Composite drying-rate charts were then drawn from the individual drying-rate curves. Since the charts are drawn from assumed average initial moisture contents, representative figures of 35 percent for heartwood and 100 percent for sapwood were selected as the average initial moisture contents. The desired final moisture contents chosen were 4, 6, and 10 percent. To draw the drying-rate charts, drying-rate curves of veneer dried at two different temperatures were needed. In this study, temperatures of approximately 250° and 300° F. were used. Figure 2 illustrates the method employed. Using the sapwood veneer to illustrate the procedure, the charts were drawn in the following manner:

From figure 1, the points were determined where the drying-rate curve intersected the 4 and 100 percent moisture content readings. The distance between these two points on the abscissa was then read as the required time in drier. A point was then plotted on the chart, with the time in drier as the ordinate and the average temperature in the drier as the abscissa. In like manner another point was plotted from the veneer drying-rate curve of sapwood dried at 250° F. Through these 2 points a straight line was drawn to represent the drying rate for 1/10-inch sapwood dried from an initial moisture content of 100 percent to a final moisture content of 4 percent. Similar charts were then drawn for heartwood dried to 4 percent and for heartwood and sapwood dried to 6 and 10 percent.

It is assumed that one can select any drier temperature between 220° and 360° F. and, from the charts, read the time necessary to dry to the desired moisture content of 4, 6 or 10 percent. To check the accuracy of the charts, it was arbitrarily decided to dry sapwood at 280° F. to 6 percent moisture content and heartwood at 285° F. to 4 percent. From the charts, the times in the drier were determined to be 14 minutes for sapwood and 7 minutes for heartwood.

Check tests were made on additional pieces of veneer, dried on the indicated schedules. The average of 12 samples of sapwood showed a 5.1 percent moisture content after drying, and an equal number of heartwood samples averaged 3.6 percent.

Results and Discussions

Results of the drying tests were tabulated, as well as the moisture content and specific gravity of the logs from which the veneer was cut. Because of limited space, the tables are not shown. However, several interesting observations were made from the data in the tables.

The most important of these was the difference in moisture content between the heartwood and sapwood in the green veneer and in the log. The moisture content of the green heartwood veneer was, on the average, within 1 percent of the moisture content of the heartwood in the log; however, green sapwood veneer that was freshly cut averaged 14 percent lower than that of the log in moisture content, and in one case was as much as 27 percent lower. There are several possible explanations for this discrepancy. The most obvious is that since the sapwood has a higher moisture content than the heartwood it might lose more moisture as it is handled between the lathe and the drier. However, the following explanation may be more correct. It was observed that at the lathe a large volume of water was squeezed from the sapwood because of the pressure applied by the nose bar; very little water was squeezed from the heartwood at this time. Apparently because of higher moisture content of the sapwood initially, it lost over three times as much moisture as the heartwood.

In the first drying tests, it was found that the veneer was frequently being overdried to below the desired 4 to 10 percent moisture range. This occurred because the drying schedules were first set up to approximate those commonly used in commercial drying. The final schedules arrived at were much faster than commercial times. This would seem to indicate that commercially dried Douglas-fir is generally overdried. It must be added, however, that to dry most of the veneer to a moisture content range of 4 to 10 percent in the short times used in this study may allow wet spots to remain in some of the veneer. Such wet spots are unacceptable commercially, where no conditioning is done before gluing.

A problem that might complicate the use of the drying charts made in this study is the difficulty of accurately controlling the temperature of the drier. This was noticed especially

at the higher temperatures and when there was a heavy demand for steam pressure. It is apparent that even greater difficulty would be encountered in large commercial driers than in the relatively small drier used in this study.

Summary

Vener drying-rate charts were prepared for 1/10-inch Douglas-fir veneer. These charts were drawn from vener drying-rate curves. The drying-rate curves illustrate the straight line drying relationship shown in earlier tests at the Forest Products Laboratory.[2] The data for the curves were obtained by drying heartwood and sapwood veneer at two different temperatures. From the drying-rate charts, times to dry 1/10-inch Douglas-fir veneer to average moisture contents of about 4, 6, and 10 percent can be estimated for any drier temperature between 220° and 360° F. After establishing the charts, check tests were made by arbitrarily selecting temperatures to dry heartwood to 4 percent moisture content and sapwood to 6 percent. At the selected temperatures, the required drying times were estimated from the charts. The veneer thus dried came to an average moisture content that was within 1 percent of the desired value. These results support the theory that veneer drying-rate charts can be developed, along the lines outlined here, for any given condition of species, initial and final moisture content, veneer thickness, and drier temperature.

