



"Woodman

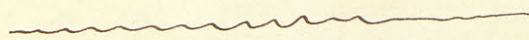
"spare that tree"

"Agricultural Forestry"

Ralph Waldo Rader.

~ Contents ~

	page.
Importance of forests	1
Difficulty of seeing value of forests	2
True value of forests	3
storing of water	
evaporation result.	
Public attention to the problem	6
Means of solution	9
Results of deforestation	10
View of lumber supply	10
Use of forest trees	
railroads.	
substitutes	
Forest exhaustion	11
worry about it.	
solution - plant and study.	
Planting of trees	12
for profit	
for economic purposes	
Conclusion	16



As we look over the works of nature it is remarkable to notice what a vast amount of its make-up is left to the beauties of vegetation in its various forms. I feel safe in stating that no product of the soil enters so largely into the industries and relative prosperity of the world as its forests. Nearly everything that man works with; his tools, machinery, dwelling and other conveniences, owe their existence to forests; in fact I believe that land, that is not furnished with this element of nature would be of no use to a progressive people. Coal mines may be exhausted, oil wells cease to flow, but as long as the earth is populated, our trees will ever be an important factor in its growth.

What weary traveller is not glad to enjoy the beautiful shade of a spreading elmtree, after a tiring trip across a hot deserty section, thanking nature for her gift of relief as he comfortably+at seals himself by a spring of water gushing forth at its base. What farmer regrets that a small part of his farm is a forest - not one - it is one of the things that establishes the

usefulness of his place, and in case of a sale it would be wisely considered by a buyer as a valuable part of it.

Not all farmers can fully realize what is the value of a good forest, since they fail to see all the influences at work producing the various phenomena that directly effect the natural conditions of good farming. They seem to consider mainly, only one class of facts, and that is the actual work connected with it, without properly considering the results brought about by silent nature. In so far as farm crops and forest trees will not grow side by side in the same field; because corn and vegetables do not grow on them, and as no one has yet taught them to graft for foliage that will sell for "leaf tobacco" or that can be manufactured into the fragrant "calorado maduro", the only thing to do is to clear the land of trees and put it into crops. That they can see the results of every year; accordingly the axe and the saw are put into operation and forests are destroyed without being

replaced. Such arguments and conclusions are all wrong.

The theory that forests effect rainfall directly in any way has long been disputed yet I question but that they do, at least whatever effect they do have, it is a fact that they retard the escape of moisture and so extend it over a longer period of time, thus continuing sources of evaporation through which rain is produced. Forests furnish the proper organic material to hold water in great abundance. The leaves and stems form layer upon layer of loose, spongy, half decomposed soil that may receive a vast amount of water and give it up at intervals to suit the condition of surrounding vegetation. The ordinary observer can see this most readily in the winter season: timber land always tends to hold and drift the snow in large banks; now as warm weather follows in spring time the melting of the snow is held in check by the shade of the trees and so, disastrous floods are much less liable to result, both because water is not formed so fast and slow

melting gives the soil time to absorb more of it. In treeless sections, on the other hand, the heat of the sun is allowed access to the soil and continued evaporation results, while the same condition is favorable to the bad effects of dry sweeping winds; thus where there is least likely to be rainfall in sufficient quantity, nature is best provided with means of dispelling it readily. A shady place is all the time cool in summer on account of the presence of moisture. The trees give evaporating surface for the water they hold, to escape and thus the moisture is dissipated through the atmosphere by the leaves at times when the air would otherwise be dry.

Our own state furnishes a good example of the relation between rainfall and forest growth. In a hand book "Distribution & Limits of Kansas Trees" by Prof. Mason I find, in substance, the following. Kansas has a range of altitude from seven hundred & fifty one feet at Kansas City to nearly four thousand at the Colorado line and in this great range grows

severely varieties of trees. The distribution and varieties of the trees and the amount of rainfall varies approximately with the height above the sea. Dividing the slate into sections of a thousand feet difference of altitude, and commencing at the east, below one thousand feet are found forty species of trees and the approximate rainfall is forty one inches. Between one thousand and two thousand are found fourteen additional species, with some others that are found in first section but not on any land higher than the second. The rainfall is nearly twenty nine inches. Between two thousand and three thousand feet are found ten additional species with few of those in previous sections but not abundant: lastly above three thousand, are six additional species found in their favorite habitat. Rainfall for the last two sections averages about twenty three inches. And farther the trees in this highest altitude are not so thrifty or large as in more favorable localities, for example the hackberry grows quite small up on the bluff side. Our common

cottonwood is probably as abundant as any that are not exactly native, and this is found at watering places, springs, or where the roots can reach abundant water supply.

