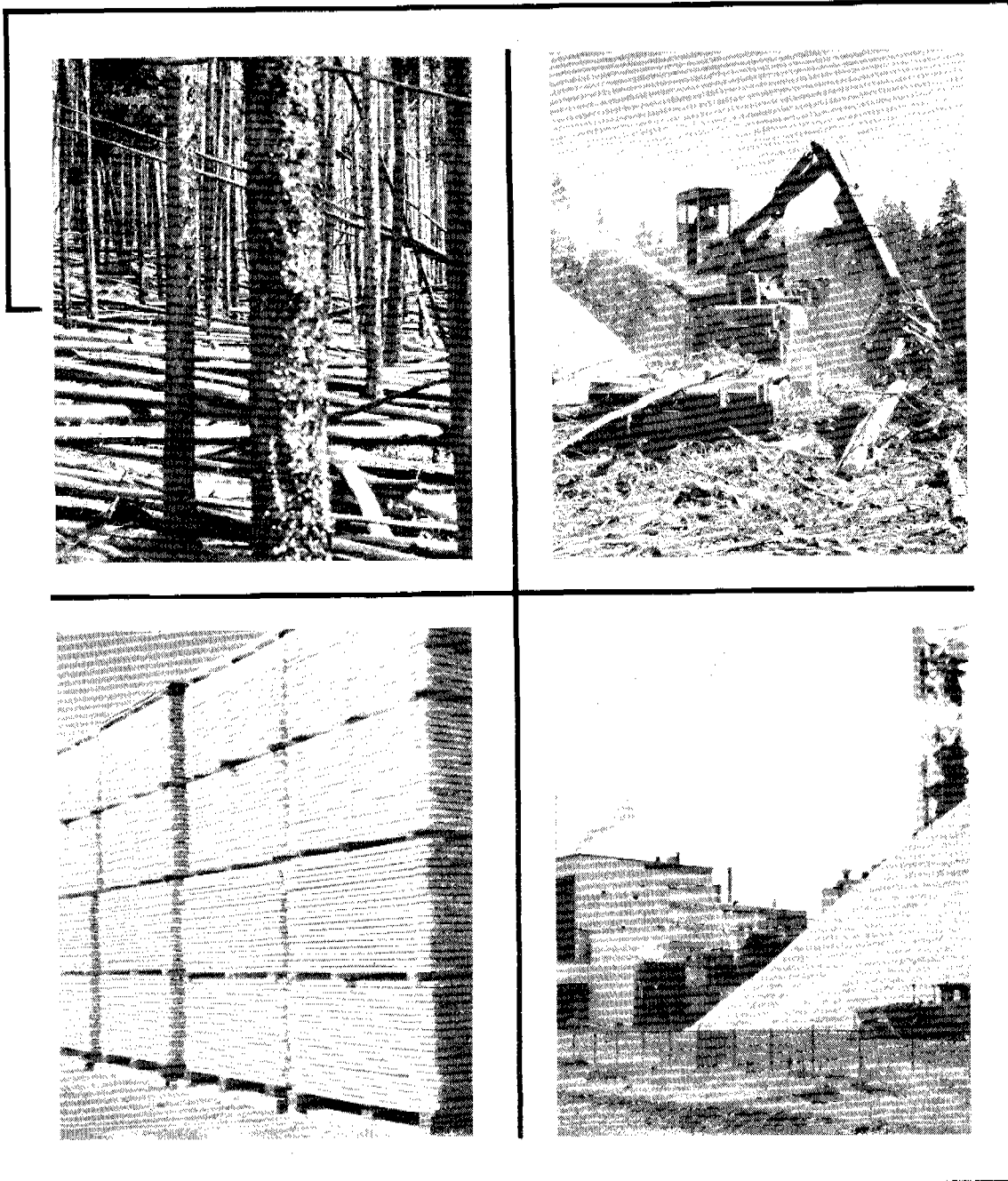


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Symposium Proceedings Nov. 28-30, 1979, Missoula, Mont.

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PRACTICAL CONSIDERATIONS IN USING LOW QUALITY WOOD
IN LUMBER, SPECIALTIES, AND PLYWOODS

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ABSTRACT

The initial practical consideration in using low quality wood is how we view it. Beyond this psychological point, very real problems do exist. This discussion examines some of the uses of low quality wood. The solid wood product families examined include composites, plywood, lumber, laminated lumber, and cedar products.

KEYWORDS: residue utilization, wood residues, wood products

Earlier presentations in this volume have discussed the opportunities for utilizing residue. This paper will deal with "Practical Considerations in the Utilization of Low-Quality Wood." Webster's Dictionary shows about eight definitions for the word "practical," as well as reference to the word "practicable." Practicable was said to be "used of something that has not yet been developed or tried, but appears likely." Perhaps we should say that much of what has been discussed here should be labeled practicable, that is it appears possible, but has not yet been tried.