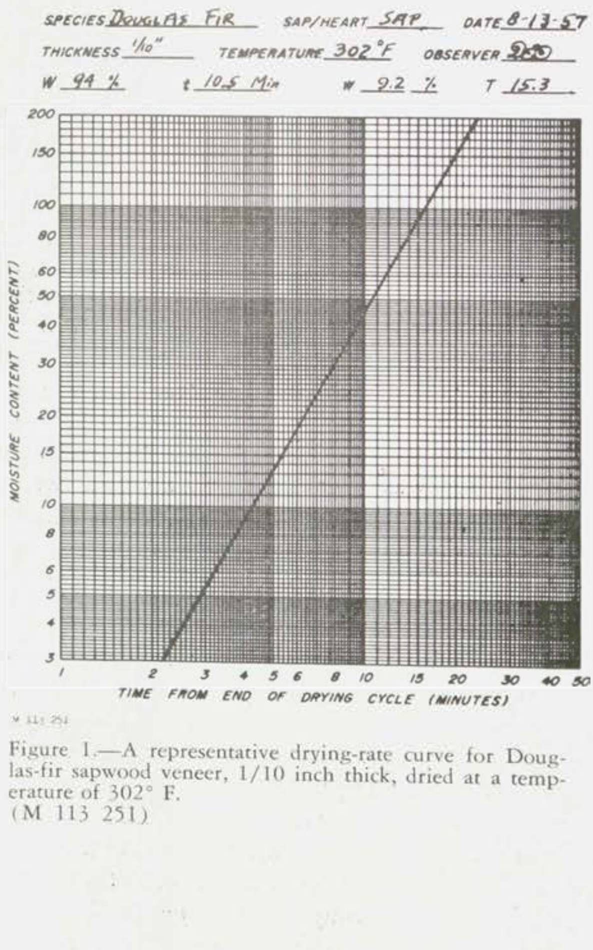


Figure 1.—A representative drying-rate curve for Douglas-fir sapwood veneer, 1/10 inch thick, dried at a temperature of 302° F.
(M 113 251)

