsin

Hal O. Liechty  
Research Associate  
B.S. Michigan Tech

Andrea Longhini  
Executive Secretary  
B.S., Ferris State College
Betty Gaff
Clerk

Ann Leach Maclean
Instructor
B.S. Michigan Tech
M.S. Univ. of Wisc. — Madison
M.S. Univ. of Wisc. — Madison

Mary Beth Maurer
Typist

Name: Johann Bruhn
Charge: Losing the Big Screw Award
Date: April 30, 1986
Time: During Entomology Class
Ford Forest Staff

Carl C. Trettin
Manager, Ford Center

Sharlene Kanniainen
Senior Secretary

James A. Johnson
Research Scientist

Mark A. Anderson
Programmer/Analyst

Elizabeth J. Reed
Research Associate

David W. Wilson
Programmer/Analyst

Johann N. Bruhn
Research Scientist

Stephen G. Shetron
Senior Research Scientist
Department News

Vincent Chiang joined our faculty this past year. He received his M.S. and Ph.D. from the University of Washington at Seattle. His research interests are in wood and pulping chemistry and he has already discovered a new pulping process. Vincent is married.

Alex Diner, adjunct assistant professor in Forestry, came to MTU in 1983 from the warm, sunny, friendly, lovely state of North Carolina. He earned his Ph.D. from Auburn University in 1979, and has since carried out research in tree tissue culture and in vitro studies of forest diseases. He and his wife, Debra, live in Hancock. Debra boards her horses far away from Alex's gun collection.

W. E. (Ed) Frayer has been the Dean of our School for over a year now. He came to Michigan Tech from being Head of the Forest Management Department at Colorado State University in Ft. Collins. Ed's background is in forest mensuration, biometrics, and computer science. His doctorate was earned at Yale. A brief description of his leadership style would have to include the phrase "quiet competence."

Ed finds that the Dean's job involves more traveling than he would like. This may relate to the fact that one of his hobbies seems to be the remodeling of old homes. He's put his skills to work on the large, old house he bought in Hancock overlooking the Portage Lift Bridge. Of course, his wife, Bonnie, may have been "cracking the whip" on that project somewhat, but the results have been beautiful. Bonnie also seems to be involved in bridge games and bowling. They have two teenage boys, Greg and Jeff, still living at home and attending Hancock High School. Two other children, one married, have "flown the nest."

The family has been seen digging divots on the Tech golf course in the summer, and has even used their boat, "Dockcrusher," a few times. Ed is an avid hunter also, but hasn't done too much to decimate the bird or whitetail population up here yet. Rumor has it that much of a recent vacation was spent visiting antique shops also.

Selections From Forestry News

by Roswell Miller

James A. Johnson, known as JJ, will be retiring July 1, 1986. He has worked at the Ford Forestry Center as a Forester-Research Scientist for the last 30 years. This past year he was given the SAF Fellow Award.

David F. Karnosky joined our faculty in 1983, but since most of you don't know him, we thought we'd let you in on some details about him. He earned his Ph.D. from the University of Wisconsin-Madison in 1975 in the area of forest genetics, but came to us from the New York Botanical Gardens. He's the Research Coordinator for the School of Forestry and Wood Products and Director of the BioSource Forest Biotechnology Group here. As well as doing research in the genetic improvement of northern conifers (primarily larch), Dave manages to teach two courses: Tree Physiology and Current Topics in Tissue Culture.

Dave's current research focuses on cell, tissue, and organ culture of larches as well as the more traditional field establishment and provenance tests. He's also actively involved in genetic studies of the responses of trees to air pollution.

John Kotar, forest ecologist and silviculturist here since 1979, will be leaving the School at the end of this academic year. The Copper Country is losing a truly dedicated cross-country skier. We wish both John and Nina well in their new endeavors.

Gary Lenz, Research Associate — in charge of the soils lab for the last 3 years, left April 25, 1986. He is working for the Soil Conservation Service as a Soil Scientist in Bloomington, Illinois.
Gary W. Lyon joined our faculty in the spring of 1984 to teach Forest Economics and Finance. He completed his Ph.D. in forest economics at the U. of Washington after serving as a visiting lecturer at both Washington State University and the University of Idaho. Gary's past also includes a B.S. in forest engineering, an M.S. in forest management and an M.A. in economics.

Gary has worked as a research scientist for the Washington State Department of Natural Resources and for the U.S. Forest Service. He also spent 14 years in Montana and Idaho as a smokejumper. His hobbies include hiking and fishing, and he's still single.

The soils lab from the Ford Forestry Center is being combined with the soils lab in the Forestry building. Janet Paces is presently in charge of the lab in the forestry building. Priscilla Sheets, who has been in charge of the Ford Forestry Center's soils lab since the spring of 1985, will be leaving for Arizona this June.

Robert Sajdak, known as Black Bob, introduced himself this year to the Dendrology class as Uncle Bob. Bob will be retiring August 1, 1986. He will still be around to teach Dendrology next fall.

Irv Ziemer has left the School and is now working for Forest Restoration, Inc. out of Baraga. That's a new outfit that is doing the organization work for the pilot Forest Improvement District in the western U.P. They're still trying to get acreage and landowners signed up so that a board of directors can be elected. Jim Meteer is also involved.
New Faculty

Margaret (Peggy) Rowan Gale received her B.S. here in 1976 and her M.S. in 1980. She’s completing her doctorate at the Univ. of Minnesota in St. Paul and will begin her work here in the fall. Some of you will remember her as a classmate or as a very able graduate teaching assistant. While here, she won University scholastic awards in two years and the University Women’s Award in 1976. Peg’s interests are in the area of computers and statistics and their applications to growth and yield modeling.

Peg is married to Chris Gale who graduated from here in 1977. Chris is now completing his work for a law degree in the Minneapolis/St. Paul area. Peggy will be teaching and doing research in the area of forest growth and yield. Her hobbies include skiing, racquetball, and working with stained glass.

Ann Leach Maclean, class of 1976, is completing her Ph.D. in remote sensing at the Univ. — of Wisc.-Madison, and will be teaching Air Photo Interpretation and developing research and additional coursework in remote sensing and Geographic Information Systems while starting up an Image Processing Laboratory. Her research interests include the practical application of remote sensing techniques to forest management, including stress assessment, type mapping, and pest monitoring.

Ann’s husband, Gordon Maclean (B.S. Forestry, MTU ’77), is also completing his Ph.D. in remote sensing at Madison and will be moving his consulting business to Houghton and working on its expansion.

Ann has been here during this spring quarter, will return to Madison to finish her doctoral research during the summer, and she and Gordon will be moving back to the Houghton area in the fall. Ann’s hobby is raising and training German Shepherd dogs for Schutzhund competition (obedience, protection, search and rescue, tracking; under international rules), and she would like to compete in the U.S. National Schutzhund Championships.

James Pickens has joined our faculty recently and is teaching operations research-type courses in the management area. Jim earned a biology degree from E. Montana College and has completed his master’s and doctorate at the University of Georgia in the area of biometrics, quantitative decision making and economics. He comes to us with a background in planning, having worked on the Resource Planning Assessment (RPA) in the Washington office of the Forest Service and for the Rocky Mountain Forest Experiment Station. Jim’s research interest is in the application of optimization methods to forestry problems, and he has experience in harvest scheduling and land allocation applications. He is living in Chassell, is married, and has one young child.

Steven M. Shafer will be joining our faculty in the fall also. Steve has his bachelor’s and master’s degrees in wood science and engineering from Colorado State University. He has been an Instructor at Penn State for the past four years in the area of wood engineering and construction. Steve’s research interests lie in the non-destructive evaluation of wood materials, and he has been active in the Forest Products Research Society. We look forward to him being a good addition to our Wood Products teaching staff.

Norm Sloan

Many of you have had Dr. Norman F. Sloan as a classmate and teacher here at Tech. He was an undergraduate student here and graduated with the class of 1958. Then, after working a while and receiving his master’s and doctorate, he returned to Tech in 1965 to teach wildlife, ornithology, recreation, and entomology courses. Norm had a stroke on Feb. 14th, and was taken to Portage View Hospital (St. Joe’s) in Hancock. He had another, more severe cardio-vascular accident the next day (15th) and was transferred to the Marquette General Hospital Intensive Care Unit and placed on a respirator. He was taken off of the respirator and out of the ICU on Feb. 27th but stayed in a coma for a couple of weeks.

