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A LESSON IN FORESTRY

Those who are trying to save the forests that clothe and protect the soil around the sources our great water sources find their strongest arguments in the experience of European countries, where governments are striving by careful cultivation and at great cost to make good the losses caused by the recklessness, selfishness or ignorance of past generations. They are also able to argue effectively from evidence procured at home. Men who know small streams have dried up and disappeared after the removal of standing timber on comparatively small areas around their headwaters can easily understand how certain changes in the streams that are fed from the Adirondacks have been caused by the reckless cutting of forests on the Adirondack slopes. The movement for the preservation of the Hudson is supported by proofs taken directly from the history and condition of that stream as well as by the great body of evidence relating to this subject which is furnished from all parts of the world.

The engineers of the Water Department of *Philadelphia have recently discovered how seriously* the Schuylkill has been affected by the destruction of forests around its headwaters. For two years they have been engaged in a careful examination of all possible sources from which that city can obtain a supply of water. The stream flows through a thickly settled valley, and is in fact a great sewer. Its water is not fit to drink. The engineers desire to provide for a supply of about 210,000,000 gallons a day—the quantity that will be needed 30 or 40 years hence. The have discovered that even if the Schuylkill waters were wholesome it would be impossible to secure enough of it to supply the city in the near future, because the minimum flow is decreasing. In fact, the stream at low stage now furnishes very little more water than the city will require 30 years hence.

Sixty years ago the Schuylkill's summer flow was estimated at 500,000,000 a day. Successive measurements made from time to time within the last 60 years showed a gradual diminution, until it was determined in 1874 that the minimum flow was only 250,000,000 gallons. In the course of time, if the city's growth should not be checked and if water should be taken from no other source, Philadelphia will be pumping up the entire river during the summer months.

The remarkable diminution has been caused by cutting off the forests around the headwaters of the stream. As Colonel Ludlow, the chief engineer of the Philadelphia water department, said not long ago at a meeting of the Franklin institute: "The destruction of the forests has to a great extent deprived the river of that power of conservation which is given by woodland, whereby the rainfall is held back and checked, as it were, in its passage to the stream, and the flow is more nearly equalized and prevented from dashing down and passing out." The rainfall rapidly descends to the stream, causing freshets which sweep down the valley, and in time of drought the river shrinks to a very low level because there is no "sponge" around its sources to retain moisture.

These facts concerning the Schuylkill have been discovered as the result of typographical and hydrographical surveys carefully made by the engineers who have been studying a problem whose solution w... be a matter of great importance to 1,000,000 of people.—*Lumberman's Gazette.*

THE USE OF PINE SAWDUST.

SIR,—Some enquiries have been addressed to me as to whether pine sawdust, though considered injurious to soils in general, might not be valuable as a mulch around evergreens, as its decomposition would apparently furnish the ground with the material need for the construction of the growing tree. As the question *of much interest, perhaps you will allow me a* few words in reply in your columns.

By all means leave no young trees without mulching during its first years of growth, unless you adopt the equally good or better plan of stirring the soil around, wide as the branches spread, and deep as you can without hurting the small rootlets, two or three times a summer. Then, if you have been so wise as to plant some square acres, so close that the wind cannot injure their early growth, the falling leaves will stay there and form the natural manure of the tree. Do not, I beg of you burn these; nature lights no fires under her trees. But, even if your trees are single or in rows, the leaves will blow away, and in that case, if you can, in addition to stirring or mulching, give each tree a little manure, so spread as neither to come rankly into contact with the roots, nor too strongly to infect the air with its odour, you will soon see how readily tree trunk and branch and spreading wealth of leaves will repay your care.

The tree receives its nourishment from first the roots, a nourishment which passes upward to the leaves, and is there greatly changed and added to by contact with the air. It then passes to every part of the tree, giving each its addition of growth. The woody substance—that which fire transmits to the atmosphere, leaving ashes behind comes principally from the air.

It will thus be seen that the mulching with pine sawdust cannot give the tree its woody substance, as that is supplied by the air. As to the influence of the pine sawdust on the ground, it has long been considered injurious, even when it had, by being used as bedding in stables, been permeated with what by itself would have been a valuable manure.

It is, therefore, inadvisable to use it for mulching, though hardwood sawdust or hardwood or hardwood chips, or straw, leaves or coarse manure, are all excellent.