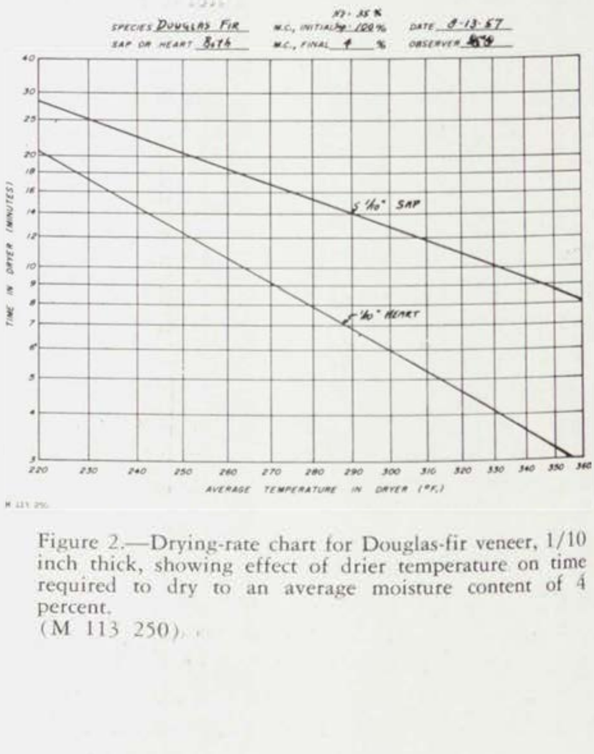
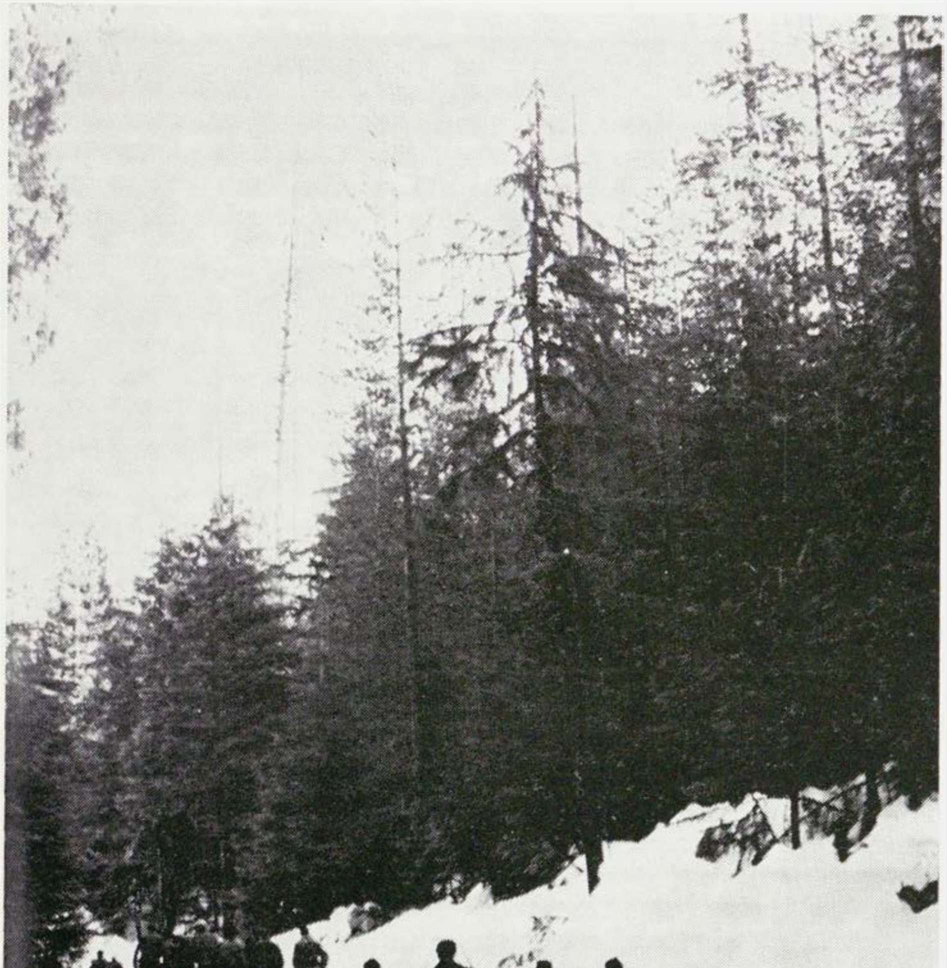


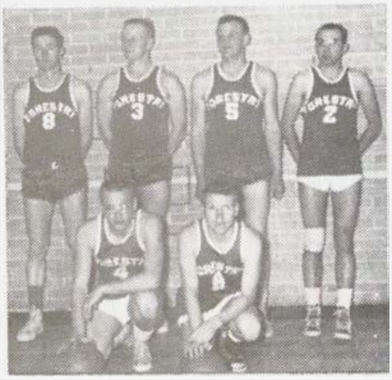
Figure 2.—Drying-rate chart for Douglas-fir veneer, 1/10 inch thick, showing effect of drier temperature on time required to dry to an average moisture content of 4 percent.
(M 113 250)

Winter Quarter 1958



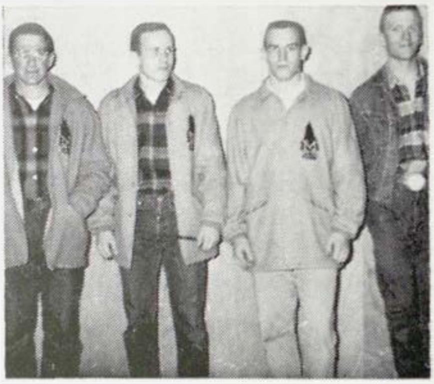
Activities

FORESTERS
Art Hollowell
Ron Stoleson
Glen Beckman
George Knapp
Fred Ebel
Ray Maidment



LOGGERS
Gene De Bruin
Lee Belau
Bob Swift
Jim Vukonitch
Dick Gibson
Jerry Gruber
Arnold Joyce

