

The Relation of the
Forest to Civilization,
by
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Outline of Thesis.

→ Forestry. ←

I Value in Nature.

a, beautifying.

b, purifying

1, Elements in the air and soil.

a, Ammonia.

b, Nitric acid,

c, Carbon Dioxide.

d, animal organisms.

c, refreshing

1, shading, 2, cooling, 3, Moistening.

II Value in Commerce.

a, as an Internal Revenue.

b, as place in Manufacturing.

c, as Fuel (wood).

d, as Fuel in form of coal.

1, coal deposits.

a, of past.

b, of present.

c, of future.

Ref. - Farwood Lectures, Professor Hitchcock.

Preserve, a National Forest; Vol 37.

Forest as a source of perpetual Revenue in
Kansas State Hort. Report 1886. P. 115.

The Relation of Forests to Man.

Every one enjoys the foliage of nature as it is presented, in all its beauty fragrance and grandeur, on every side. The field that is covered with shade trees and bedecked with flowers and shrubbery arranged in the most magnificent manner attracts the eye of all who pass by. It gives an impulse to their activities; it furnishes inspirations, enlivening them in their work.

Psychology teaches, that we sympathize with things about us. If our friends are happy, joyful and glad, so will we be happy joyful and glad. On the contrary if they are sad, heart-broken and have a disappointed look we will assume the similar mood of sadness, of heart-felt sympathy and disappointment. In like manner cannot we say that we sympathize with things about us, being happy, glad, and joyful when walking amid

the fragrant flowers of the most beautiful of flower gardens or in the cooling shade of some beautiful spreading shade tree. On the other hand we bear an altogether different expression if the ground is bare or if the flowers are not fresh and fragrant but faded and wilted, then we assume a different mood and people say that we look like the "last rose of summer".

Could we expect it to be otherwise? We would say no, if we were to agree with the laws of nature, commonly called the laws of the uniformity of nature.

Taken in a much broader sense let us view the effect of a large number of plants, a forest for instance. The cooling effect, the purifying effect, the shading effect will be in proportion to the size and extent of the forest. The change might be compared to that of being taken from the city and put into the country.

In the city the many yards are bedecked with flowers and plants so in the garden. In the country a still greater variety of flowers and plants are enjoyed, so it is in the forest.

The cooling effect of a forest is very great and of much importance to the people of the United States. How does this effect make itself known? The well moistened earth under the trees account for a part. The trees shading the ground prevents the very rapid evaporation that would otherwise result. The leaves and rubbish that falls from the trees act as a mulching and keeps the upper surface of the ground well moistened and also, besides preventing the very rapid evaporation of moisture, tends to check the water and prevent it from running off to the sea. When thus checked it can soak into the ground and furnish water for the wells, springs, creeks, and rivers. There is

However considerable evaporation of water from the leaves of the trees and is of much importance. The decaying leaves besides preventing evaporation enrich the soil probably more than an applied manure. It being more evenly distributed, put on annually and increased in quantity at each years growth.

Some authors claim that a forest, by its cooling effect, causes a greater amount of rainfall than would otherwise result. How true it is I do not know but from personal observation I can say that the ground in a forest always seems to contain more moisture and is richer than neighboring lands. The cause may be laid more to the fact that the evaporation is not so great and that therefore less rain would be required to keep the ground in such a condition. Whatever the cause the result is the same, whether the forest

attracts and causes more rain to fall or shades and prevents the very rapid evaporation from the surface of the ground. The roots tend, also, to make the ground more porous, more pulverized and causes it thereby to hold its moisture better.

Yet still greater is the effect of the forest in purifying the air. The relative importance can readily be seen when we consider and see how and what relation our health bears to plants. The deoxidizing power of plants is of much importance and of the highest significance so far as the maintenance of our individual health is concerned. Animals are continual consumers of oxygen and generators of carbon dioxide and if there were no means of decomposing carbon dioxide and setting the oxygen free the air would become very poisonous and unfit to sustain life.

But plants step in, decompose and use the carbon dioxide that animals give off, and thus keep the air nearly at an equilibrium. Again the decaying vegetable and animal matter furnishes many of the impurities of the air, some of which are the ammonia compounds, nitric acid and gases of all sorts. Some of these pass into the air and are then known as impurities of the air, a few being injurious to our health while others seem totally harmless but tend to weaken the air by decreasing the amount of oxygen in a given volume. Here again plants are known to do their work. They have the power to assimilate the nitrogenous products of decomposition of the organic matter. The increased percent of ammonia in the air can readily be ascertained after having a long dry spell. The first rain that falls is found to contain

quite a bit while succeeding rains show a great and gradual decrease in quantity. Thus showing that frequent rains, which are caused by the cooling effect of the forests, tend to purify the air by taking out the ammonia and the many other like products.