It seems that the natural tendency of american people is to give little attention to things that do not give prompt returns and such is the forestry problem. Some one is always inquiring "Does it pay" and the like and I think it has been demonstrated many times that it does, yet people can see the need of forests and just for the sake of the good they do in forming localities they should not question the financial part of the work, because the indirect way in which it accomplishes its good cannot be figured out by a mathematical equation, so no one can tell whether it pays or not.

I think the question is not so much the preserving of the forests, some of which are nearly mature, but to plant others where the trees have been destroyed, at least avoid such action as is generally if not always, preformed in the great

lumber districts. When you cut away a forest, why, plant another, although I would not insist on having it in the same place, rather not, but put it on land that is not so valuable as bottom land generally is. You need not expect that by planting on your lowest land, the "good" will go up hill and be a benefit to the highest. True enough, it is sometimes hard to start a grove on high ground, specially if it has always been dry, but it is worth many trials, for to engage in work of this kind can be of no harm and is in view of good, and if you do get one started, then you may expect it will benefit your lower land by originating springs or some other form of irrigating agency.

Is there not enough solid worth and virtue in this question to make it of interest to anyone who is willing to better his neighbor and himself? Do not the areas of desolate land in our continent now, that was once covered with beautiful forests, speak for

itself a valuable lesson. Even nature where she has already grown forests though they have been destroyed by man, would tend to the reforestation herself, if not only hindered by the axe, plow, and the fire. Now, farmers are seldom bothered by fires but they do clear away the trees and put the land in other crops, without planting any forest to replace what they have destroyed. It is in lumbering districts the the fires do damage. Only such trees are taken from the timber land as can be made into boards or plank of certain dimensions; the small trees and tops of the big ones, with more or less dry and dead limbs scattered among them, remain on the ground, so when fire starts in such a jungle of combustible material it is difficult if not impossible to stop it. When such a fire goes over a woodland it kills all the young timber, and even that which is just sprouting from seeds in ground or second growth from stumps; and besides all this the fire leaves the ground in

such condition that it more readily drains water and thus does not absorb it as it does normally. In this way the surrounding country is drained in wet weather, leaving no reserve for dryer seasons.

It is probable that only by teaching the people the true value of forests, that reckless deforestation may be stayed and more timber set in. The settlers of Pennsylvania in their early clearing, observed the rule of William Penn "For every five acres in cultivation, one must be left in trees". Many such rules might be made for the guidance of farmers and others but unless they were obeyed they would be useless. Just think of such a scheme as having a narrow strip of trees around every farm, probably not enclosing the whole; but every farmer could put a belt in the most needed or convenient place, considering uniformly and regarding the work of his neighbors. If such a plan should be adopted, what a

system of protection would be established. However, it seems that not many are inclined to start such a plan alone, for we all know the little good that would result from the work if only a few individuals took part.

I once heard of some thoughtless tillers of the soil in a certain place, who cut down their trees because birds lived in them that picked off the grain of their field crops; the result was that they had neither birds nor grain and the place became desolate. In some parts of Spain seeds are sown in furrows and they do not come up for months, simply because not a drop of rain falls; now sometimes this happens two or three years in succession and the consequence is a condition of poverty and starvation.

This thesis is not written with the idea that the forest supply will ever be so diminished as not to equal the demand for building lumber and

in manufacturing, because I think there is timber enough in some places yet I think there are places where there is not enough and such places I refer to. I know and believe that the demand for wood in industry is decreasing on account of the increased use of iron, steel and other metals, but this will not relieve the farmer in seasons of drouth, for he does not raise timber for profit from its sale to manufacturers but to improve the condition of his own industry or to sell or use as fuel at home. I think that nothing can entirely take the place of wood specially as fuel, for it is more likely that timber will grow long after coal is all gone and as we near the exhaustion of coal, wood will be the cheapest fuel. As long as the earth is inhabited there will be trees growing and, I doubt not, that there will be a continual supply. Probably at present one of the greatest drains on our forests is the demand of railroads but it is likely that

before another decade passes a substitute will be found for this purpose and thus another great exhausting factor will be removed. There are many of the small articles and tools on the farm where wood is now used that could be replaced by metal. Still it is hard to conceive that our steamships, dwellings, furniture etc will ever be made of any thing but wood, yet the possibility cannot be disputed. Considered from an economic point of view, then, there does not seem to be much danger of forest exhaustion, because the inventive genius of our people will produce a substitute almost before the scarcity is sorely felt. What should concern us most, then, is the planting in places where there is none or at least insufficient quantity to produce the best agricultural and climatic results.