SKI TEAM
Ken Keefe



SWIMMING
Gene De Bruin
Jay Bertino
Holt Quinn
John Manz

Priest Lake Dendro Field Trip

By O. B. HOWELL

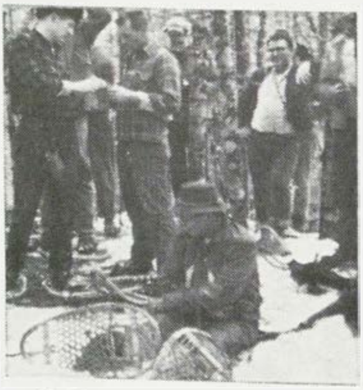
In February, all students in Dendrolgy make a 4-day field trip to Priest Lake, Idaho. Here the climatic zones intermingle at 3600 feet elevation.

Priest Lake is nestled in the mountains and benefits from 34 inches of annual rainfall. With this amount of precipitation, hemlock, yew, white and engelman spruce, white, ponderosa and lodgepole pine, grand, alpine, concolor and douglas fir, scopullarum and creeping jumpers, larch and western red cedar are growing in a mixed company of poplar, aspen, maple and mountain ash. It is here one can see as many as ten kinds of trees in a 50 ft. radius.

Students are lodged at a swank summer resort in cabins accommodating 10 to 20 persons. There's hot water, showers, and meals in the main lodge.

Snowshoeing is part of the trip. At this time of year, the snow varies from 3 to 7 ft. deep. All students have their own snowshoes.

Near Priest Lake is the USFS Experiment Station with a 40 acre aboretum. In acre blocks there are plantations of jack, black, pitch, brisltecone, red, ponderosa, lodgepole and jeffery pine, black, white, blue and sitka spruce, balsam, concolor, grand, alpine firs, mountain, eastern and western hemlocks, plus many varietal plots of douglas fir and junipers.



O. B. Howell setting the pace

No one complained about the chow!

41st Annual
Foresters Ball

Chief Push

Ed Bloedel

And A Good Time Was Had By All

For 5 days and nights last January, the M.S.U. Field House was alive with the sounds of pounding hammers, roaring chainsaws, straining muscles, earth shaking yells, lively music, and the tapping of the can can girls dancing feet—the reason?—Why the Montana Foresters were putting on the greatest social event on the University Campus!

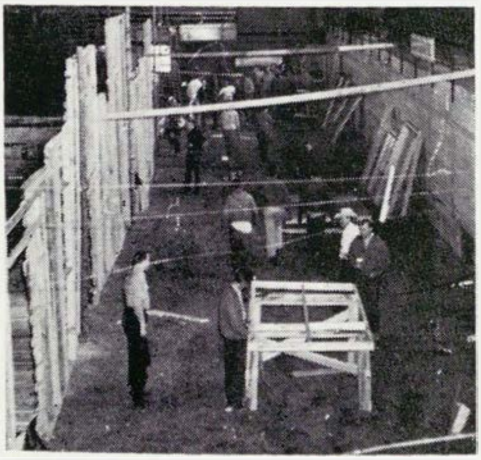
The theme for this year's ball was "America's Range Resource'.' Following this theme, the decorations consisted of a complete "Wild West" western town along one side of the dance floor and 2000 Douglas Fir trees, cut during the fall, around the rest of the floor. Dance series were announced by buffalo, cattle, and bronc riders, (the numbers branded on the animals sides) thundering across the length of the field house above the trees and band.

700 couples attended the ball, which ran two consecutive nights and featured as guest of honor, Irvin "Shorty" Shope. Shope, who has been painting for the Forestry School, a series of 10 ft. x 6 ft. oil paintings, depicting the development of Forest and Range Management in Montana, unveiled his last picture of the series during the intermission program. The intermission program also featured the beard contest winners, a costume contest, a shaving contest between a straight razor and an electric razor, the Forester's Glee Club, and the Delta Gamma Can Can girls.

Altogether about 4000 man hours went into making the 1958 Forester's Ball one of the best in its 41 year history.

Setting Up and Convocation

The setting up is of course much work, but it is also fun and most amazing to see how quickly the Field House is transformed. Convocation ends Boondock Days with rousing entertainment.



