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into logging costs, milling costs, lumber transportation, and selling costs.

The sawing and finishing of lumber, together with lumber transportation, have already been highly standardized. No doubt many further economies will be effected in these departments from time to time. A start, which has every promise of large results, has already been made in the, heretofore, much neglected field of lumber salesmanship. But perhaps the largest field for economies is that of logging, and the hope for greater efficiency in this quarter is in the development of the art of logging engineering.

As agriculture calls to its aid so much of the sciences of chemistry, physics and biology, so the logging engineer, in the development of his profession, takes toll from the whole field of mechanical science, and calls for much of the best that has been produced by that modern alchemist, the metallurgist. No occupation calls for greater resource and adaptability. Every logging unit differs from every other in the complexity of variations in topography and stand; of the thousand ways in which logging may be done there are not many profitable ways, and there is, of course, only one best way. The man who knows and can effectively carry out one or more of these better ways is a potential logging engineer.

The successful logging engineer of the past has compelled success by a more than average ability and adaptability. How may the average logging foreman improve his methods and thus take the first steps to qualify as a logging engineer? Must it not be through bringing to him the results of the best thought of the thousands of men who are devoting their lives to this work?

The graduate of the forest school, with a special training in the department of logging engineering, may hope to be of considerable service to a logging company from the start, but, to be of the greatest service in the end, he must be willing to start his practical apprenticeship at the bottom and work up.—*Dr. J. F. Clark.*

SMELTING AND REFINING ORES IN CANADA

One of the immediate results of the present war has been to encourage the smelting and refining of ores in Canada. While certain metallic minerals have, in the past, received preliminary treatment in Canada, the ordinary metals of commerce, excepting lead, have been exported for refining. Recent reports announce the establishment in Canada of plants for refining both zinc and copper.

Leaks in gas pipes can be temporarily stopped with soap.

Forestry and the Lumberman

By Working Hand-in-hand Good Results May be Secured

What is the duty of the lumberman toward forestry? Essentially, it is to keep an open mind. He should be receptive in two ways. First, to understand thoroughly how the public ownership of timber lands under scientific management may affect his own business, both now and in the future; second, to determine what principles of forestry as practised by the state might be applied to advantage on his own lands. He should consider these matters for his own immediate business good, and in a spirit of friendly co-operation with other private owners and the state. Without such co-operation it will not be possible to carry on in the future a permanently profitable lumber business.

In years gone by, the lumberman, with good reason, has taunted the forester with his ignorance of practical lumbering conditions. The forester has grown; and, although he still has much to learn from the lumberman, he now knows that turn-about is fair play. He asks that the lumberman keep an open mind toward forestry; that he take a lively interest in those problems in the solution of which the forester might assist him; and that he then apply to his own lands such method of forestry as may work for his own practical advantage and the ultimate good of the state.—*Olmsted.*

Doubling the Price of Herring

Proper Curing Methods will Make Canadian Equal to Scotch Product

To dispose of 600 barrels of cured herring at \$11 per barrel, f.o.b. Nova Scotia, while his neighbours were getting only \$4 to \$4.50 per barrel, was, last summer, the fortunate experience of a fish packer at Goldboro, Guysborough county, N.S. This highly satisfactory result was secured by discarding the old-fashioned Nova Scotian style of packing in favour of the modern Scotch method of carefully packing the fish in tight, well-made barrels that will retain the pickle and preserve the flavour. This was done in consequence of the representations of Mr. J. J. Cowie, inspector of pickled fish for the Fisheries Branch, who, at the request of the Goldboro firm, secured an expert from Scotland to take charge of the work. As a result of this valuable object-lesson, Mr. S. Y. Wilson, a large dealer of Halifax, has determined to put up some 2,000 barrels next summer in the Scotch way.

Forest Fires in Northern Alberta

Tremendous Losses in Well Stocked Areas—Little Remains of Mature Timber.

Enormous damage has been done by forest fires in the Smoky River valley and the Grande Prairie country, in northern Alberta, according to a report recently published by the Dominion Forestry Branch. The examination, made under the direction of J. A. Doucet, covered an area of 8,000 square miles previously well stocked with forests of various species, including lodgepole pine, white, black and Englemann spruce, alpine fir, tamarack, aspen and birch. On account of unfavourable soil and topography, only a very small portion of this area can ever be used for agricultural purposes. The agricultural lands are for the greater part limited to the prairie, of which there are considerable areas, and in the development of which the timber resources would be of the greatest value.

The report shows that the results of the repeated fires in this region have been appalling.—Of the 8,000 square miles well wooded even within the last hundred years, only 648 square miles, or 8 per cent, still retain a forest cover 100 years old or over. These are the only portions which can be regarded as having a virgin cover. Thus, 92 per cent of the area has been burned over at least once during the past hundred years.

About 8.5 per cent of the total area bears timber from 50 to 100 years old, averaging 70 years, while 14 per cent bears timber of small pole size, averaging 25 years

of age. Less than 20 per cent is covered with young reproduction, while 3,690 square miles, or 46 per cent of the total area examined, is covered with brush, mostly swept by fire within the last 30 years.

Including the young reproduction area, the percentage of the territory swept by fires during the last 50 years totals about 65 per cent. In some places, the soil cover has been entirely removed, and it will be long before another forest can take root; in others, the heavy slash endangers the young growth and the little remaining old forest.

It is estimated that, within the territory covered by the report, not less than 16,000 million feet of merchantable pine and spruce timber has been destroyed by fire during the last 30 years. At an average valuation of 50 cents per thousand, this represents a loss to the country of \$8,000,000, in addition to the serious depletion of game and fur-bearing animals.

The report closes with a strong recommendation for the establishment of forest reserves and for the allotment of sufficient funds to provide for adequate protection.—*C.L.*

THE FORESTER

There are foresters whose vision sticks in the woods and does not piece through to the fact that the welfare of the people, not the welfare of the community of trees, must be the aim of the forester's endeavor. Foresters are only the medium through which he works. The most successful forester is the one whose life and work contribute most fully to the necessity, convenience and pleasure of the greatest number of people, not necessarily the one who grows the most wood per acre in the shortest time.—*DuBois.*

Unsafe ladders have many permanent disabilities to their credit.



Cut No. 11.

RESULTS OF FOREST FIRES

Young stand of lodgepole pine coming in on old burn, in Northern Alberta. area of 8,000 square miles, 92 per cent has been burned over the past 100 years.