

THE FORESTS AND THEIR MANAGEMENT.

We take the following from Mr. R. W. Phipps' report to the Ontario Government:

THE BRITISH ISLES.

There are many forests, both Crown and private, in the British Islands, concerning which, as they appear to be managed on different systems, I shall merely state such points as seem to have some bearing on possible operations in Canada, or may show the progress made in late years in planting and foresting operations.

In the New Forest, Hampshire, containing 91,000 acres, much has been planted with Scotch fir and larch in 1853, and with oak in 1857. What is noticeable is that the first, planted as nurseries, are planted here so much before the others (both are elsewhere frequently planted at once). It is done to establish the nurseries, and give shelter from the cutting winds prevalent here. They transplant here from the first nursery to another—the last one near the ultimate destination of the trees.

The Dean Forest, in Gloucestershire, has 22,600 acres, in all. The commissioner visited twelve plantations here, ranging from 1844 to the present year. Nurseries and hardwood are put out together.

In Scotland, the nurseries of Lawson & Sons, near Edinburgh, are noticed. They contain 270 acres. There were thirty millions of coniferous seedlings in the beds. The *pinus pinaster* is largely used for planting on light sandy soils near the sea.

Before sowing or forming the nursery bed the land is trenched to fourteen inches, and a crop of potatoes taken off to clean it. In the following spring the seed beds are laid out, and the upper soil carefully prepared to suit the nature of the trees which are to be sown. Most of the conifers prefer a light dry soil with a considerable proportion of sand, and this has the advantage that the seedlings are easily shaken out and freed from each other for transplanting. In the case of Scotch fir and larch, the seed is sown in May or June, and left in the seed bed for two seasons. The seedlings are then planted out in lines fourteen inches apart, and three inches between each plant, are left thus for sometimes two years, and then planted out for good. It is thought better, if the frost can be prevented from killing the seedlings, to sow in April, and transplant one year after, or even the same autumn, as soon as the leaf bud is hard. The spruce requires two years in the seed beds, as its growth is slower than that of larch. The *pinus pinaster*, *austriaca*, and *laricio* are sown in May or June, and transplanted the same autumn into rows six inches apart, the plants close together. Hence they are transplanted the following autumn, into rows fourteen inches apart, where they are left one or two years before being planted out. It is considered an object to shorten tap-roots and encourage laterals. (This last idea, it will be noticed, may assist the tree; but not that main object of forest preservation, the connection between the upper and lower strata.)

The Earl of Seaford's woods, in Strathpey, give an instance of the rapidity with which planting is going on in Scotland. There are 60,000 acres, of which half are in timber, yet so young, that the commissioner saw little large wood ready to cut, but plenty of thinnings. The overseer intends gradually to plant the whole, so that, in course of time a thousand acres could be cut annually and a thousand planted out, which could not, it is said, fail to bring in a large revenue, without trenching on the capital of timber. Three lines of Scotch fir the commissioner saw lifted and tied in bundles for planting out. This was done expeditiously by the five-pronged fork, two men digging out the young trees, which are then lifted by women, the earth shaken off, and tied in bundles for planting. This list will give some idea of the progress made on only one estate:—Duthill hill, 700 acres, planted six years; Deshar, 1,100 acres, within seven years; Slumore, 600 acres, five years; Revock, 700 acres, four years; Bengalupin, 1,200 acres, six years; Advie, 300 acres, one year.

A point here presents itself which, though it seems vague, and not according with Canadian experience, it might be well to examine and find the meaning of. The Strathpey overseer

considers that "in Strathpey, at least, the land should be left barren and untouched, after it is cleared of trees, until the natural herbage, whether heather, grass or moss, which existed before the trees grew, recovers; and that if planted before this takes place, failure will result."

It may be remarked that oak is now little planted here, its use for ship-building being much less than formerly; while, even for backing for ironclads it is abandoned in favor of teak, which has not the injurious effect upon the iron produced by the contact of oak. Scotch fir and larch are much planted, and are rapid in natural reproduction. Whenever the natural vegetation has sprung up in places formerly covered with coniferous trees, the seeds germinate. This is then protected by wire fences with great success. In a large tract of self-sown forest in Granton district, enclosed six years ago, the Scotch fir average six feet high, while individual trees run up to ten feet.

Wire fence, tarred, three feet eight inches high, can be constructed for seventeen cents per yard, posts and all, and is much used. After ten years, or when the trees have grown out of harm's way, pasture is sometimes let. Enclosed plantations for this purpose command 2s. 6d. per acre, while ordinary hill side pasture gets but 6d.