But, since we are dealing with practical considerations, we should define the word. "Practical" is defined as "obtained through practice, workable and useful, utilitarian, experienced from actual practice," and so forth. The panel discussion on which this paper is based moved from the opportunities of the practicable to the problems of the practical.

A first practical consideration in using low-quality wood is in the description of our raw material. Elsewhere in our program we have been referring to residues. Now we are using the words low-quality. Unfortunately, it is true that much or most residue type material is not the best. But with that admission, I would like to express the view that part of our practical problem may be our label.

I believe that if the residue resource is examined, a range of quality can be found which straddles at least partially the range of more "normal" wood. For example, I suspect that some dead timber is better than some live timber; some residue is superior in size class to some of the so-called merchantable material; and some residue has higher intrinsic wood value than some merchantable timber (such as pine versus hemlock).

I want to cover here some of the experiences at Potlatch Corporation^{1/} with so-called low quality wood in several product lines: cedar products, lumber, laminated lumber, and plywoods.

CEDAR PRODUCTS

This is probably the oldest product line based on a raw material that is traditionally a residue in Northern Idaho and surrounding areas. Several decades ago, split cedar products were mostly produced by individuals or families living and working in the forest. The raw material was often free, but converting it to saleable product was a business with the most basic practical consideration - staying alive under dangerous working conditions and making ends meet by hard and long hours.

Today Potlatch operates two cedar products plants as a part of integrated logging and milling operations. New problems arise although others may be solved. The variability of quality in defective cedar is surprising. Although our plant specs will allow a minimum log length of only 6½ feet, handling such short pieces out of the forest is awkward. Without a system for working out sawlogs from material delivered to a cedar products plant, one must guard against a downgrading of higher grade material into a longer piece of part-low-grade cedar products log. In other words, the move towards higher volume utilization can affect quality utilization. Another problem from such operations, which reduce forest residues, is the manufacturing waste factor. Two-thirds of the gross weight of delivered wood can become scrap. Accumulated at a mill, the resulting residue may be a bigger problem than if dispersed in the forest. Improving fuel markets is an answer to this situation, however.

LUMBER

I'm sure that most Rocky Mountain area sawmills are now using some logs today that previously would have been considered residue. Other speakers have cited this.

Species is a primary factor influencing the type of problems which enter the picture regarding using residue or low-grade logs for lumber. In the pines, which are typically cut to boards, checks, worm holes, and blue stain are common characteristics of the lumber output. These affect the basic grade of the product, usually negatively. Another problem is variable moisture content, which follows through in kiln drying as overdried lumber. A significant dollar loss in surfacing due to overdrying higher grade boards is well established in forestry literature.

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In true firs, we find incipient and advanced decay to be the principal problem in lower grade logs. Not only is lumber grade and value lowered, there can be a breakage problem in handling, which slows production. Such pieces are preferably sent straight to the chipper, but can't always be diverted.

Douglas-fir presents relatively fewer problems in the final product, once the logs are sawn. Inherent crook in the tree is a culprit in the woods which can create low quality sawlogs. If the crooked portions aren't culled as residue, the logger may be penalized for the scale loss, and mill production can be slowed.

LAMINATED LUMBER

Here is an area where one can effectively upgrade some lumber which otherwise might be put to a lower use. It is accomplished by combining three or more pieces of varying appearance quality levels into one piece which is used according to its outer or face grade. Hoards or dimension comprised of sound solid wood can be used as center and back laminations, where visual properties can essentially be ignored. For example, knotholes are structurally equivalent to sound knots of the same size, lower value species can be used with facings of premium woods, and splits, wormholes, and other slight imperfections become relatively unimportant. Low moisture content from overdrying can be beneficial in processing and in-place product serviceability.

PLYWOODS

The plywood business has been a good one for a number of years. "Sheathing" used to mean boards, but now, as most everyone knows, it means 4x8 - CDX, or plywood.

Low quality does not present isolated problems in making plywood; essentially, it is unacceptable. The process of making conventional plywood is so standardized and streamlined that standardized raw material becomes essential. Try to run a 6-foot bolt into an 8-foot line, or put a soft-centered overmature white fir in a lathe, and everything stops. A 6-inch diameter log slows up a headrig, but is worse on a 5½-inch lathe chuck.

Potlatch faced the practical problem of using lower quality raw material, in its true sense, with our composite plywood we call "Plystran." We wanted to make more plywood without using more peeler quality logs. Some of the problems we faced, and solved, as we went from practicable to practical, were: dirt on "buckskins," mostly dead white pine; rot in defective logs, mostly true firs; achieving the excellent performance level of plywood from low-line wood; integrating log usage and conversion facilities with parallel pulp mill needs; smoothing out wood quality variation, ranging over a complete spectrum; and allowing for errors in the pioneer effort, since errors are inevitable when innovating.

Without explaining here how all these were accomplished, the conditions were: the market for the product existed, the technology was mostly available or seemed close at hand, and management was willing to take some risks. With a lot of effort by many people, success was achieved.

Using low grade wood is not done through miracles, but with the classic ingredients of most achievements: hard work, economic reality, and well-defined goals.