At this season of the year, to speak of another branch of the subject, I may state that the seeds of the hard maple, beech, oak, hickory, ash, pine and other evergreens, are ripening, and that those who mean, in a couple of years, to start plantations, might save great trouble and expense by sowing for themselves now, transplanting once when ready, and then planting out at the proper season.

R. W. PHIPPS.

Toronto, Oct. 3.

PURCHASES OF PINE.

The *Northwestern Lumberman* says:—Mention has before been made of the purchase of a large amount of pine in the Province of Ontario, north of Lake Huron, by an Alpena, Mich., syndicate, the design being to bring the logs to the lake, and then boat them to Alpena for sawing. The syndicate is composed of Frank W. Gilbert, Charles W Richardson, William Johnson and Thomas Collins. They have purchased what is called the Harvey limit, on Fish river, (probably White Fish river), comprising, according to estimate, 150,000,000 feet of pine. The *Lumberman* is also informed that a second purchase of 50 000,000 feet has been made, which will give the syndicate a total of 200,000,000 feet of stumpage as a pine resource. The logs will be brought to the lake near the mouth of Spanish river, and there shipped to Alpena. The syndicate has purchased the old big ferry boat Michigan, which most travellers between east and west remember as at one time the means of transfer between Windsor and Detroit on the Great Western and Michigan Central route. This boat will be transformed into an immense log barge, and will be towed between Spanish river and Alpena. It is called "Gilchrist's yacht" at Alpena, but being a Canadian bottom, it retains the legal name of Michigan. It will carry 2,500,000 feet of logs. The loading will be done with an endless chain apparatus, carried by steam.

THE WHITE ANT

The animal which we are in search of, and which I venture to think equal to all the necessities of the case, is the termite or white ant. It is a small insect with a bloated yellowish white body and a somewhat large thorax, oblong shaped, and coloured a disagreeable oily brown. The flabby, tallow like body makes this insect sufficiently repulsive, but it is for quite another reason that the white ant is the most abused all living vermin in warm countries. The termite lives almost exclusively upon wood; and the moment a tree is cut or a log sawed for any economical purpose this insect is upon its track. One may never see the insect, possibly, in the flesh, for it lives under ground, but its ravages confront one at every turn. You build you house, perhaps, and for a for a few months fancy you have pitched upon the one solitary site in the country where there are no white ants. But one day suddenly the door post totters, and lintel and rafters come down together with a crash. You look at a section of the wrecked timbers and discover that the whole inside is eaten clean away. The apparently solid logs of which the rest of the house is built are now mere cylinders of bark and through the thickess of them you could push your little finger. Furniture, tables, chairs, chests of drawers, everything made of wood is inevitably attacked, and in a single night a strong trunk is often riddled through and through and is turned into matchwood. There is no limit in fact to the depredations of these insects, and they will eat books, or leather, or cloth, or anything, and in many parts of Africa, I believe if a man lay down to sleep *with a wooden leg, it would be a heap of saw*dust in the morning. So much feared is the insect now, that no one in certain parts of India and Africa ever attempts to travel with such a thing as a wooden trunk. On the Tanganyika plateau I have camped on ground which was as hard as adamant, and as innocent of white ants apparently as the pavement of St. Paul's, and wakened next morning to find a stout wooden box almost knawed to pieces. Leather portmanteaus share the same fate, and the only substances which seem to defy the marauders are iron and tin.

PIPING SAFETY VALVES.

The diversity of opinion which has existed among engineers in regard to piping safety valves is gradually resolving itself into a decided opinion that they should not be piped at all, but should be left free to blow directly into the boiler room. Used in this way the valve cannot blow without attracting attention; a leak will be immediately detected, and no chance will be allowed for water to stand upon the valve as when, for instance, it is piped straight up through the roof without proper drips. The effect of the is not only to impose an additional load upon the valve and to corrode the working parts, but it affords a very potent cause for explosions in winter by becoming frozen and binding the valve to its seat. In these days of pop safety valves, which preclude the necessity of a constant drizzle from the valve and render only an occasional short discharge necessary, much of the objection to open discharge into the room has disappeared and the tortuous and dangerous escape pipes, are becoming a thing of the past.—*Journal of Commerce.*