The Earl of Mansfield's woods, in Perthshire. These are about ten thousand acres. Planting is going on constantly. There are nine district foresters, and a large staff of woodmen. A large plantation of Douglas pine is mentioned as doing remarkably well. They were planted in pits fifteen feet apart, fifteen inches square, and ten inches deep, with larch and Scotch fir nurseries at four feet apart. The pines average twenty-five feet in height. The nurseries are being removed. The overseer disagrees with the Strathpey statement as to leaving the land bare, and considers that it is only the insects (the beetle) which hinder the growth of seedlings on land cleared of conifers. He succeeds well by excluding cattle for one year, letting the grass, etc. grow, then burning it when dry, and planting out.

The Duke of Athol's woods, in Perthshire, comprise 10,000 acres, and were commenced in 1728, principally with larch, which has done well in places, but is now undergoing the substitution of Scotch fir which pays better. Oak coppice cut at intervals of twenty years yield \$60 per acre.

WOOD-WORKING FACTORIES.

A correspondent of the *Builder and Wood-Worker*, who has evidently "been there," writes: We do not have to draw largely on our imagination for persons who make up the rank and file of men setting up and running planing mill machinery. We just take the men as we find them, and the machinery, and by uniting them together the picture soon becomes a reality, and the mystery of imagination ceases at that moment to be mysterious. But the kaleidoscope does not produce a greater variety of fantastic forms than does the vast number of mills through the country, each showing some different person and different style in the management and care of that particular mill. Each has his own particular way, which shows itself in every nook and corner, and about every piece of machinery that has anything to do with. You go into a place and see everything in a tumble down style, and bolts running half off the pulleys on the leader and the other half off on the driven, and boards and pieces of plank nailed up here and there, half worn through by belts they are trying to lead or drive somewhere, the said belts having three or four more lacings in each, and going around the pulleys like a Virginia fence, making it almost like running a gauntlet to get through the mills. Tools lying helter skelter, here and there and, perhaps, on the floor in the shavings; and the first thing you hear from them they go rattling through the suction fan, or the fireman has pulled them out from under the furnaces when cleaning out to start the fire in the morning; and so through the whole arrangement of the mill, everything from top to bottom at loose end.

We do not have to draw largely on our poor ideality to complete this picture. The person

having charge, very likely, leaves everything to the care of irresponsible workmen, whose only care seems to be to get through as little work as possible, and get their overalls off ready to jump out of the mill at the first sound of the whistle or bell; the aforesaid man in charge having left sometime before, that he may spend a little time in a favorite grogery and get fortified for the afternoon's performance or, perhaps, get braced up for to-morrow. Such companionship completes the picture drawn and is true to life.

Now take the opposite conditions, and we see belts running perfectly everywhere; everything is free and clear. One lacing in a belt and perhaps, what is infinitely better, the belts are made continuous by lapping and riveting; everything is in its place. If you want a wrench or file or any tool necessary about the mill, all you have to do is to go where they are always kept and you are sure to find the tool you want, and never, or scarcely ever, find a tool in the shavings or rattling through the suction fan, and there never is found little piles of pieces of boards lying around in the way, taking up room that could be used to very much better advantage as a clean place, where you could put some useful thing if you wanted to. I do not ever see this man leaving any responsibility, which he ought to bear, resting on the shoulders of those who are not fit persons to trust it with, and he makes it a rule to see that everything about the mill and machinery is properly attended to. The oiling is looked after, and there is never a hot box because he knows the condition of every box and bearing about the mill. You never can go through the mill and hear a squeak here and another there and another over yonder, as if there was half a dozen wagons going through that had not been greased for the last decade. You always find this man there quite as soon as any of his men are, and has everything ready to go ahead as soon as the machinery starts up, and is there until the mill shuts down, and never has to visit any saloon or grogery on the way home to brace up for any future task or duty.

This is one picture which this kaleidoscope shows us, and we turn it just a little and we see another. It does not necessarily follow that because a man is orderly and keeps everything in its place, that he would be one that understood just how to file a saw, or sharpen a knife or a side-cutter, and keep it in good working shape. Keeping tools in their place and keeping them in good condition to do their work well and easily, are two very different things, although it would seem that a person who was nice and orderly about one thing would be so in others, and would take pride in the work of his hands.