As this is being written, Norm is in the Rehabilitation Unit at the hospital. He’s conscious now, but remains “locked into” a body that won’t respond to what he wants it to do. He can see and can hear and think. His facial muscles work well enough to allow him to frown or smile somewhat, and he can blink his eyelids to answer yes or no to questions. He has to be fed through a tube, breath through a surgically created tracheoscopy in his throat, and cannot talk. He is obviously quite depressed, frustrated and discouraged. We will just have to wait and see what happens, pray, and support Martha, Betty, and Graham during this difficult time for them all.

Those of you in the Marquette area on a visit might stop in and let Norm know we are all “pulling for him.” Send cards to the School of Forestry and Wood Products, and we will make sure he gets them.
Research at MTU

Forest Ecology and Biology

Forest ecology and biology research at Michigan Tech is concentrating primarily on problems associated with regeneration of conifers in northern regions. Researchers involved in this area include John Kotar, Johann Bruhn, Robert Sajdak, Paul Berrang, Alex Diner and David Karnosky. There are currently some 8 graduate students involved in this research. Dr. Kotar’s research has focused on developing and testing habitat classifications for evaluating site potential. This research, started by Mike Coffman, a former MTU professor now employed by Champion International Paper Company, has resulted in a habitat classification field guide which represents an attempt to transfer the results of this research to practicing foresters in Upper Michigan and northern Wisconsin.

Dr. Bruhn is studying mycorrhizae associated with red pine, jack pine, and larches. He is particularly interested in identifying mycorrhizae that can stimulate early seedling growth in the greenhouse and that will help young, container-grown seedlings survive and rapidly establish themselves after field planting.

Herbicides are an important component of conifer regeneration in the Upper Midwest because of the intense competition the conifers incur from weeds, grasses, and low quality hardwoods. Robert Sajdak is examining numerous herbicides for site pretreatment and for release of young plantations. He is also developing and testing methods to apply herbicides in an ecologically sound manner.

Alex Diner and David Karnosky are conducting “cutting-edge” research in forest biotechnology. Currently, they and their associates and students are involved in tree cloning experiments, in vitro disease screening studies, and genetic engineering. They are working principally on *Larix* (Larch) species which are rapid growing, variable, and conducive to micropropagation via tissue culture.

Paul Berrang is studying ways to optimize early growth of container-grown red pine. He is also cooperating with David Karnosky on forest biology studies related to air pollution impact on forest ecosystems.

The Center of Intensive Forestry and Northern Regions (CIFNR) was developed in 1983 to focus industrial attention on forest ecology and biology research sponsored by several industrial cooperatives. CIFNR is focusing its attention at problems of conifer regeneration on marginal hardwood or low-quality mixed hardwood/conifer sites. Some 12 research projects have been funded by CIFNR in its first two years. Mead Paper Company is the principal CIFNR sponsor.
Forest Products

Alan Preston, Director of the Institute of Wood Research leads one of the world's most active research groups on the use of preservatives for wood products. The Institute's research centers on the development of new wood preservations, test methodologies, environmental studies, and basic understanding of fungal mechanisms.

Bruce Haataja is leading the research and development in the area of composite wood products. The University's research is carried out through the institute in conjunction with the Departments of Civil Engineering and Chemical Engineering, and this team approach is being expanded within the School of Forestry and Wood Products. The composite research is aimed at the development of new structural products for both industrial and constructional uses. The research encompasses both product development and studies aimed at understanding basic properties. The molded flake pallet is an example of the use of this technology.

Vincent Chiang is studying aspects of pulping processes and novel pulping techniques, while John Sutherland is investigating the application of biotechnology to several areas of wood products production and wood biodeterioration.

Peter Laks is studying the production of chemicals from the forest resource. This research has tremendous potential with respect to the utilization of Michigan's forests.

In the School of Forestry and Wood Products, Bernie Sun is continuing his research on fiber characteristics and the development of techniques for improving the manufacture of fiber-based composites. Additional faculty are being recruited for positions in marketing and financial analysis and in basic properties of composite products. These positions will be interactive with the wood products programs in the Institute and in other departments at Michigan Tech.

Forest Soils

Forest soils and related research continues to be one of the strongest forestry research areas at Michigan Tech. Glenn Mroz, Martin Jurgensen, Stephen Shetron, and Carl Trettin are responsible for over $400,000 in sponsored research annually. The soils program area is currently supporting seven graduate students. Priscilla Sheets was recently hired to be responsible for the Soil Research Laboratory at the Ford Forestry Center. She will also participate in ongoing research programs.

Dr. Shetron has been working with the U.S. Army Corps of Engineers on land management planning research. The research project areas range from Alaska to Georgia where the investigators are integrating soil resource data in geographical information systems. Dr. Shetron is also conducting research on the erodibility of forest soils and its association with harvesting systems.
More Forest Soils Research

A major research project sponsored by the Illinois Technology Research Institute is analyzing the plant moisture stress of red pine associated with soil factors. This project, under the direction of Dr. Mroz, is also addressing the relationships of red pine productivity with mycorrhizae and soil fertility. This ITRI project is part of the environmental monitoring system associated with the Navy's ELF antenna system. Drs. Mroz and Jurgensen are also investigating the impacts of chemical and mechanical site preparation techniques to the forest site; and the fate of applied herbicides in the terrestrial system. In associated research, Carl Trettin is conducting research on water management systems which are designed to ameliorate excess moisture conditions. The primary objectives of this research are to improve site productivity and improve operating conditions.

The School also continues its research program with the Cooperative for Research on Forest Soils; which is hosted by MTU and is a consortium of private companies, public agencies and universities. The soils program also maintains an agreement with the Michigan Department of Agriculture to provide technical support to the soil surveys of forested areas in Michigan. Soils related research is also being supported through cooperative agreements with the U.S.D.A. — Forest Sciences Laboratory and Soil Conservation Service.

Silviculture, Growth, and Yield

Three academic faculty members, two research associates, and two programmer/analysts are involved in teaching and researching in quantitative forest science. W. E. Frayer, Dean of the School of Forestry and Wood Products, came to Michigan Tech in the summer of 1984 from Colorado State University. Dean Frayer's expertise is in the area of sampling and forest inventory; he has conducted numerous workshops and seminars in this field. The Ford Forestry Center has also worked in inventory and sampling for many years and sponsored three microcomputer workshops in the summer of 1984 which were led by Mark Anderson and David Wilson.

David D. Reed is active in forest growth and yield research as well as teaching forest measurements and biometrics to undergraduates and advanced biometrics and inventory to graduate students.

Two research associates, Hal O. Liechty and Elizabeth Jones Reed, work with the quantitative aspects of various silvicultural and biological studies with the School of Forestry and Wood Products.

Gary W. Lyon is a forest economist who joined the Michigan Tech faculty in 1984. Dr. Lyon is incorporating economic analyses into forest growth and yield projection systems and is developing a dynamic programming management optimization routine for the STEMS growth projection system. Efforts are currently underway to hire three new faculty members in the area of quantitative forest science; one of these will specialize in harvest scheduling and operations research, one in forest growth and yield and management, and one in remote sensing and aerial photography.
1985-1986 Graduates

School of Forestry and Wood Products

Steve Albee
Urban Forestry
708 Hecla Street
Hancock, MI 49930

Experience: Regional Planner; Economic Development Consultant.