The Ball

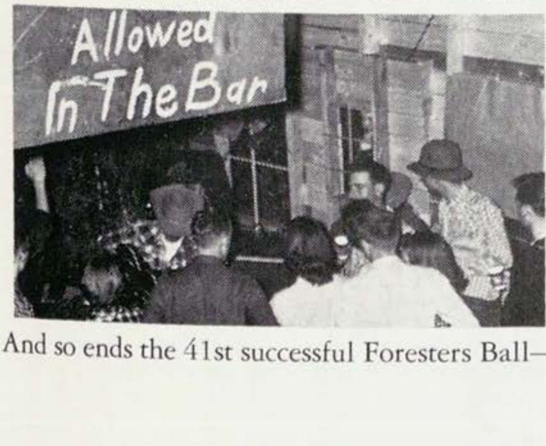
Contests

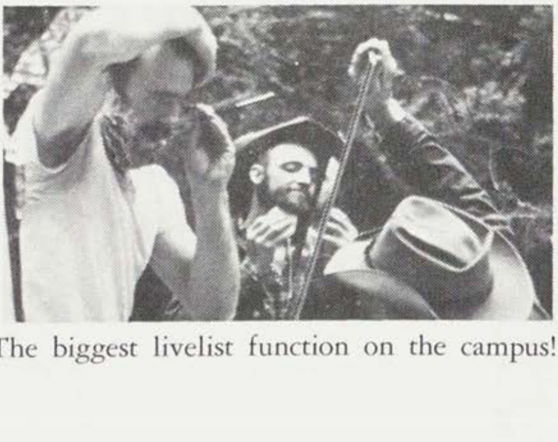
A few of the beard contestants and the judges.

Ed Bloedel presenting prize to Dick Novak for the best full beard' while Lynn Boe waits his turn for the 'most unique' beard. Bryan Rivers (not shown) received an award for the 'best try'.

A few of the costume contestants, waiting the judges decision.

A Look At The Big Show





And so ends the 41st successful Foresters Ball—The biggest livelist function on the campus!!

Remember This

These Forester's wives showed the men the finer points to splitting a match.

Roger Lund, John Wordal, Coach Bob Steele, Jerry Calbaum, John Manz. These are the Forestry Schools donation to the M.S.U. varsity ski team.

Druids, The Forester's Honorary Fraternity

Staff Note: We would like to explain that due to uncontrolable circumstances we were unable to obtain a few pictures that should be present, for this we wish to apologize.

To those who kindly donated pictures and especially to those who donated their time, go our heartfelt thanks as this year's book would not have been published without their help.

We hope you are pleased with your Forestry Kaimin.

Special Thanks: Dick Harris for special help with photos and engravings; Mr. Claud Lord and staff for the printing; Oliver Lee and wife, senior write ups. Dick Harris for cover photo.

