

that he has thus been able in every case to satisfy his customers.

At the Market street station the firm has another large ware house, where the heaviest kind of machinery is stored. A switch runs right alongside this warehouse, so that boilers, engines, etc., weighing many tons can be handled to and from the cars with the greatest ease. Inside the warehouse as we enter there is a hundred-horse power engine, which in a few days will be shipped to Colpoys Bay, to run one of the giant saw mills that are to be found in that region. Outside on the platform is the fly wheel for this engine some ten feet in diameter, and weighing some four or five tons. Near this is a biscuit making machine, fitted up with all the devices for turning out every kind of biscuit known to the trade. Further down in the shed is a hand engine, which has just come in from some village that has become ambitious enough to buy a steam engine. Near it are several threshing machines with their complement of traction engines to draw them about in the fall. There are also here a number of portable engines on skids, which are intended to run saw mills, stone crushers, etc. Near the door is a planer and matcher, which will shortly be shipped to Hastings county, and near it is a stave cutter intended for the north-western part of the province. Outside are a pair of hydraulic rams, quiet enough now, but powerful lifters when put in action. Water wheels of every kind, size and description are piled up around, while a part of the yard is especially devoted to boilers of the largest kind. On the platform near the south is a hundred-horse power boiler, ready to be shipped to the north, where it will keep the saws of a monster mill in motion. Smoke stacks of all sizes and lengths are piled up, ready to go out with the engines and boilers. On the platform, too, are several large drills and planers for heavy iron work, and near them is a curious machine that will turn out a steady stream of barrel hoops. By its side is a solid, grim looking machine of iron and steel, whose ravenous jaws will shortly be put to work grinding cinders for the asphalt sidewalk of the city.

Altogether this is one of the most bustling and busy establishments of our city, and as for the rest, Mr. Petrie's name is synonymous for reliability and square dealing throughout the Dominion.

TEACHING A NOVICE.

"Will you kindly advise me if I can get any book giving instructions by which a novice may acquire proficiency in estimating stumpage, or number of feet per acre of standing timber. What is the best and cheapest work, and where can it be had?"

We do not know of any such book outside of a good lumber journal. Aside from these, a book about five feet six high, weighing from 150 to 175 pounds avoirdupois, capable of swallowing about four pounds of salt pork a day, and rivaling the pedestrians who recently walked 100 miles a day in New York, in point of endurance. A book written upon the brain of a man who has made his home in the wild woods, is the only work of any reliability of which we have knowledge. Our advice would be: 1st. Get such a book (?) 2nd. Go yourself. 3rd. Send a boy. If you adopt the second or third propositions, you will first need an outfit. This is not to be found in the parlor of a \$4 a day hotel, nor in smoking 25 cent cigars. Get a pair of army blankets and a picking strap, a frying pan and a tin pail, a big chunk of salt pork or bacon, a few quarts of beans and a bag of flower (some land lookers carry their flower in a bottle, claiming superior virtue in the extract.) Don't forget a plug of black tobacco and a briar-wood pipe. An axe and a rifle come handy. If you are a novice with the axe don't take a double barreled (beg pardon, double bitted) one, lest when you come to use it, you find it making more time in your leg than in a tree.

Thus provided, with a folding rule, a log book and a memorandum book in your pocket, you start for the forest. You strap the goods, made up into a pack weighing 75 to 100 pounds, upon your shoulders. If you have no suitable packing strap, take off your drawers and pass the legs through the ropes and over your shoulders; it makes a good substitute. Thus equipped you are ready for an exploring trip. Calfskin boots and morocco slippers are not recommended for woods wear, and kid gloves are out of place. First find a section corner to make sure you are on the right land. Look the ground over for awhile, pick out an average spot of timber, pace off 72 paces square, and cut down an average size tree. If you don't manage to lodge it in another, and it don't kick back and knock you down, measure it off into 16 feet lengths, and by your log tables find out how many feet there is in it. Count the trees on the acre, and you can figure out how many feet they will probably scale. If there are punk knots in sight or any other defects which will make the lumber cost more than it will sell for, it is not advisable to count the tree. By the time you have tramped over 40 acres your "novice" will probably enjoy his pork and no less his "dudeen." When the shades of night fall about him, he will be a fit sub-

ject for gathering up a handful of pine spines for a feather bed, and after hunting up a soft rock or a pine log for a pillow, say his prayers and enjoy the sleep of the just. We would not care to buy stumpage on the estimate of a novice from the results of one day's experience, but if he sticks to it long enough, he in the course of a few years would be likely to become an adept if he has the stuff in him that land lookers are made of.