Clubs: SAF, MTU Forester

Honors: Xi Sigma Pi; Phi Sigma

Mary Binns
2101 Winchell
Ann Arbor, MI 48104

Ron Brown
3709 W. Bancroft
Toledo, OH 43606

Experience: Timber Technician, USFS

Clubs and Activities: MTU Forester; SAF; IM Hockey
Carol Christensen
1019 10th Ave. So.
St. Cloud, MN 56301

Experience: IWR

Clubs and Activities:
SAF; Forestry Club; IM sports

Brian Dixon
Urban Forestry
1328 Applecroft
Portage, MI 49002

Experience: Landscaping

Deb Glas
Soils
5166 West B. Ave.
Kalamazoo, MI 49009

Experience: USFS Timber and Silviculture crews,
Montana; Soil Prep and Assistant Librarian, Ford
Forestry Center

Clubs: Vice President, Xi Sigma Pi; MTU Forester

Honors: Xi Sigma Pi; National Deans List; Michigan
Competitive Scholarship

Peggy Dallavalle
Urban Forestry
1227 Vassar Drive
Kalamazoo, MI 49001

Experience: Forestry
Aid, Bighorn National
Forest, Wyoming.
Mark Goetz
Urban Forestry
35 W. Braman
Milan, MI 48160
Experience: Grounds crew, McFarland Tree Service
Clubs: MTU Forester; SAF; Photography Club; Students of Christ

Susan Hart
Urban Forestry
180-A Fawn Hill Rd
Tuxedo, NY 10987
Experience: Street Tree Inventory, Toledo, OH
Clubs: Treasurer, Xi Sigma Pi; SAF; MTU Forester
Honors: Xi Sigma Pi

Todd Groh — Forest Management
21 Cunningham Rd.
Taylors, SC 29687
Experience: Silvicultural Site Modifier with Herbicidal Treatment
Clubs: SAF; Xi Sigma Pi
Honors: Xi Sigma Pi

Kim McCrary
Soils
8775 Hanleyln
Crown Point, IN 46307
Clubs: Theta Chi Epsilon Sorority

Roy Lefevre
Wood and Fiber Technology
500 Wilson Dr.
Midland, MI 48640
Clubs: Chairman, FPRS
Patricia Ross
600 W. Edwards
Houghton, MI 49931
Experience: Computer work, MTU; USAF

Glen Tolksdorf
Management
206 W. Sixth Street
Houghton, MI 49931
Experience: Research Assistant, FFC; Forestry Consultant
Clubs: SAF; AFA

Mary Sunblade
Urban Forestry
414 N. Warwick
Westmont, IL 60559
Experience: Forestry Intern, Downers Grove, IL
Clubs: SAF; Xi Sigma Pi; Campus Crusade; IM Sports
Honors: Xi Sigma Pi; United States Scholarship

Mark Wallach
Management
315 Essex Dr
Tipp City, OH 45371
Experience: Technician, usfs, Hiawatha National Forest
Clubs: Chairman, SAF; Theta Tau Fraternity

Matt VanStratt
Wood Science and Technology
2390 E. Herbison
Bath, MI 48808
Clubs: FPRS; IM basketball and softball
Masters Graduates:

Judy Allen
"Biomass and Nutrient Content of Two Old Growth Northern Hardwood Stands in Upper Michigan"

Tim Bottenfield
"Soil, Site, and Productivity Relationships in Red Pine Plantations in Northern Michigan"

Patty Connaughton
"Effects of Acid Decomposition on Mycorrhizae of Red Pine Seedlings"

Charlie Becker
"The Effects of Plant Moisture Stress on Red Pine (Pinus Resinosa) Seedling Growth and Establishment"

Sandy Brovold
"The Effects of Artificial Drainage on Soil Physical and Soil Chemical Properties"

Dave Fehringer
"Investigation of the Island Qualities of an Isolated Tract of Boreal Forest in Northwestern Upper Michigan"
Les Fuller
“Modeling Northern Hardwood Diameter Growth by Weekly Ambient Factors”

Andy Mulcahey
“Factors Influencing Adventitious Bud Formation on European Larch (Larix decidua Mill.) Embryos”

Erich Tiefenbacher
“Landowners Expectations from a Forest Improvement District in Michigan’s Western Upper Peninsula”

Joe Kovach
“Upland Habitat Types Characteristic of the Northeastern Lower Peninsula and Their Relationships to Soil Landform Distribution”

Janet Paces
“Soil Chemistry of Mass City Soils”

Sue Wandersee
“Nitrogen Fixation in Decayed Wood”
Alumni News

1946 - Tom Loring — Retired now in Br. Col., doing some consulting and involved in community affairs. The oldest Grad. to reply so far.

1949 - Duane L. Corbin retired Feb. 3 from the Wauaus Marathon County Park Commission where he was Park Director. He’s planning on staying in Wausau, WI, and has both a metal and wood shop in his basement where he does custom riflesmithing for precision shooting. Sounds like he enjoys the five grandchildren produced by his third married offspring as well as camping, hunting, fishing and photography.


1951 - Karl E. Ackerman — still the Sr. Assoc. Forester for the City of Detroit.

1951 - D. C. Krautter — has a name-change for his ranch — it’s now the Longview Ranch (was the Broken Wheel Ranch). He sent in a postage donation — thanks D.C.

1951 - Leslie M. Reid — Prof. of Recreation and Parks, Texas A&M Univ., Gets Sta., TX. Retired as Dept. Head last Sept. ’85 after 20 years on the job. Traveled to China in June ’85 on a scientific exchange team, and is currently on sabbatical leave at Clemson U. until May ’86.

1954 - Richard Little is still a teacher and Assistant Principal in the Columbia Elementary School in the Peoria School District and is living in Edelstern, Ill. A son graduated from MTU in Civil Eng. in 1984, a daughter from MU in Math in 1985, and there’s still one more to go.

1957 - Neil R. Paulson is currently the Forest Supervisor for the Coconino National Forest, headquartered at Flagstaff, Az. He’s involved with the National Wildfire Coordinating Group and its Fire Training Team. Saw his classmates, Ray Hendrickse (Wisconsin DNR) when in Rhinelander last September.

1958 - Gerald Vand Hei is still Chief, Forest Mgt. Section, Bure of Forestry, Wisc. DNR.

1961 - Harold T. (Tom) Nygren — is the Leader for Land Management Planning for the PNW Region, USFS, Portland, OR.

1961 - C. Jay Wright is living in Lachine, Mi and is doing some consulting forestry work along with the installation of irrigation systems.

1962 - Jack G. Bolt — was just recently promoted from Sales Engineer to Sales Manager for Durr Industries in the Detroit area.

1962 - David R. Karling — retired from USFS in January. 3rd and is currently self-employed with plans to move to the Catskill Mountains of NY and set up a consulting forestry practice while his wife, Peggy, keeps busy with a bed and breakfast inn. We’ll be looking for a new address.

1962 - Ralph E. Duddles and his wife, Carolyn, have a new home in Sublimity, OR.

1963 - Timothy A. Chick also has a new address in Saginaw, Mi.

1963 - John Gogin is currently employed as a Sales Representative for Willamette Industries.

1965 - Thomas J. Rozich is still a land appraiser for the Michigan DNR.

1966 - Eric Mahringer is a forester with the Menomonee Tribal Enterprise in Neopit, WI.

1967 - Clark Judy is a Senior Environmental Scientist for Battelle and has a new home in Delaware, OH.

1968 - Fred Brenner — has a new job as manager of Grounds for the Univ. of Michigan-Dearborn, and lives in Canton, Michigan.

1968 - Melvin B. Hendrickson — was recently promoted to Port Director for the U.S. Customs Service at Sault Ste. Marie, Michigan.


1969 - James Verville — currently has a new position as Managing Director for Eaton-Superior, Inc., doing a business feasibility plan to determine whether larch biotechnology research at MTU can be commercialized. Back in the Cooper Country after 15 years with Forest Div. of S. Dakota, the last ten of them as the State Forester of S. Dakota.

1970 - Lou Best is a Foreign Language Instructor (Spanish) and Officer at the U.S. Military Academy at West Point, NY having recently returned from a year of graduate school in Spain — Way to go, Lou! It’s great hearing about some of our tax dollars at work!!!

1970 - Michael King is District Ranger on the Carson Ranger District of the Toiyabe National Forest. Works with Leon Buist (former prof.) on some projects. Says he’s always on the lookout for vacationing MTU grads.

1971 - Thomas Bahti — is Area Wildlife Manager for the four co. Green Bay area, WI DNR. He keeps busy with his wife, two children, one cat and one dog.