We will go into a mill, however, and look around, and we come to a saw bench and see a saw with one large tooth and one small one, and one long one and a short one, and one filed very fleaming and another almost square; and looking at some sawn stuff, it looks as if a thousand demons had gone through it with a hurricane. More than as likely as not this abused servant had three or four black spots on it showing how terribly it had been handled.

This is a specimen of the rest of the tools in the mill. A pair of side-cutters on a bench near by confirms the statement. One is filed short and the other a long bevel, and the grooving bit of one stands out one eighth of an inch further than the other, and one is filed standing and another the opposite, every individual bit is sharpened at a different bevel. We look for stuff that has come from the mill with tools in this shape and we find the last production and, oh! horrors of horrors, the demons have been here surely and have been recruited. Do we wonder that carpenters complain of the bad work done by planing and matching machines? But there is a relief to this picture, and a little turn of our magic picture maker brings it to us in an instant.

We see a man just stopping his saw, and before he shuts off he takes a piece of broken grindstone, and carefully holding it up to the saw, just brushes it over. Noticing this we ask, "Do you joint a saw every time you take it out to sharpen?" He tells us "No," not always, but as often as once a day he just goes over it to keep the teeth of an even length,

which helps to keep the out corners full and makes the saw run enough better to pay for the trouble. When he takes the saw out he holds it up to you, and you see every tooth is so near alike that the eye can not see any difference in their size or shape, and the saw shines like a piece of burnished silver. This draws out the remark that he has not got any black spots on his saw. Pleasantly he tells you there is no need of any if you use the saw right. If you keep a saw round, and the outside corners full, and a good fair set in it, and don't crowd it if it binds in the cut, which it will do sometimes, there is no need of making black spots on a saw. It shows us some of the sawing, and you are surprised that a man can do so nice work, but when he comes to put in another and you hear it make that fine, clean clear cut, so peculiar to a saw in order, that you do not wonder that his sawed stuff looks so nice. He tells us that they have one man to look after the saws and no other man ever has anything to do about filing or setting, which makes the saws all come from the filer, uniform in set and shape of tooth, and if there is hard wood to saw, there is always something ready for the work. We now go on to see the man sharpening the knives of a matching mill, and we see him taking pains that the knife is straight, and he gives it a good bevel so that there will be a good clearance in the cut, so as not to go pounding through stuff instead of making a clean easy cut, which old planing mill men can tell by that peculiar sound given by a mill when it is in good nice working trim. The side-cutters are now looked after, and we see that each bit has done an equal share of the work and are all dull alike; and in filing them to use again, pains are taken that every bit is the same bevel and they are set out alike, and if for working two sides they are set perfectly square and filed, so that they will make a tight joint on the surface. We see the work coming from this mill as near perfect as it can be. The work comes just right, and the matching is neither too loose nor too tight. So ends this picture.

We might keep turning and changing the views almost indefinitely and still there would come continually perfect representations of the different characters, who have the charge of some one of the thousands of mills running in the different parts of the country. Each individual must show his individuality in his personal work, and owners must test these different realities to see which best comes up to the standard which they demand.

NUMBER OF TEETH IN A SAW.

It certainly seems to me that a man must be devoid of all reason and common sense when he undertakes to tell what gauge of saw, number of, or shape of teeth is the best for all purposes. Why, sir, I have seen saws advocated in the numerous articles in your paper of late that would do (if properly filed) splendid work on some mills, and on others would not go one-half its diameter into the log before it would be broken into hundreds of pieces and scattered all over the adjoining country. Where would a 20 to 30 tooth, No. 10-gauge, 56-inch saw be in a 24 inch cut of yellow Texas pine, on a 9 to 12 inch feed, with belt and engine power behind it sufficient to drive the arbor its 850 revolutions per minute, whether the saw went straight or crooked? It would be non est in about a second after it touched the log. Again, what would be the result of a 100-tooth, 7-gauge, 56-inch saw on a 1½ to 2-inch feed, in yellow poplar or white pine, with light power to drive it? It would scrape away (not cut) until the belt slips, engine checks down, and the speed of itself slowed down so that the centrifugal force is not sufficient to keep the saw straight against any pressure on the teeth, and consequently doubles up or flops over one way and then the other, until it gets hot from the point of teeth to the eye, and you can do nothing with it until it is cooled off; then you start again and have a repetition of the same.

Now, all I will say in reply to those who think the fewer teeth you have the lighter your saw will run, is for them to try the experiment of laying a board down on some solid foundation, and then take a quarter-inch chisel and place it just far enough from the end so that it will cut