School Roster

Abbott, Raymond W.
Appel, Ronald O.
Allen, Ronald L.
Amsbaugh, Clifford R.
Anderson, Richard A.
Anderson, Richard J.
Arvidson, Rudolph J.
Babich, Ronald G.
Backlin, Harvey L.
Barney, Eugene E.
Barney, Richard J.
Bartley, Ronald L.
Beckman, Glenn M.
Bednorz, Joseph C.
Belua, Lee R.
Bentzen, Raymond C.
Bertelsen, Allen V.
Bertino, James J.
Blakely, David A.
Bloedel, Edmund E.
Blunn, Thomas C.
Bochman, Bruce A.
Boe, Deen E.
Boe, Lynn R.
Bon, Virgil D.
Bonnett, Howbert W.
Boll, Louis A.
Briggs, Frank W.
Brigham, Dwayne T.
Bristol, Jon W.
Brown, Gary G.
Buck, Ronald R.
Bugni, Thomas A.
Burns, John E.
Burns, Robert A.
Byrne, Dean R.
Cain, Carl H.
Calbaum, Gerald H.
Cameron, Delbert H.
Carmean, Edward B.
Carty, David M.
Cates, Robert G.
Cauvin, Dennis M.
Challinor, Howard C.
Chehock, Clyde R.
Christensen, James G.
Christianson, Ronald D.
Clark, Bernard O.
Cline, Don E.
Colgan, Daniel L.
Croft, Clarence B.
Croft, Dennis D.
Crone, Lloyd E.
Crowder, David L.
Davey, Charles H.
Davis, John T.
Day, Allan C.
Dean, Noble E.
Debruin, Eugene H.
Dennington, Malcolm C.
Dern, George K.
Deschamps, Charles S.
Desilvia, Craig
DeVries, Richard J.
Dieter, Robert T.
Dillingham, Richard A.
Dobson, Roger S.
Dowell, Ronald R.
Drinville, James T.
Duke, John R.
Ebel, Frederick W.
Ebelt, Gerald E.
Edwards, Harold O., Jr.
Egerman, Kenneth J.
Eichhorn, Larry C.
Emerson, James C.
Erdmann, Gayne G.
Fairless, William F.
Ferdinand, Duane L.
Ford, Robert L.
Foster, John R.
Fouts, William W.
Fregren, Donald M.
Frohne, Richard G.
Galea, John
Geisler, Karl R.
Gibson, Richard L.
Gidlund, Carl A.
Gilmore, George B.
Gorsh, Joe W.
Gragg, James F.
Graves, Delbert K., Jr.
Gray, Robert F.
Greeman, Merrill G.
Greitl, Henry E.
Gregg, Tilman D.
Gruber, Gerald J.
Guck, Thomas E.
Guderian, Nevin T.
Gustafson, Robert D.
Haiges, Manfred L.
Hallmark, Brien G.
Harkin, Donald W.
Harrison, Wallace K.
Haugland, Garth, L.
Hayden, Craig E.
Heiser, Donald A.
Hendzel, Leonard
Hillstrom, Richard L.
Hoffman, Harry W., Jr.
Hoffman, John C.
Hollowell, Arthur J.
Holmes, John R. B.
Howe, Norman J.
Hudson, Leslie N.
Hutchinson, James E.
Jeffrey, Lewis P.
Jenni, Donald R.
Jernigan, Frank P.
Johnson, James E.
Johnson, Paul S.
Johnson, Robert W.
Johnston, Dempsey T.
Jones, Carl A.
Jones, Philip J.
Joyce, Armond T.
Kabica, Richard A.
Kalkoski, Gene A.
Kalland, Alfred H.
Kardos, Theodore S.
Kaufman, Norman B.
Keefe, Kenneth W.
Keppner, Alfred P.
Kimery, Philip H.
Kirk, Stephen L.
Klebenow, Donald A.
Knapp, George
Kohl, Arlan H.
Korb, John W.
Kovalicky, Thomas J.
Krammes, Samuel J.
Landgraf, Libert K.
Laws, Louis W.
Lee, Oliver M.
Legner, Francis H.
Lester, Charles M.
Lichlyter, Bobbie R.
Lindh, Craig J.
Lix, Robert S.
Loscar, Donald D.
Lovell, John V.
Lukes, Richard F.
Lund, Roger C.