1971 - Fred Hendrickson, D.O. — is serving an internship as an ophthalmic physician at Doctor’s General Hospital in Plantation, Fl. Worked on Isle Royale N.P. in maintenance, completed an Electrical Apprenticeship, completed a graduate study, then entered pre-med, and completed medical school at MSU. Hopes to open a family practice in the Copper Country soon.

1971 - Glenn E. Lanberg is District Conservationist for the S.C.S. and currently has three other MTU foresters working for the S.C.S. in the Fremont, Newaygo County area.

1972 - Margaret M. Harris — currently a Research Soil Scientist with Forest Service at NE F Exp. St. Will be enrolling at Cornell U., NY to get her Ph.D. in forest soils this fall.

1972 - Roger Hoekema is with the F. Mgt. Div. of the Michigan DNR in Lansing. We get to read about many of his contributions to magazines which concern woodlot management for private forestland owners.

1972 - John M. Koski — recently promoted to assistant forester with Gwin Field Office, Mich. DNR; married with a 3 yr. old girl and 1.5 yr. old boy.


1973 - Frank B. Isaacs — is a wildlife biologist for the Oregon Cooperative Wildlife Research Unit, and is in his 8th year of studying bald eagles in Oregon. His work includes checking on nesting sites, breeding adults, young, produced, over-wintering population, and making habitat studies.

1973 - Mark Warren — was recently transferred from the Willamette National Forest in Oregon to the Ozark-St. Francis N.F. in Arkansas and is District Ranger on the Buffalo Ranger District.

1974 - Eric S. Moore — doing the purchasing for Sawyer-Cleator Lumber Co. in MN; married with three children and a dog.

1974 - Les Quick — currently Grounds Maintenance, Henry Ford Hospital, Detroit. He is about to go into the field of industrial robotics.

1974 - Graham Wise — is trying to complete his Master’s degree in Physical Education while being the Assistant Hockey Coach and Coordinator of Sports Seminars at York University in Toronto.

1974 - Kenneth Ohlrogge and his wife (Elizabeth McFarland Ohlrogge) have recently moved from Idaho to Wisconsin. Liz is the District Ranger on the Glidden R.D. of the Chequamegon N.F. and Ken is self-employed.

1975 - John Blatchford is working in Redwood Lumber Sales and Manufacturing for Martin Forest Industries. He has a new home in Ukiah, CA and gets involved in the preservation of cultural (archaeological) sites in the Redwood Region.

1975 - Scotty R. Gladstone — A new job as Asst. to Comm. of Public Works for Delaware County DPW in NY. Still lists hunting and fishing as his no. 1 priority.

1976 - George Teachman — currently a soil scientist with SCS in Cheboygan, MI.

1976 - Edie (Lichtner) Waite — She and Bruce just moved into a ”real” house and they’re both thrilled with the extra room.

1976 - Mark Kerr — is now the owner of Northern Furniture Designs as well as a consulting forestry business. Makes and sells custom furniture.

1976 - Donald J. Kostrezwa — is a hazardous waste programmer in the Environmental Engineering Dept. of Delco Electronics. Has four children; plans a visit to Houghton this summer.


1976 - John M. Helge has recently been promoted and transferred from Louisiana and is currently Sales Manager with the Nalco Chemical Co., working out of Plymouth, Minnesota.

1976 - Gerald Kelly has recently been assigned Assistant District Forest in the Scranton, PA area (Lackawanna Forest District).

1976 - John Smendzuk is the Assistant Survey Dept. Manager for Gosling & Czubak Associates in Grawn, MI. He mustn’t spend all of his time supervising the Hydrographic Dept. since his wife is expecting their first child in 1986.

1977 - David J. Hensel — is the Area Procurement Forester for Blandin Paper Co., working out of Auroa, MN, where he’s in charge of handling wood deliveries and logging jobs.

1977 - James L. Stukel is Program Administrator for the S. Dakota Dept. of Agriculture, and now lives in Pierre, SD.
Charles Nicholas "Bob" Bell currently seesmill supervisor, Champion Inti.
Darlene Julie Howell is currently a paralegal for a year now and is one of their County Foresters.
Gary Lemasters is working on his Ph.D. at the Univ. of Wisc.-Madison.

1977 — Dennis P. Regan — currently sawmill supervisor, Champion Inti.
1977 — Michael K. Reif — currently a general contractor and journeyman plumber for Reif's Hammers and Pipes in Sitka, Alaska.
1977 — Matt Wilkin — currently a forest technician, Tally Lake R.D., Flathead National Forest, Montana.
1978 — Michael G. Hansen — currently a truck driver for Creative Kitchen Designs of Traverse City and practices forestry in his limited free time.
1978 — Gary Vollrath — currently Service Forester, Ohio Dept. Nat. Resources Div. of Forestry. He is working with other MTU Forestry grad.
1978 — Robert Stoll — has recently been promoted and is the District Conservationist for the Soil Conservation Service, working out of Bellefontaine, Ohio.
1978 — Barbara J. (Griewe) Bennett — recently finished her M.S. in Engineering at Penn State and is an engineer for E. R. Squibb & Sons in New Jersey. A son, Jason, was born May 23, 1985.
1978 — Robert J. Ross — is currently the Manager of Wood Engineering for Metrinqaud, Inc. of Pullman, Washington. He received his Ph.D. in Engineering from Washington State University in January 1985 and won First Place in the 36th Annual Wood Awards from the Forest Products Research Society for outstanding graduate research in Wood Science and Forest Products.
1978 — Barbara Johnson Snyder — now a land surveyor with Renner & Sperlich Engineering Co. Received her RLS in S. Dakota in February. A daughter, Katie, was born last December 1.
1979 — Ellen (McInnis) Simone — currently Forest Technician — Assistant Foreman of trees planting, Great Northern Paper Co. She lives in Enfield, ME.
1979 — John Simone — currently biology teacher, Calais High School and Asst. Tree Planting Foreman for GT. Northern Paper Co. in Maine.
1979 — Barbara Clemens Klok — is living in the Kalamazoo, MI area, now has two daughters and is working in a hospital.
1979 — Peter Ratcliffe III — currently forest technician for U.S. Forest Service in ID.
1980 — Mike Sekley — living in lower Michigan and working for a private forestry firm.
1980 — Darlene (Garrett) Robbins married Rick Robbins in March 1985 and is working for the U.S.F.S.
1980 — Mary Dagle Flynn — is currently a full-time student at Drake University Law School in Iowa, working on a degree in Environmental Law.
1980 — Ann Pullen — is a Soil Scientist with the U.S. Soil Conservation Service and is living in Canopy City, CO.
1980 — Jim Trent — is working for the Missouri Department of Natural Resources as a Land Reclamation Specialist after receiving his M.S. in Environmental Science from Indiana University in 1983.
1981 — Kathy Hayton Cramer is an Environmental Scientist with the Battelle Pacific Northwest Laboratories and has recently completed a paralegal degree necessary for a job at the Hanford Nuclear Reservation in Richland, WA.
1981 — Jeff DeMatteis has worked for the Mississippi Forestry Commission for a year now and is one of their County Foresters.
1981 — Gary LeMasters is working on his Ph.D. at the Univ. of Wisc.-Madison.
1981 — Mark Jamieson — currently a forester trainee with Mississippi Forestry Commission and working as an assistant for the District Public Lands Forester while training to be a county forester.
1981 — John S. LaFave — Senior Analyst, Forest Products Marketing and Sales at Burlington Northern Railroad, Ft Worth, TX.
1981 — Jill Schultz — living in Hancock, wedding plans for June '86 — another forestry couple to add to the list — Kim Stocker is the planned spouse.
1982 — Beverly J. Cornwall — received her M.S. in plant pathology from U. Idaho in Dec. '85. Isn't married yet and is "looking for a job in Hawaii." Aloha, Bev.
1982 — Kevin Johns — is selling insurance and is living in Colorado Springs, CO.
1982 — Dave Kober — currently surveying for Hardin County Engineer, Ohio.
1982 — Ann Long-Voelkner — just moved from the Hiawatha National Forest in Mich. to the Allegheny N.F. in PA.
1982 — Bonnie J. Mazur — is an outdoor education instructor at George Williams College. She lives in Williams Bay, WI.
1982 — Nicholas "Bob" Bell — a wildlife technician in the Peace Corps until '82 then moving back to Michigan. Sees Ivan Eastin ('85) who's also in Liberia.
1982 — Brian Warner — is a forester with Michitree, a forestry consulting company in Manistee, Michigan. He's been involved in a woodburning congeration power plant and a sawmill for cutting small diameter red pine in the Cadillac area.
1982 — Thomas D. Potter is a Wilderness Ranger for the Umatilla N.F. and was married last July. He likes the west so much he's going to stay.
1983 — Richard D. Ahnen — recently got out of the Army. Would like to get back into the field of forestry.
1983 — Tim Bottenfield — a Research Associate at the School of Forestry, Auburn Univ., Alabama. He's in charge of field operations and data analysis for assessing economical and ecological effects of two thinning systems applied to loblolly pine plantations.
1983 — Brian Dykstra — forester in summers for USFS doing timber cruising in Wyoming, working as an apprentice electrician during the winters and taking computer courses.
1983 — Karen Stoeckel Keeley — isn't employed now but is keeping busy with a daughter born Nov. 8, 1985. Getting ready for another change in address soon.
1983 — Alice L. Therrien — currently Land Agent, Conn. Dept. of Env. Protection.
1983 — Sharron LaForest — Tree Clearing Investigator, Detroit Edison. Engaged to Larry Lesniak (MTU, CE '84) June '87 wedding plans.
1983 — David Vaylin — is working for the Soil Conservation Service on the soil survey at Roundup, Montana.
1983 — Silvia Hogsett — is a Tree and Shrub Care Specialist for Chemlawn Corp., working out of Troy, Michigan.
1983 — Lauri Winquist LAbumbard is now the District Forester for the Newaygo Soil Conservation District and is living in White Cloud, MI.
1983 — Brenda Briese — currently a grad student in F. Genetics at U. Washington in Seattle, teaching skiing as a sideline.
1983 — John R. Carpenter — 1st Lt. in U.S. Army now, promoted last June ('85). He is living in Frankfurt, W. Germany and was married last June too.
1984 — Laura Snyder is a draftsperson and air photo interpreter for a surveying co. in Denver, CO.
1984 — Debbie Page Dumroose is working on her Ph.D. at the Univ. of Idaho and living in Moscow, ID.
1984 — Mark Holden — is about as far away from Houghton as you could get. He's a Peace Corps Volunteer in the Philippines.
1984 — Michael J. Holmes — working out of Jacksonville, Florida is a Ranger/Forester for the State of Florida, Division of Forestry.
1984 — John Zwier is a graduate student at Washington State Univ. in Pullman, WA.
1985 — Ivan Eastin — currently a Peace Corps Volunteer in Liberia, West Africa, and trying to get involved with the B.S. degree program in Wood Science and Technology at the Univ. of Liberia.
1985-86 Dean's List