The theory of forest exhaustion is by no means a new one; in the records of the French government as

early as 1696, they were worrying about the forests of Canada, and I studied for schemes of protection, but in spite of this worry for two hundred years, no practical solution has yet been offered. I am of the opinion that when the people see the necessity of planting, and quit talking about what is being destroyed all the time, then it is that some of the worry may subside. We must destroy some, for to let it pass its age of maturity is injurious to the tree, and then if you have a thin woods you may want to clear it and plant some place else or in other words, practice rotation of crops. Timber land is rich and by a substantial system of rotation, this good may be taken advantage of.

Plant! Plant! Plant is written on every hill and knoll - but what shall I plant and where shall I plant it. - this is surely an important point, yet if every one who ought to plant was

really anxious to do so, it would be easy for them to find an answer. Every man can judge by the kind of land he has what is best to plant; and the "where", he could as easily answer by taking this one principle into account - that trees will grow on land that he cannot farm, if he has such - if not, why then try to make it a shelter for his buildings or crops. By planting this way he can improve his surroundings by modifying the action of winds, making the temperature more regular and obtaining a healthful climate. Farmers should study the character and habits of the most common trees so that they would be able to obtain any result they may desire, provided it is possible, without experimenting. - this is the way they do with their other crops. Very little study in the right line would enable them to succeed without guessing; combining the two conditions of dry weather and "trees for shelter", the evergreens will

probably answer the purpose best if the climate is not too hot; the leaves have very little evaporating surface and consequently the tree does not require as much moisture to sustain it as some do.

The economic farmer will plant such trees as will furnish fence posts and good sized poles for frame work of small buildings for cattle or horses. Last year a gentleman in my neighborhood built a good sized shed, (14x40x15ft high), using hewn oak for the posts, nailing pieces and braces, and he put it up about two thirds cheaper than by buying posts and scantling at the lumber yard.

Profit in timber culture may be realized in many ways depending greatly on the variety of trees planted and the care of them. The individual who wishes to furnish the cabinet maker with material may find it best to plant oak, ash or walnut, and care for them some while young, but if he be fond of sugar and molasses

making, he must stock his land with the maple tree, and he may yearly extract from them a goodly portion of his income. Some may prefer to raise trees for fuel only or nut trees for their fruit or various other kinds for shelter or lumber. Thus you see a farmer can handle forest crops with an assurance of as large returns as from any other, if he only seeks to develop it along a line that will make it interesting for himself and produce what other people want.

Some this timbered land may very conveniently be converted into a timber pasture and so serve a double purpose and may also be used for a feeding lot in winter because of the shelter it affords. The wild game of our land harbors principally in the woods or near by and the farmer who has not this part of his premises is certainly deprived of the right of having any of these creatures at his disposal.

Now in conclusion, it seems to me that on the whole, farmers can certainly

see the necessity of having at least a reasonable portion of their premises in timber, yet I question but that the same destruction will go on, and as much difficulty in planting experienced, until it will be clearly seen that tree planting is a profitable business to engage in. As long as the owners of timberland can obtain a greater income from the timber in market, and the land free from it, they will not be turned aside by public interest, but continue to make their crop in a manner that will give the largest return. This is perfectly natural and undoubtedly right, but what I wish to impress is that an equal amount, or more, land should be planted to replace what is destroyed in order to preserve the surface and climatic conditions upon which the success of agriculture depends. It is as simple as the regular routine of cultivating the ordinary farm crops; both are attended by success and failure. All the attempts of legislation to

give bounties or exempt from taxation land that is in forest cultivation, have failed to produce good results, since they do not appeal directly to the pockets of timber owners.

Lastly, I believe that "Arbor Day" is a practical step in the right direction, specially its introduction into the public schools. Small as it may seem it is capable of extending its influence widely as a power for good. Its celebration inculcates in (all) the minds of the young the ideas that will interest them in later years and make them lovers of trees as such and not for their value as lumber or cord-wood. Teach the children these practical objects lessons in forestry that they may see the important relations to soil and climate and enlist their efforts to save agriculture.

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