Lundell, Bryce E.
MacDonald, William Z.
Magee, David K.
Maidment, Ray S.
Manz, John W., Jr.
Maxwell, John S.
Mazanec, Richard J.
McBride, Joe R.
McGrath, William T.
McLaughlin, William D.
McMahon, John P.
McMichael, Marvin D.
Meek, Kent A.
Mendel, William L.
Meyer, Homer G.
Michael, Albert C.
Miles, Edward J.
Mistrick, Alferd C.
Mitchell, Jere L.
Mohler, Jean P.
Mohler, Jerry L.
Moorhouse, James A.
Morton, David H.
Muraro, John S.
Murphy, Paul M.
Mutch, Robert W.
Nace, Walter T.
Nelson, Donald W., Jr.
Neufelder, Carl E.
Niskala, George R.
Nonnenmacher, Konrad
Notars, Michael C., Jr.
Novak, Richard A.
Noyd, Lemar C.
Ochs, Donald E.
Olson, Herbert K.
Osborn, Larry W.
Paquin, Robert H.
Parker, Gerald V.
Parker, Melvin G.
Patterson, James B.
Payne, Jerry A.
Pennington, Andrew W., Jr.
Pittman, George D.
Poncin, David E.
Plunkett, Richard D.
Quinn, George H., Jr.
Rabone, Howard M., Jr.
Ramberg, Richard A.
Raugutt, Raymond L.
Reed, Barry W.
River, Bryan H.
Rockwell, Ronald V.
Roda, Richard H.
Rose, Larry L.
Rost, Maynard T.
Ruckman, Bruce J.
Ruff, David D.
Ruff, Philip H.
Sartz, Calvert L.
Saxton, LeRoy F.
Saylor, Ronald J.
Schile, Norman J.
Schlueter, Henry L.
Schmidt, Wyman C.
Schmitt, Whitney T.
Schrader, John F.
Schroedel, Daniel J.
Scott, David O., Jr.
Shalhope, Donald F.
Shipe, Tilford C.
Silver, Tom I.
Simpson, Bernard F.
Skillman, Edward F.
Smith, Craig E.
Smith, Donald L.
Smith, Dwight H.
Smith, Richard H.
Smith, Tommy L.
Smith, William E.
Sorensen, Frank C.
Squire, Thomas C.
Stark, Eugene G.
Stark, Melvin J.
Steele, Robert L.
Steiner, Terrance L.
Stenslie, Rodney L.
Stevens, Mervin E., Jr.
Stevenson, Donald G.
Stinson, Donald S.
Stoleson, Roland M.
Stone, Chester O.
Stoops, Ronald R.
Strong, Stanley R.
Sulc, David G.
Sundstrom, Charles W.
Svenson, Richard K.
Swanson, Charles A.
Swenson, Adrian D.
Swenson, Ronald W.
Swift, Robert W.
Talbot, Bruce B.
Taylor, Alan R.
Tennyhill, Robert D.
Threlkeld, Duane L.
Thullen, Robert J.
Travers, Charles M.
Tribe, Charles B.
Troedsson, Nils A.
Truscott, Francis D.
Turner, Richard W.
Uphill, Richard
Upton, Glenn H.
Veeneman, Wayne A.
Visminas, Casimir
Vukonich, James P.
Walker, Jack E.
Warner, Arthrur D.
Waterman, Charles J.
Wedum, David E.
Wedum, Leslie A.
Weeden, Dean J.
Welch, Richard E.
Whelan, Lawrence J.
White, Keith L.
Whitesitt, David D.
Witt, Robert F.
Wolfe, J. Franklin
Wolfer, Richard H.
Wordal, John E.
Wright, Charles E.
Yao, Joe
Zapatka, Thomas P.
Zenonian, Leonard E.
Zinne, Wayne W.

4 keys to efficiency in the lumber industry

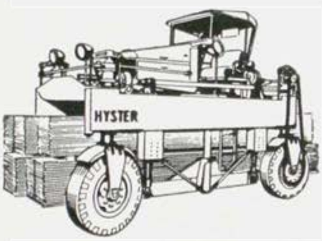
Setting higher standards of efficiency in one of the world's toughest industries for over a quarter century, Hyster machines are your keys to more profitable logging operations. Wherever lumber is produced or handled, you'll find Hyster equipment doing tough jobs faster, safer, more economically.

HYSTER
FOR ANY LIFT OR PULL

HYSTER LIFT TRUCKS *(1,000 to 20,000 lb. capacity) speed lumber handling*—in and out of yard and shed storage, loading and unloading trucks and railroad cars. Stacking with Hyster Lift Trucks increases your storage capacity.

HYSTER WINCHES, DONKEYS, YARDERS, LOGGING ARCHES help provide maximum production efficiency on any logging operation—cable yarding, arch logging, loading and skidding.

HYSTER GRID ROLLER *builds better log haul roads at less cost.* Hyster "Grid" roller crushes pit-run rock right on the road bed to develop long wearing surface that will stand up under pounding of heavy truck loads and reduce hauling costs.



HYSTER STRADDLE TRUCKS *(20,000 and 30,000 lb. capacity)* move large lumber loads with no loading or unloading time, and often make short-haul deliveries *right to building site.*

Today there are over 800 dealer locations throughout the world who sell and service Hyster Tractor Equipment and Industrial Trucks.