The following students of the School of Forestry earned 3.50 to 4.00 grade point averages for the 1985-1986 school year.

* achieved a 4.00 grade point average

Spring Quarter 1985

Senior: Carol Christinsen, Brian Dixon, Keith Eldred, Deborah Glas, Mark Goetz, Dana LeBlanc, Robert Sommer*, David Stanfield*.

Fall Quarter 1985


Winter Quarter 1985-86


The Forester Congratulates these students on their fine achievement. Keep up your outstanding work!

Recipient of this year's Wisconsin Michigan Timber Producers Association Scholarship at Michigan Technological University's School of Forestry and Wood Products is Lee M. Andrews, a Junior forestry student from Painesdale, Michigan.

Shown presenting the notice of the award is W. W. (Swede) Intermill of Chassell, Member, past president and current director of the Wisconsin Michigan Timber Producers Association.

Lee has family members working for the Northern Hardwoods Division of Mead Corporation in South Range, Michigan, and switched into the Forest Management curriculum over a year ago. He has maintained a grade point cumulative average of 2.61 while at Michigan Tech and a departmental grade point average of 3.18 (A = 4.0) while working to help pay the costs of his education. Currently he is an undergraduate research assistant for baseline studies being conducted at the ELF construction sites. Lee is also a member of the Michigan Tech Student Chapter of the Society of American Foresters.
What will happen to the Michigan Tech Forestry Department in the next 50 years? That is about the rotation age for red pine here in the lake states and longer than the career span of most foresters. During the past few decades we have seen many changes at Tech and we can expect to see more. The calculator and then the computer have become commonplace. The chainsaw has become a more versatile tool. Transits and EDMs have replaced the old staff compasses, and women have broken into a male-dominated profession.

Forestry education in the near future must take place overlooking a fiercely competitive job market. Prospective students are hard to come by. This is not the forestry school of the early 70s when forestry classes were taught in Fisher room 135. Jobs are hard to find, necessary skills are changing, and the education received by students is different in many ways.
"Modern Transportation" at Summer Camp

USDA cars: traveling in style!
Chainsaws:
Dendrology is usually the first forestry class students take during their stay at Tech. In this our first taste of forestry, bits of wisdom and unpronounceable scientific names are bestowed upon us. We were amazed at the similarity of these two pictures, taken thirty years apart. The staff has changed and the students have gone out into the world. Some have returned to teach new generations of Tech foresters, but the same friendly, caring atmosphere is still here.
Volleyball — we've been playing it for a long time. The foresters have been sporting at least two volleyball teams in the Intramural Leagues for quite a few years, but we still like to play for fun. The court in Alberta is used a lot during camp while the SDC is home for IM games. Wherever and whenever we play, be it on the grass courts in the 50s or the hardwood floors of the SDC in the 80s Tech foresters have fun.
Alberta, 4400 acres of trees, a few houses, a lake, and a sawmill. There have been many changes to the town of Alberta so go ahead and look at these aerial photos and check for new additions. The first shot was taken in the late '40s or early '50s and the second was taken in the early '80s. (Notice the Victory gardens in the first photo — right in the depression. Quite a frost pocket.)
Once the logs are out of the woods they must be loaded, moved, and unloaded again. In the first picture logs are being unloaded by a cable system, a very time consuming and labor-intensive process. At the other end of the scale are modern paper mills which deal entirely with chips. In the second picture a chip truck is being unloaded in the background as a loader moves a bucket full of chips across the foreground. I'm sure there will be no argument if I say there have been some changes in the way we transport wood products out of the forest.
Every good forester has to learn to use a hand compass and pace well. There has been no change in this requirement. The old silvia still gets us there.
The challenge of scaling logs in the pile is one of those things which we learn in camp at Tech. Scaling sticks become part of our life and wardrobe for a few weeks and mountains of logs become our prey. No changes? Not in the logs anyway. The only difference we found in these pictures is that now students must wear hardhats in the woods and log yards.
Summer Camp at Camp Pori, 1949.

COME ON YOU BACKWOODSMEN!

AY TANK
AY GO

DRESS
ACCORDINGLY

'LUMBERJACK BALL'

FRIDAY JAN. 7, 1938
MUSIC BY THE MANDAN HAYSEEDS

DANCING FROM 9-1
M.C.M. GYM
ADM. 25¢/HEAD

SPONSORED BY THE FORESTRY CLUB
This year marks the 25th anniversary of the forest engineering research program which has been housed on the Michigan Tech campus since 1961. It was a year earlier that the USDA Forest Service established a national program of forest engineering research. Besides Houghton, laboratories were established in Seattle, Washington; Bozeman, Montana; Auburn, Alabama; and Morgantown, West Virginia. Each was to conduct systematic programs of forest engineering research within their own multi-state region of responsibility. The goal was to promote better and more efficient forestry operations through the application of engineering. Included in the program, but not limited to, was research on harvesting, site preparation, stand establishment, tending, timber stand improvement, and road building. Since its inception, most of the effort has focused on harvesting.

Though it is impossible to cover all research completed over the last quarter century, I would like to recall for you some of the key historical events and research of the project since its humble beginnings. The project is now internationally recognized.

The project began with one researcher, a part-time secretary, and office space in one of the old MTU quonset huts near the Institute of Mineral Research which have long since disappeared from the campus. The Houghton project was one of several field locations of the former Lake States Forest Experiment Station headquartered in St. Paul, Minnesota. During the quonset hut years, the project fluctuated between a one- and two-man research staff. Much of the time was spent defining the problems and laying out a framework of research associated with the management of northern hardwoods. This task, however, did not preclude the starting of a few specific research studies.

