TRENDS AND NEEDS IN MODERN WOOD UTILIZATION

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Importance of Utilization

If foresters accept the philosophy of future abundance of renewable forest crops from 1/4 to 1/3 of the total lands of the country, they cannot side-step acceptance of the importance -- indeed vital necessity -- of adequate and efficient utilization of these crops.

The magnitude of a natural resource does not in itself make a nation great nor a civilization secure. Savages in the American wilderness managed only a miserable existence amid surroundings of natural wealth that have since enriched the world. Some of the most squalid conditions of existence in present day society occur amid localities rich in natural but undeveloped wealth.

It is only through utilization, made possible by scientific and technological developments and the industrial application of these developments, that the great forest resources of the United States are now giving direct support to 6,000,000 people and contributing to the support of 2-1/2 million farm families; that in the past tax returns on investments aggregating 10 billion dollars have been forthcoming; commodities valued at 3 billion dollars annually have been produced; and the public provided with a host of commodities needed for their daily comforts.

The outstanding feature, however, is that 95 percent of these products have come from private timberlands. These privately-owned areas constitute three-fifths of all the commercial timberlands in the United States. To insure an economy of abundance, these lands must be kept under sustained forest management. There must, however, be a frank recognition that forestry on private lands can and will be practiced only when there appears a reasonable opportunity for profitable utilization of the crop; and that while the maximum extent of private forestry cropping is limited by the extent of the forest supply, it is controlled by the quantity of forest products which can be profitably manufactured and sold.

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The same considerations apply with equal force to farm forestry. Upward of 15 percent of our land in farms consists of woods, while in some states woods occupy more than half of the farmland; forest products rank tenth in terms of income among the crops produced on farms, and in 1935 yielded farmers $69,546,000 in cash; wood products of much greater value are consumed directly on the farm. When one considers the fact that approximately 900,000 farmers in the United States earn a gross income of less than $400 per year, and that a large portion of these farms is located in natural forest areas, the importance of potential income from forest products and employment is obvious.

Utilization Trends

The important question is, are present utilization practices economical or wasteful? Efficient or inefficient? Contributing their maximum to general welfare or not? Holding or losing their markets? Promising well or ill for the future of public and private forestry? Examination reveals an unfavorable answer in practically every instance.

Losses and Inefficiencies in the Woods

If all the available yield of the forest could be economically utilized with complete efficiency, the number of persons employed would be several times what it is at present, and products could be offered to the consumer in correspondingly greater volume.

Throughout the country is found a vast volume of logging wastes, which occur in the form of down timber, tops, limbs, trimmings, unmerchantable small logs, defective trees, and trees damaged in logging operations. This unused material aggregates annually some 3 billion cubic feet of wood, or nearly one-sixth of the Nation's total forest drain.

Coupled with this is an interlocked problem of nonuse. Prominent in this situation are the little-used or so-called "weed" species. They occur in practically all regions of the United States, and good forest management requires their utilization. New England, for example, is overrun with low-quality hardwoods. The South's pinelands are reverting to inferior quality hardwoods over extensive areas. In the Ozarks, a large volume of blackjack oak of poor quality gives little present aid to a population dependent upon the timber crop for support. This challenge to utilization is a stumbling block to successful forestry in all regions.

Losses in Conversion and Manufacturing Plants

In the operations of sawmills and remanufacturing plants about 2.3 billion cubic feet of wood are lost annually. Checks, cracks, splits, warping, twisting, and stain are the cause of large losses during seasoning. Severe seasoning degrade is a chief factor in the nonuse of some of the southern swamp-grown hardwoods. Loss in quality due to preventable stain and other degrade taking place during seasoning decreases the value of lumber in general by $10,000,000 annually and unsuits much of it for exacting uses.

Only one-half of the wood that goes into chemical pulp is utilized. Wood fiber to a value of $10,000,000 annually goes down mill sewers, suspended in the "white water" discharge. A total of 1,500,000 tons of lignin is annually discharged as waste pulping liquor into the Nation's waterways.

These losses cost as much to grow as the material that is used. But they return nothing to the stumpage owner, nothing to the processor, practically nothing to employment, and they tend to increase the price of forest products to the consumer.

Service to the Consumer

Not all of the wood used in construction and industry performs the service of which it is capable. Weak woods are sometimes used where strong woods are needed. Woods with poor wearing qualities may be used where traffic is heavy and wear excessive. Woods with high swelling and shrinkage properties are found in articles which give special trouble on this account. Woods with low resistance to decay are often used where decay hazards are high.

The home owner's bill for repainting houses and other wood structures is about $375,000,000 annually, but because of modified paint products he does not get the service from this expenditure to which he is entitled. Uncertain paint service reacts against the use of lumber for the exterior covering of houses, and wood substitutes so play upon its high cost that the consumer often turns to other materials, many of which cost more than wood.

Declining Markets

In view of the practices and results of timber utilization to date, the question about forest markets becomes all the more significant.