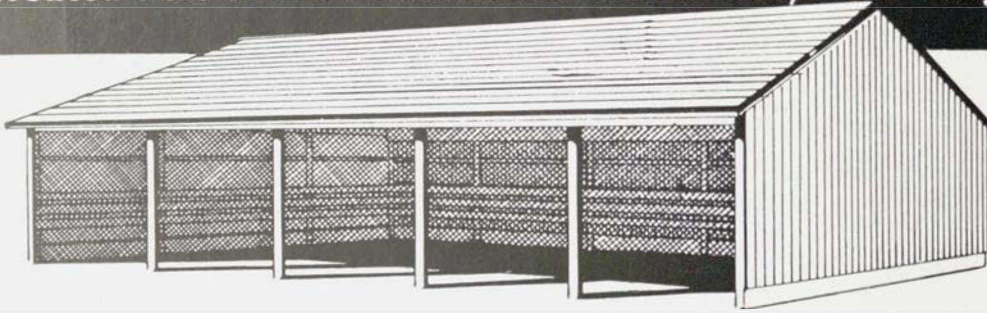
HYSTER COMPANY

Hyster, Grid, Donkey and Straddle Truck are registered trademarks of Hyster Company

Factories

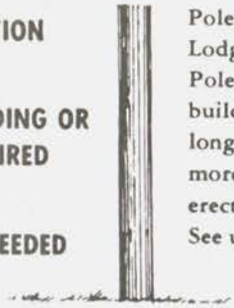
Portland, Oregon • Danville, Illinois • Peoria, Illinois
Nijmegen, The Netherlands • Sao Paulo, Brazil
Glasgow, Scotland • Sydney, Australia (licensee)

Treated Pole Frame Construction Costs Less, Lasts Longer



Ask for J. NEILS "Double Life" Penta Treated Poles

- ✓ **NO FOUNDATION REQUIRED**
- ✓ **NO SCAFFOLDING OR FORMS REQUIRED**
- ✓ **NO SKILLED WORKMEN NEEDED**



Pole-frame buildings made from J. Neils penta treated Lodgepole Pine poles are long lasting and economical. Poles are straight, with uniform taper. You can do the building yourself. When you're done, you have strength and long life at an amazingly low cost. We will gladly give you more information, including a FREE J. Neils plan and erection instructions for an all-purpose farm building. See us soon.

For Sale by

CONTACT THE

J. Neils Lumber Company,

A Division of St. Regis Paper Company, of Libby, Montana
for the name and address of your local dealer
or the dealer nearest to your area.

OREGON® SAW CHAIN PLAYS IMPORTANT ROLE IN MODERN LOGGING

OREGON Saw Chain Division of OMARK Industries, Inc., 9701 S.E. McLoughlin Blvd., Portland 22, Oregon. This ultra-modern OREGON saw chain factory is the largest in the world. Other plants in Guelph, Ontario; Cincinnati; Sweden; Japan.

OREGON Chipper Chain

A fast-cutting, easy-to-file, all-purpose cutting chain. Factory equipment for 37 of 41 American chain saws. Standard replacement chain for all chain saws.

OREGON Chisel Chain

An exceptionally fast cutting chain for use on a wide range of chain saws. Expert filing required.

OREGON Crosscut Chain

A fast cutting "scratcher" type chain for limbing, cutting to a line, cutting hard or frozen timber.

OREGON CHAIN WORLD-FAMOUS

Hundreds of thousands of timber workers in the United States, and increasing numbers of woodsmen in foreign countries, today operate chain saws equipped with OREGON chain.

OREGON chain is manufactured in the largest saw chain factory in the world, using latest methods and equipment. There is an OREGON chain manufactured for every make and model of chain saw. Only finest quality, hardened steel is used in the manufacture of this expertly designed, precision built chain, which carries the chain industry's strongest guarantee for workmanship and materials.

In addition to saw chain, OREGON manufactures chain saw accessories and maintenance equipment, including Armor-Tip® Saw Bars • Drive Sprockets • File Holders • Filing Vises • Depth Gauges • "Gaugits" • Chain Breakers • Hand Rivet Spinners • Bar Tenders • Outer-End Handles • Magnesium Wedges.

When buying saw chain or maintenance equipment specify "OREGON." Look for the name "OREGON" on every chain cutter, the big "O" mark of quality on the package.

OMARK Industries, Inc.

OREGON SAW CHAIN DIVISION

PORTLAND 22, OREGON

The advertisements found in this book represent the finest in products and services.

It will be worth your while to trade with them

Mention the Forestry Kaimin–it identifies you