One of the most serious problems identified was the high handling and transportation cost associated with harvesting of low value products such as pulpwood, coupled with the low level of utilization. Nearly half the pulpwood tree was left in the woods in the form of tops and branches. The solution to increased utilization and lower handling and transport costs was believed to be the in-woods conversion of entire pulpwood trees into a uniform bulk material — chips. At this time in-woods whole-tree chippers did not yet exist, but in-plant stationary chippers did. So with a vision to the future, project researchers, in cooperation with university researchers, began a series of laboratory studies to establish the energy requirements for chipping. (figure 1). The published results on energy requirements have been
used by engineers to design woods portable machines which are now extensively used worldwide by forested countries that use mechanization.

Because chips are a relatively uniform bulk material, it was only natural for researchers to investigate the application of efficient bulk materials handling methods. One such investigation was another cooperative study with University personnel on pneumatic handling of chips in pipelines. This research was done in close collaboration with the sister unit in Bozeman, Montana, where research was underway on hydraulic transport of wood chips.

This period also marked the beginning of a series of basic research investigations centered around the use of sharp knives - shear blades - as tools for felling and bucking pulpwood-size trees. Although chain saws were in use, they were very heavy, physically demanding to use, and man-day productivity was low. Machines were in use, they were very heavy, physically demanding to use, and man-day productivity was low. Machines were already beginning to appear in the forests of the early '60s which were semicommercial forerunners to the vast array of today's highly productive tree harvesting and processing machines that use shear blades to cut wood. Designers did not have basic engineering information about such things as the force and power required to cut wood with shear blades, the influence of blade thickness and sharpness angle, the effects of blade dulling, not the effect of species and moisture content. Crosscut shearing research began with studies on 2x4s and ended with extensive testing of roundwood bolts up to 12 inches in diameter (figure 2). This research is cited as being some of the most important on the subject and has been used extensively by engineers responsible for designing commercial machines.

The Unit moved to new quarters before the shearing research was completed. The quonset hut quarters were never intended as a permanent residence for the forest engineering project. The vision was for a fully equipped research laboratory with shop facilities on the MTU campus. With the important public and university support given in the form of testimony to the U.S. Congress, money was initially appropriated to plan the facility and finally construction money was approved. The long awaited move to the newly constructed and present facility came during the summer of 1967. The Forest Engineering Laboratory was officially dedicated in a joint ceremony with Michigan Tech which had just completed construction of the Forestry/Institute of Wood Research facilities.

The office and shop buildings were designed to accommodate a staff of 20 to 25 people. However, at the time of the move the permanent staff still numbered only two researchers and one full-time secretary. In an unfurnished building with three people occupying offices in three corners, it is an understatement to say it was quiet. Footsteps echoed through the halls. Fortunately, things were soon on the upswing - both in terms of increased staff and funding. The main vehicle for this increase in staff and funding was a new research emphasis which was soon to become known internationally as "bark/chip separation/segregation" or BCSS.

While the whole-tree chipping was now a commercial reality, there remained a serious bottleneck to widespread use of whole-tree chips by the pulp and paper industry - they were dirty. Whole tree chips are contaminated with bark, dirt grit, and foliage, which lower the quality and strength of the resulting paper and consume excessive amounts of pulping chemicals to bleach them out. The goal of a proposed 5-year BCSS research program was a laboratory solution to the problem of cleaning whole-tree chips. This proposed program of research received considerable industrial support - particularly by the American Pulpwood Association and the Technical Association of Pulp and Paper Industries. With testimony by industry before the U.S. Congress as to the need for this research, a very substantial increase in
yearly funding to the Houghton project resulted. The staff then progressively grew to its present level which has since hovered around 18 permanent positions. With adequate staff and funding, the research became very active.

Over the ensuing 5-year period, about 95 percent of the project staff and resources were devoted to solving the BCSS problem (figure 3). A solution — in fact, several patented solutions which complimented each other — resulted from this research. Semicommercial pilot plants in Canada and France have employed the laboratory’s technology; BCSS has not become commercial. We believe that the technology is ahead of its time. Due to abundant U.S. supplies of clean chips from debarked pulpwood, industry has not yet been forced to obtain its main supply of fiber from whole-tree chips. Some pulp companies have designed commercial-scale BCSS technologies awaiting that eventual day of implementation.

Since completing the BCSS research about 1975, project researchers have expanded research emphasis and addressed a broad variety of important problems. One was thinning of pole-size northern hardwoods. Traditional chain saw thinning methods are inadequate because they are costly, labor-intensive, result in large volumes of unsightly forest residues, and yield no immediate return to the landowner. The goal of our thinning research was to develop mechanized systems for thinning hardwoods which were silviculturally acceptable, economical, and practical (figure 4). Since the mid-'70's, six case studies in mechanized thinning have been completed and reported in the literature. Mechanized thinning is now commercially practiced on a growing scale on private and public forests, but more remains to be done to develop even better, more viable systems.

The energy crisis of 1973 had a major impact on project activities. At one time, wood represented a major source of industrial and residential energy. But the technological revolution and abundant supplies of fossil fuels pushed wood out of the picture. People forgot the science of burning wood and details of fuel properties. The modern-day energy crisis caused a rebirth of wood energy. Researchers at the Houghton project were in the forefront of this new look at an old fuel. We became knowledgeable about wood fuel properties and combustion technologies and transferred this information through presentations and publications. Additionally, researchers began investigating the harvesting of low valued stands, thinnings, and forest residues for energy use. Included in this work were two studies done under contract to the National Science Foundation and to the U.S. Department of Energy. All of this energy-related work has been instrumental in expanding the use of wood as an energy source in the U.S. Published information has been used extensively by professionals, consultants, and educators who deal with wood energy.
wood as an energy source in the U.S. Published information has been used extensively by professionals, consultants, and educators who deal with wood energy.

Another activity stemming from the energy crisis is the development of harvesting and planting equipment for short-rotation intensively cultured (SRIC) plantations. While Forest Service researchers at Rhinelander, Wisconsin were studying clonal selections and establishing SRIC research plots, concepts were being cooperatively formulated by project researchers for mechanical SRIC harvesters and planters. Two experimental harvesters have actually been built. One unique feature of both Machines is the use of an auger cutter which was thoroughly researched in earlier work for performance as a cutting or felling device. (figure 5). Another unique feature in that forward travel did not stop while the trees were being felled. The machines were continuous harvesters. Research is now underway to incorporate microcomputers into the second harvester to control the collecting arms and other repetitive operations (figure 6). This work is being done in cooperation with several countries interested in establishing and harvesting SRIC plantations for fiber and energy.

Although the north central region of the U.S. does not have such steep terrain as the Appalachian and Intermountain areas, it has its fair share of steep, short slopes covered with small trees that are inaccessible to conventional harvesting machines. Project researchers addressed this problem and came up with a unique solution. They were able to identify semiwalking machines developed in Europe for excavation jobs on steep terrain — slopes up to 100 percent. With cooperation from the manufacturer, a machine was brought from Europe to Houghton where it was modified and tested as a steep terrain feller/buncher (figure 7). The machine is now marketed as a tree harvester by two manufacturers.

The tremendous waste of potentially valuable energy wood prompted project researchers to investigate technologies for harvesting massive hardwood sawlog tops. Researchers found that approximately half the above ground portion of sawlog trees is left behind as an unsightly residue. This is a resource deserving attention. A 1-ton top, for example, is not uncommon — every such top left in the woods is equivalent to leaving a 42-gallon barrel of oil. To recover this resource without incurring severe damage to the residual stand, researchers have developed and tested an experimental machine (figure 8). This machine approaches each top, sever the large limbs, and then forwards the compacted tops to a landing by means of its inverted bunk-grapple.