The answer, in simple terms, is that the market for lumber in general is declining in volume. The per capita use of lumber has decreased so that

in the boom year of 1929 it was only slightly over half that recorded in 1906; since then it has averaged only about one-fourth. In the pulp and paper industry the per capita use of wood has greatly expanded in recent years; yet half of this expansion is in the form of foreign woods, despite the fact that our domestic woods are ample in quantity and quality to support the entire production. Had the 1906 per capita use of lumber been sustained, and had pulp and paper production been all from domestic woods, in 1929 the number of jobs from these great forest industries would have been about twice what it was.

In the future, a forest crop of more than twice the volume we are now using will be produced if our present forest lands are successfully rehabilitated and maintained. Such an outcome is hardly to be expected — certainly not from any private forestry efforts now in sight — unless present markets can be increased and finally at least doubled.

Other Losses

Superimposed on the foregoing are the losses resulting from scattered and diversified forest ownership, lack of integration of industrial operations, migratory operation rather than stabilized operation, inadequate mechanization, excessive transportation costs, and certain aspects of our tariff policy that are operating to the disadvantage of American forest industries and employment.

Remedial Measures

There are two basic ways in which the problem of American forest utilization can be met. One is by an adequate program of utilization research, and the other by means of extension and education. Both ways are at present grossly inadequate to meet the issues at stake.

Foresters might well take a leaf from the book of the agriculturist. Today agriculture (in addition to moneys appropriated by the states) is provided annually with Federal funds amounting to some $35,000,000 to $40,000,000 for the major purpose of improving the value and marketability of agricultural crops and for extending their uses through education and extension.

Research

To return to the research phase of the utilization problem, records indicate that successful industries spend from 1 to 2 percent of the sale value of their product upon research. Predepression values of forest products aggregated 3 billion dollars annually. An expenditure for research

of even 1/2 percent of this annual value of forest products would mean $15,000,000 annually. If it is recognized that almost one-third of the Nation's forest lands is in Government ownership, and that another one-third is in small scattered tracts largely owned by the farm and rural group, is it faulty to set the vision of the public carrying at least one-third of such a research program? This would mean a public research program on utilization aggregating at least $5,000,000 annually; at present it is only about one-eighth of that magnitude.

Such a program to improve present products and their methods of production, conversion, and use, and to develop new ones will require the combined efforts of competent specialists in a score of sciences; it will require the services of technologists conversant with such industrial operations as logging, sawmilling, fabricating and secondary utilization processes, building methods, wooden and fiber box making, pulp and paper, distillation, naval stores, preservation of wood against decay, insects and fire, painting, gluing, veneer cutting, and plywood manufacture. Especially urgent research needs lie in the fields of house and building construction, the chemical conversion of wood and wood waste, and the utilization of little-used species.

Good working clues are in the hands and heads of research men that offer prospect of meeting many of the needs enumerated. In this paper no attempt is made to even high-spot these clues. It is hoped and expected that many of you will see some of the clues under development during the visit to the Laboratory at Madison which is a part of the program for this meeting.

There is the further need of developing new products from wood, in which improved mechanization and technical procedures may count more heavily. A recent analysis indicates that in the conversion of 1 million cubic feet of timber into lumber and planing mill products, 75 men are employed, $75,000 in wages are paid, and the resulting products are valued at $250,000; whereas, in the conversion of the same amount of wood into pulp and finally into a good grade of paper, the employees number 150, the wages are $200,000, and the finished products are valued at $900,000. Conversion of the wood into rayon carries these benefits still further.

This particular illustration points a general direction that forest industry should be following. It suggests the need for waste utilization and industrial integration, and for greater adaptation and refinement of products such as contemplated in the proposed research program.

In addition to the specific things already mentioned, there is need for attention and research in developing for the Nation a long-range study of the influence of transportation costs on the economics of distribution of forest products and their resulting influence on growing forest crops. The results of such a study should, through the Secretary of Agriculture, tie in with the Interstate Commerce Commission in regard to freight rates on forest products. This procedure would be similar in principle to that now authorized in the Agricultural Adjustment Act of 1938 for freight rates on agricultural products.

There is also need that further tax studies should be broadened to include measures to encourage good utilization. Also attention should be given to present tariff policies and reciprocal trade agreements particularly with respect to pulp and paper, which do not encourage larger production and use of our domestic forest supplies.

Extension and Education

On the extension and education phase of the problem, the machinery is already in existence so far as the agricultural group is concerned in the form of county agents, extension foresters, land grant colleges, and the like. Yet the machinery is faulty in that forestry receives but scant attention, and of this, forest products utilization in particular gets practically none. Here again it is felt that an adequate appropriation is needed. As a beginning, at least one utilization extension man should be available in each of the states on a footing similar to state extension foresters. This would cost, with necessary travel and incidentals, about $250,000 annually. In addition to the farm group, there is the commercial timberland owner to whom extension and education services should be made available. This latter group requires the development of new extension procedures but there should be no question of the desirability of providing it with a workable scheme, adequately financed.