

Some Slants on Forestry and Soil Conservation

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In the short time available I will not attempt to tell you a complete story of the place forests took in the building up of the soil for this nation. To do so would require too much time. I will, therefore, pass over this point by merely stating that when the first white men came to this continent it was almost 50% forests and the soil was deep and fertile.

The early settlers were quick to recognize the agricultural possibilities of this fertile land, but before they could cultivate crops it was necessary to remove the trees. Trees, therefore, were looked upon by the settlers as a weed and a pest that retarded progress and must be removed by any and every means available. The slaughter of forest that marked man's advance across this continent has had no equal in history. There is no questioning the need to clear the lands most suited for agriculture but the hunger for timber and more farm land did not stop there but went on and on until a tremendous acreage unfit for agriculture had been stripped of its forests. Even today, with a national surplus of farm produce, much submarginal land is being cleared for agriculture.

Finally, far-sighted men of this nation saw that the destruction of our forests was progressing at such a pace that our timber resources would be depleted to such an extent that the nation would suffer if measures were not taken to conserve at least a portion of the nation's timber. Among these men were foresters who had long recognized the need for conservation of natural resources. Thus the forester was one of the first to champion the cause of conservation in this country. One might expect that he would have been interested in timber conservation alone but

such has not been the case. The Act of 1897, which defined the purposes of the National Forests, states that they shall improve and protect the forests or secure favorable conditions of water flow. Thus it becomes apparent that over 40 years ago the forester was interested in maintaining conditions favorable to water flow and the Congress of the United States recognized that there was a relationship between forestry and control of waters that was of national importance. In subsequent Acts Congress has reaffirmed their action.

The fact that these Acts specifically mention favorable conditions of water flow is significant to any one interested in soil conservation since the major cause of soil erosion in the Inland Empire is water out of control. The forests now generally occupy the higher mountainous portions of the country, where rainfall is the greatest and the ground steep, which makes ideal conditions for rapid runoff and soil erosion. It is the job of the forester to so manage the forests that there will be a minimum of erosion within the forests themselves and to control the streams, leaving them so that there will be as favorable flow as possible. The term favorable flow would in this case mean a maximum amount of water distributed over a long period of time, thus making water available for irrigation, power, and other purposes without floods or destruction to land or other property.

Foresters soon learned that anything which removed the forest cover might result in uncontrolled water, floods and soil erosion unless some other cover, crop, or soil retainer replaced it in a short time. By forest cover I do not mean just trees but shrubs, herbs, litter and duff. The land-hungry farmer did not realize the necessity of protecting

the soil when the forest cover was removed. Had he realized this he would not have attempted to farm the steeper slopes. The result of this clearing of steep areas and lack of safeguards against erosion has been gullied and eroded farms, poverty and want. The nation now finds it necessary to replant many of these farms to trees and thereby stop the depletion and wastage of soil, and through the generations to come try and rebuild that which has been lost.

Here is an economic, social, educational and forestry problem all in one. It is an economic and social problem to devise ways and means to stop the clearing of submarginal land and to retire that which is now in cultivation to some other use. Zoning and soil classification have been suggested as solutions. It is an educational problem to teach the people of this country the need of such action, also to teach farmers that there is land that can be tilled but is not suitable for agriculture. It is a forestry problem to restore the areas best adapted to timber production to a productive state. In all these questions the forester should take an active part, working for and cooperating with the County Agents, Agricultural Economists, Soil Conservationists and others directly concerned.

Next to man, the most destructive agency to forest cover has been fire and much of it can be attributed to man's activities and carelessness. Fires have burned over large areas in the past and continue to do so each year. But it is not because of the large acreage burned alone that fires are so destructive. There is no other agency that so completely destroys the forest cover. Silviculturally fire may be beneficial since it may eliminate inferior species but so far as soil is concerned it not only kills trees but removes the herbs, shrubs, debris and duff that are so important in checking rainfall and

holding the moisture until the soil can absorb it. In many instances, even the vegetable matter in the soil is burned, leaving the bare loose mineral soil in a condition easily removed by rushing waters that have no obstruction. The prevention of fires is of utmost importance to the control of soil erosion within the forests and the areas they affect below. Anyone planting trees to control soil erosion should give protection against fire due consideration.

There are other agencies that open the forests to soil erosion besides fire. In the harvesting of timber crops many of the trees are removed but since the duff and forest litter remain there should be little opportunity for erosion to start. But removing logs is heavy work and the logger desires to remove them with the least amount of effort and cost. He therefore follows the line of the least resistance and skids the logs down hill into the gulches and then down them to the creek bottoms. His skid roads thereby conform to the same branching course of the streams. The tractors, or horses if they are still used, and the heavy logs plow the forest duff and debris aside, leaving a path the water can follow unchecked. The result, in many instances, is that the water rushes down these skid-trails, tearing loose much of the mineral soil, forming a larger and larger stream until it empties into a larger creek below, often to continue its destruction there until its force is dissipated and the flow confined in the larger stream channel. Skidding of logs is as old as logging but in later years the methods have changed from horses to tractors. The tractor has increased the size of the load many times and increased the ditch-digging effect of skidding. Of course, not all areas logged are subject to erosion, but this is one of the possibilities the forester must consider.

Many forest areas are used to graze domestic stock and where the ground

is not too steep a limited amount of grazing can be allowed without danger of soil erosion. But such is the farm economy of many stock-raising communities that in order to maintain their existence the ranchers must use all available range to its full capacity. They not only graze all range lands on or near their ranches but often ship and drive their stock many miles to reach summer range. The results are that many forest ranges are used for grazing purposes that due to their steepness and light soil can be grazed only very lightly or not at all without damage. The removal of the sparse forage from these areas and the trampling of feet destroy the agencies that ordinarily trap precipitation until the soil can absorb it. This unabsorbed water trickles down the steep hillside, tearing away small particles of soil and joining with other small streams, soon forming a larger stream and tearing a gully.

The dire need for range makes it necessary that some stock be driven long distances over rough country. Since this stock must travel through ranges belonging or allotted to other stockmen, their routes are confined to narrow driveways. Continued use of these driveways year after year by large numbers of stock breaks the sod and forms a trail or rut down which waters course, eroding away the soil and forming an ever-deepening and widening channel. The social and economic problems involved in managing forest ranges are almost, if not more, complicated than the submarginal land problem. The solution of these problems is the task of the forester.

Livestock is not the only agency that destroys the forest cover by trampling. Man himself is sometimes guilty of this offense. Public camp grounds constructed at convenient places or points of interest, where people collect in large numbers, are often damaged. Cars driven to these areas will break the forest cover if not confined to a definite route by barriers. But even though car damage is held to a minimum we find that the pounding of thousands of human feet pack the soil and kill the small undergrowth and sometimes even large trees near the most favored spots. When this material dies the use changes to another location until this is also stripped of vegetation. Thus a camp ground is progressively opened to the destructive forces of rain and flood making it necessary to close the camp long enough for it to recover.

Forests have played an important part in building up the soil of this country and there does not seem to be any other crop that is so effective in holding soil on steep mountain slopes, and trees are being planted by the millions to prevent soil erosion by wind and water. But the forester must be constantly on the watch for agencies that will undo what the trees have accomplished.

Almost every use of the forest brings problems to the forester, and use of the forests is constantly increasing. New uses are springing up and changing methods require new solutions so that the forester must be ever on the watch for destructive forest and soil agencies, and constantly striving to prevent them.