Small trees form thinnings or low valued stands have potential as future sources of fiber for flakeboard or other composite wood products or for use as energy wood. Conventional chips from whole-tree chippers, however, are not necessarily the optimum particle for all energy converters, nor the best raw material for obtaining long, thin flakes to manufacture high strength structural flakeboard or other composite flake products. Project researchers thus began investigating new technologies for reducing small trees into something substantially larger than chips. The end result of this work has been the invention of four chunking machines — two have been patented and two patent applications.
are in process. One machine, called a helical-head comminuting shear, is now commercial with almost 2,000 machines sold. Although the machine is built in Finland, it employs the same conical cutting device as that developed at the Houghton laboratory. The second machine is patented as an involuted disc slicer (figure 9). The U.S. Government has granted manufacturing and marketing rights to a Michigan businessman who is now formulating arrangements for commercial machines. Another experimental machine was built and tested in Sweden while a project researcher was participating in a scientist exchange program.

The type of particles resulting from "wood chunkers" have been the focus of considerable international attention. These particles, coined "chunkwood," are now being aggressively investigated as a source of energy wood by researchers in Denmark, Finland, Norway, Sweden, and the U.S. in a cooperative program of international research which had its beginnings in Houghton. This cooperative program is one of several in which project researchers participate under the Forestry Energy Biomass Program of the International Energy agency involving numerous developed countries.

Researchers collected data on equipment or system productivity during the many years of studying existing and experimental harvesting and other mechanized forestry operations. This was done through work measurement studies (figure 10). Many of these data were then used to develop and test computer simulation models — time-efficient tools for rapidly manipulating equipment or system variations by playing "what if" games.

This is a brief look back at more than 25 years of research at the Forest Service's Forest Engineering Research project in Houghton. There have been many noteworthy accomplishments. Project scientists have published 180 papers since 1961 and given numerous presentations at professional meetings and technical conferences. We look forward to the next 25 years as being equally productive with an important impact on the continued management of forests of the north central region.
ACTIVITIES
The student chapter of the Society of American Foresters at Tech had a busy year. While half of our officers were up in Houghton, a majority of our members were down in Alberta for fall camp. Regular meetings did not really get started until winter term. Fall term did boast a weekend clean-up out at the Otter River Camp and a giant effort bucking, splitting, and delivering eleven cords of firewood to area residents.

Once our forces were united in Houghton winter term it was time to get rolling. Meeting topics included "How to get jobs in Forestry," "Where have all our graduates gone?", Peace Corps, Tim Bottenfield's work in New Zealand, and Marty's trip to China. We participated in Winter Carnival again, moved tons of snow to Co-ed Hill, and succeeded in making the east entrance to Wadsworth Hall a skating rink.
Spring term was spent gearing up for the Michigan Society of American Foresters meeting here in Houghton on April 17 and 18, 1986. The Forestry Building was scrubbed, rearranged and temporarily equipped with such luxuries as donuts, pop, and padded chairs. The topic of the meeting was "Wood as a Material: Products and Utilization." Speakers included Ermine Venute (Keynote Address), Dennis Bradley (Wood Energy Potential in N.E. Minnesota: A Short- and Long-term Complement to All Forest Uses), Michael "Mac" MacCleland (Wood Energy Use, Marketing and Benefits in Michigan), Stacey Ault (Central Michigan University Wood Conversion Program), Dave Sefcovic (Wood-Fired Taconite Processing), and Robin Bertsch (Interaction of Wood Utilization for Energy).

Additional speakers included Dennis Gunderson (Press Dry Paper), Vincent Chang (A New Pulping Process), Peter Laks (Chemicals Derived from Wood), Melvin Yokoyama (Foods Derived from Wood), Paul Walcheski (Wood Preservatives), William Penoyar (Trusses and Laminated Beams), Bob Palaridy (Composite Wood Products), Tom Merz (Regional Forest Products Economy), John Diebel (Management Implications on Marketing), Dan Miller (Management Implications on Production), Ron Woesner (Public Demand Implications on Forest Management, Private Industry Perspective), Don Meyer (Public Demand Implications on Forest Management, Public Agency Perspective), and Wayne Mann (Closing Address).
Foresters always know how to have a good time, and this definitely includes eating. Denny drove everyone downtown in the old school bus to the Main Street Inn for lunch on Thursday (above), and then there was the banquet in the Memorial Union Ballroom Thursday night. After feasting on the Union's fine buffet spread it was time to kick back for the awards ceremony. Awards of local interest included:

Joe Foster — First Annual U.P. Chapter MTU Scholarship
Jim Johnson — SAF Fellow Award
Jim Meteer — SAF Fellow Award
Ken Dorman and Dominic Jacobetti — Distinguished Service Certificates
Irv Ziemer — SAF Student Recruiting: Top 10 in the U.S.

The Michigan Tech Singers brought us half an hour of listening pleasure (right) as tension built before the big event — the raffle. Tables full of items were raffled off, from snowshoes to cuttingboards, pins to mugs, and from trees to paneling.
(clockwise from top)

After a long, hard struggle to "give the 'Big Screw' award" to Johann we found ourselves with some stiff competition. Steve Hoffer gave an impressive call for donations at the meeting Friday morning. Dedicated SAF members dug deep in their pockets and nearly doubled our collection. It wasn't quite enough, though, and we landed eleven dollars short. Just to show that we were not to be beat, though, two weeks later Johann was "Locked Up for Cancer" by his entomology class. His charge? Not winning the big screw award!

Denny Baril tried to hide from Joe Foster's camera, but didn't fit behind Kate.

In amongst the hustle of the SAF meeting we still had to remember that we are students at Tech. John Miller took time out from the meetings for a confusing glance through his air photo project. The conference room has two student modes. Shown here is the study mode. Scott and Sue are busy cramming, Kate returns from the coffeepot with a full cup of grog, and Joe and Joe paw through Kate's industrial-sized bookbag. The other mode is called blow-off, and it most often happens around noon. The tables are pushed to the side of the room and the hacky-sacs come out of hiding. We found it was better for our own well-being if we didn't play out in the hall where the risk of kicking an unsuspecting business student was much higher.
Forestry Exposition
And
Small Woodlot Management
Field Day
April 19, 1986 Alberta, Michigan

Photos by Abe Foster
The academic year of 1985-1986 marked a year of change at Michigan Tech. While celebrating M.T.U.'s 100th anniversary, numerous alterations in the forestry degree program resulted in the shifting of our summer camp to fall camp. This posed a few problems with our initiation procedures, but nothing moving the initiations to winter term couldn't fix. Four new members were inducted, expanding our total membership to 22 faculty, 9 undergraduate, 11 graduate, and 11 local members.

Each year, Alpha Eta Chapter sponsors a symposium related to wood and the wood products industry. This past year we co-sponsored the Michigan State Chapter of S.A.F. annual spring meeting. Spanning a two day period, the symposium covered a vast variety of topics dealing with "Wood as a material: Products and Utilization."

As usual, our donut and coffee sales made a big hit. Needless to say, we kept everyone full of 10W-40 weight caffeine!

Joe Foster, Forester reporting

1985-86 Initiates (L to R) Todd Groh, Kate Lantz, Marianne Emmendorfer, Jim Post.
Wildlife Club

The 1985-86 Michigan Tech Wildlife Society was very active this year as it made apple cider in preparation for the 1986 conclave, held poster sales to raise funds, co-hosted the 1986 North Central Student Wildlife Conclave, and held a wildgame banquet.

The Conclave was a great success after many hours of planning, preparing and cooking before going down to Battle Creek. The trip was long, the presentations were informative, the people were friendly, the food was great, and the parties were plentiful.

The wildgame banquet was held a couple of weeks after conclave to help raise some money, get rid of some leftovers and bring friends together for good food and to learn the art and science of water witching.

Overall it was a fun and exciting year and next year promises to be more of the same. I leave you with the immortal words of Jeanmarie: “We be jammin’!”

Sincerely,
Scott Marsh

I'd graduate, but I can't find my way out of this mess. (Scott Marsh)
Congratulations, you're the only one in this class to identify an Amazon Spotted Cuckoo!

Wow! I see a Blue-eyed, blond breasted, leather coated, Wren.

He'll never see it — he's looking in the wrong direction!

Maybe if I move my finger from in front of the lens . . . ?