One of the products of organic decomposition is nitric acid which at the time of its liberation unites with some base of the soil and forms a salt. The salt or nitrate varying with the base with which the acid comes in contact. The nitrates being readily soluble in water are dissolved by the rain and can be easily assimilated by the plants. The ammonia compounds are, by the way, the two principal forms in which plants use decomposing nitrogenous organic matter and by which the greater portion of such decayed material is disposed of.

We have considered the value of the forest as it is in nature, we will now consider it in a much broader sense, the value of the forest in commerce.

Besides the beautifying, purifying, and refreshing effects the forest is seen to be a great means of advancing civilization when we consider and see the great many places and uses to which it is put. In manufacturing we cannot but give a meagre idea of its application. It is said that wood is the prime factor in all mechanical devices, being used more than any other thing known. On account of its great use and application and deterioration in quantity it has and is still raising in value and becoming very expensive; and on account of its scarceness and high price will be rapidly replaced by other materials if its quality and quantity is not kept increasing.

in proportion to its use.

The part it takes in furnishing us our internal revenue is very great and is worthy of some note. It is stated in the Statistical record of 1880 that the forest products of the United States amounted to \$70,000,000, that of corn \$679,000,000, that of wheat to \$371,000,000, that of cotton \$280,000,000, and that all the mines of gold, silver, iron copper, lead and zinc to \$106,000,000, from which we can readily see the relative importance of the forest products.

There is no product, no single source of revenue, which equals that of the forest. Cannot the forest be made a source of perpetual, national revenue? Cannot a forest be planted now which will in course of time be as good as the ones we have? Cannot laws be made to protect the forest we have so they will not be encroached upon up to certain limits

Yes all these and more can be done. Each and every individual who is in the possession of a few hundred acres of land can put in a number of forest trees. Planting the most substantial and those best suited for the purpose so he will receive the the greatest benefit. A man having five hundred acres of land could easily and well pay to put in from forty to fifty acres of forestry, which if properly cared for would in a few years bring as much as most any other crop requiring the same labor and care. A man possessing one thousand acres could profitably put in from one hundred to one hundred and twenty five acres of forestry, and every man possessing land could profitably put in as many acres according to the proportion forty to fifty acres to every five hundred.

What effect would this have in a few years on the forest product. The result cannot be over-estimated. so rapid would be the growth, so great would be the change.

The great application of wood as fuel is of much importance and attracts the interest of all but for want of space will but hint at it and pass on. There is however one phase of this that needs a few comments, that is the importance of the vast beds of coal. These coal beds are, as has been clearly shown, formed from vegetable material, which deposited in large masses and covered with earth, is converted into coal. But although there are great coal beds at present they will in time become extinguished unless new beds are formed at present to furnish coal for the future. But how can they be deposited

when the forest and other rank vegetable growth are continually decreasing in quantity from year to year.

Cannot we make the forest of the future equal to that of the past? Having at our command all the necessities for forest culture it does not seem unreasonable to say that we can since we know, after so many years of experience, the trees best adapted and best suited to our climate. We ought, with but comparatively small amount of labor, produce, practically speaking, forests very much superior to those which have grown heretofore, without care, without culture, without pruning, without selection of the best and most useful trees. They were planted in a haphazard sort of a way, no system of planting, no system of culture, no system which would cause it to contin-

nally increase.

We should so handle the forests of today that their products will be more ample, richer in variety and better suited to the wants of our future generations, better suited to the wants of our children, better suited to the wants of a perfected civilization of the future. As civilization advances so must the forest advance.

It is quite essential that if the forest is to keep its place in industry it must continually be on the increase and not at a stand-still.

Perhaps we should be greatly surprised at the rapidity with which a forest grows when once started. The small trees of today will, in a few years, become giant trees. We can hold in our arms a few small switches or trees, which if planted would in a few years make a large forest.

We can see the great advantage in the forest, the great interest derived therefrom and yet there is stirred within us no enthusiasm to put it in practice. And why? Because we feel that the benefits will not be immediate, because we feel that it is a crop which we cannot reap, because we feel that we must leave it for our children. Let us try to stir up this feeling of enthusiasm and make our farms beautiful, our towns pleasant, by starting a new system of planting trees which will in a few years produce a very marked change as heretofore stated, in purifying the air, changing our dry deserts of the West to moist and fertile lands, furnishing a large product for industry and furnishing products for a greater revenue.

Then can we say that we

have accomplished a great work.
Then and not until then can
we say - that the forest will be
the greatest source of revenue. Then
can we say that, "Forest is King".

The End.