(Photos by Palmisano)

Our early morning birdwatchers visit the U.P.'s newest "fire tower" in the Sturgeon Slough Wildlife Management Area.
Theresa Riley, who worked with the advertisers, and Howard Lindberg, business manager, were both lost in the woods when photos were being taken.
Houghton In the Winter

98 YEAR SNOW RECORD
FROM 1887 THROUGH 1985
HOUGHTON, MICHIGAN

1979 - 355.9 INCHES

"When Ice Pine Was King" was our largest (sheer bulk) undertaking for statue competition in the last couple of years. While these giant Ice Pine (Pinus glacieri) logs didn't impress the judges, we sure had a good time constructing them.

Forest Pathology Lab — Nothing stands in their way, not ever 300+ inches of snow. (L to R) Steve Albee, Todd Groh, Jon Drukenbrod, Joni Moore, Johann Bruhn, Mark Wallach, Rick Baron, Marianne Emmendorfer, Joanne David, Pat Ross.
Fall Camp 1985

By Kate Lantz

On the very first day, a brilliant orange bow appeared at the base of the lightpole in front of the dormitory. From that day on, some dedicated student crept out into the pre-dawn chill to add a ribbon, marking each day of tech's 1985 Fall Camp.

Although the day's routine remained fairly constant, the people at camp managed to add that spark that made every-day unique. It began with breakfast, where the main event was holding your face over the steam from your coffee cup, taking bets on who trailed in wearing the oddest assortment of sleepwear or who used the most ketchup.

Strangely, it was the small things we remember most — standing in a hardwood plot with freezing fingers and toes, listening to a raging dispute just over the hill.

"Two logs! Are you blind? That's a two-and-a-half, minimum!"

"This is the last time I work with you, pal."

"Oh yeah?"

"Cripes, not that tree, you fool, this one! Over here!"

Or hearing our own one-man sore-limbing demolition team toppling dead saplings as he estimated red pine diameters. The sound of falling timber punctuated all our activities.
I'm still trying to unstick pages of notes bled on when our hunters returned, smelly but triumphant, to show off their latest kill. By the middle of October, the hall smelled like a meat locker.

The smallest occurrence was cause for excitement. Phone calls ranked high on the list, and anyone sitting in the study room had ringside seats to the mad thunder of stockinged feet as four campers leapt to answer the phone.

Amid cries of "I got it!" all would attempt to negotiate the sharp turn in the hall, which was tricky until you got the hang of it. It was a common sight to watch some unfortunate fling himself, arms and legs flailing, into the room and over a stray chair. Equally entertaining were those who missed the doorway entirely. We couldn't see them, but could hear them as they hit the side of the hall and slowly crumpled to the floor.

(Clockwise from top) Denny bestows the art of log-scaling upon the eager ears of fall camp students. (Photo by Foster)

Ken "Grisley" Anderson learns 101 uses for a relaskop. (Photo by Frayer)

Hacky-sac was, once again, a very important camp activity. Drew shows off the proper form for John and Jay. (Photo by Foster)
Mature, adult forestry students turned into kids again during a midnight snowball fight one weekend — a first for forestry camp.

There were impromptu jam sessions in the study room, where all gathered the day our own mancini mastered the "Pink Panther" theme.

And we were all cured of Bruce Springsteen — forever.

There were long evenings of hard study, cold, wet days of running open traverses, and times when we dragged ourselves home with feet that felt like they hadn't been out of hiking boots since March, and no ambitions beyond making it to our bunks.

Then there were the days like the one saved for the final cruise problem — that unbelievably bright day when you could actually take field notes without fears of frostbite. It was the kind of day that made all that slogging worth the trouble.

Back in Houghton, engineers were hunched under fluorescent lights, madly punching calculators, or studying in a dusty basement smashing endless piles of cement bricks. You take a deep breath, glance over at your partner, and realize he's thinking the same thing.

We sure made the right choice, didn't we?
A typical Sholly lunch break in Alberta. (Photo by Foster)

(Below right) Tom and Teri — Fall Camp couple. (Photo by Foster)

Below left) And J.J. wondered why we didn’t remember what we read in the manual? (L to R) Jeanmarie, Jim, Kate, Bob, Dave, Harv, and Teri preview tomorrow’s assignment.

(Above left) The inmates in the process of building a red pine forest out of a stack of logs — Silviculture class 1985. Top row: Herm, Grisley, Sholly, Skid-row; Front row: Dave S., Spud, Geezer, Spooge, Eighth-pint, Post-toasties, Gerry S. (Photo by Mroz)
Fall Camp Blues

Or

Read It In The Manual

"CLASS!," Today we are going to mmmmpth. Then we are going to mmmmmmmmm. What do you mean, you didn't catch that! Didn't you read it in the manual? Read what? I think you're confused. Didn't you get enough sleep last night? Now class be sure and turn in your results because they will count toward 65% of your grade. What? You again? . . . Just wait until you finish what you're supposed to be doing and then I'll explain how to do it. In the meanwhile if you figure out what's going on — don't tell the rest of the students. OK! WHO ate my copy of today's assignment? You inmates are worse than the students I had here last fall. What? You are the students? Well it doesn't matter anyway, because I have a hatchet just in case you try anything. Let's go into the woods now. I'll meet you there. Where? Don't worry about that now, just be there. What? You're confused? Well it's your own fault for coming to Fall Camp. Now, where is my pair of ladders and my hatchet?

*In order to protect the graduation rights of the author he/she has asked to remain anonymous.*
Here I sit upon a stump,
My compass broke, my feet so sore.
Flies have made my skin a bump.
Don't know how I'll take much more.

Cull factor and D.B.H.
Type symbol and tree grades too.
Knees and knuckles all abraised;
My shins are turning black and blue.

Running lines and traverses.
Maps and notes, reports are due.
Quiz tomorrow, after breakfast.
How come creeks are colored blue?

How are we to learn to do this?
Look it up! It's in the book!
Experience we gain so slowly.
Now my confidence is "shook."

Ten long weeks have passed so quickly.
Classmates, now, I know so well.
Maybe that's why our professors,
Put us through this vale of h--l.

Rain and snow keep right on fallin'.
Lunch is gone, my sox are damp.
Hope I never get the callin'.
To spend another Fall in Camp.

D.B.H. is equal to Diameter-Forehead-Height for JeanMarie.
(Clockwise) One more time... You really didn't want to graduate, did you Todd? The Iowa Hawkeyes Flasher — Tom Hill. The Men are cooking lunch? (Kate Lantz, Jeanmarie Militello, and Joanne David.) That'll teach Jim to wear his Steel-toed boots! Catch! (Joe Foster, Tom Hill, Scott Swank, and Todd Groh.)
(Clockwise, from top right): "I finally found it — after looking through 3528 slides." (Todd Groh by Foster)
Myron, our very own Liberace. (Joe Lannom by Hart)
Absorbing both knowledge and caffeine. (Jon Druenbrod by Palmisano)
Why did we ever let those silly biologists into the Forestry building? (Ken Whitmore by Palmisano)
You're kidding me ... this IS red pine, isn't it? (Angie Brandon by Gdula)
Let's see, should the top light be on and the bottom off — or should the top be off and the bottom ... (Jay Clark by Foster)
Joni — are you the one who has been hoarding all the tomatoes? (Photo by Palmisano)
Firewood Cut 1985 Photos by Foster

(Clockwise from top right): Tom Hill supervises as Joe and Kate unload a supply of wood at the cabin.
Lunch break in the red pine plantation, Fall Camp.
The bridge received some loving care by the fall campers and now has all the planking.
Our team has personality, but OH THOSE LEGS!! The relaskops: R to L: Scott Swank, Todd Groh, Jim's friend Mark, Joe Foster, Jim Post, Lee Andrews, (front) Jim Sholly.
The Outdoor Adventure Part I: L to R: Teri Burger, Todd Groh, Mary Jo Humphreys, Sue Hart, Jay Clark, Scott Marsh, John Miller, Joe Lannom, Ken Whitmore.
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I’m most proud of: My new deluxe cab, designed for operator comfort and completely insulated.

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I wish I could stop: Showing off by picking up random logs up to 22 ft. in length with the center of gravity remaining on my carrier.

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Joann — Working hard? Hardly working! (photo by Foster)

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