There is another way in which estimating is often done, borrowed from methods often adopted by United States surveyors, but it has its drawbacks, and these sometimes culminate in a drawback toward the penitentiary, and is therefore not to be recommended to "novices." By this method a pleasant room, well lighted, a large table and plenty of writing material and requisite. A large map of the territory to be estimated or surveyed is spread out, and the lines laid out dividing it from other lands, then it is the easiest thing in the world to mark off section lines, which can never be found, and to estimate quantities of timber that never existed. There has been too much of such surveying and estimating, and the outcome has never been satisfactory. Concisely to answer our correspondent's question, timber estimators are born rather than educated, and must learn from experience rather than from books. — *Chicago Lumber Trade Journal*.

PRACTICAL MILLING.

It has been the policy of "the country saw mill" owner to buy that which was cheap. We have reference more particularly to their first plant—their mill, engine and boiler. Let a man want to engage in the saw mill business, nine cases out of ten he counts the profits first, then the costs, and, as he is "a little short," he tries to economize by buying his outfit second-hand. He starts out on a cheap plan, and scours the country for some mill that has passed through the fire, or whose owner has found it far more profitable to let it lay up than to attempt to run it.

He visits the city and looks through the second-hand machinery stores. He looks at one or two new mills, gets completely muddled, and, disgusted, starts off home and buys "Jones' old mill." It has not been run for two or three years, but he can save one hundred or possibly two hundred dollars in this his first purchase. He is told that it is a little behind the times, but then it will do him.

Now all that is wanted is to secure an engineer and head sawyer who is in keeping with the mill, and we have a full-fledged mill to help him cry "hard times," and although gradually, it will soon cause him to feel that saw milling is not what they crack it up to be.

At last he finds an engineer who has done almost everything. He comes along, or, rather, "turns up," and wants a job. He has been used to large mills, big pay and his fireman, but has had a "streak of bad luck" and will take hold of this mill, put it in order and show what can be done. In not a few cases our engineer imparts "his bad luck" for he knows nothing of engineering, and but very little of firing. Our new proprietor is new at the wheel, and does not discover that his engineer is second-hand until reminded of it by repeated accidents and mishaps that suggest something wrong. A broken ring is looked upon as a necessity, hot wrists result from the mill laying up, steam escaping from nearly every joint of pipe, the piston rod, valve rod, and the several conditions soon suggest that something is not what it should be.

Strange as it may seem, hundreds of men start out thus, holding a penny so close to their eyes as to lose sight of a dollar with their reach. Poor tools make poor workmen, and a more fallacious policy was never pursued than economizing in the plant—getting something cheap regardless of worth. The best is the cheapest, applying this both to tools, mill and labor.

The older mill men, even some who have been looked upon as "full-fledged," have erred to their sorrow, in moving too soon from a good site. They have cut out certain qualities of timber that they have depended upon largely for their run, and without fully investigating whether it would pay to cut other lumber, have hunted up other sites and moved; and in not a few cases to their detriment. It has come under our observation of late, to note where several mills have moved back to their original sites, re-buying timber that they had passed over unnoticed at their first sitting, and, where the strange part comes in, paying for this second cutting a little more than they originally paid for the first, land and all. A little forethought could have saved them money, trouble, time, and expense of two moves.

It takes experience. The practical man studies not only the present but tries to anticipate his future wants. The practical miller counts nothing too good for him, and looks upon the best as the cheapest. He wants good tools, good saws, good files, the best of lacing and belting, and good, steady, experienced men. He knows how to keep them, and they recognize

in their employer a man who masters and understands his business. It's a satisfaction to them to work for such a man. It is rarely such a man fails; success is too near the surface. *George Fisher, in the Woodworker.*

SPRUCE LUMBER.

There is no lumber growing in America to-day, which sells at so low a price in comparison with its intrinsic value as spruce. We know of no wood that could fill its place for light frames or for general building purposes where strength, stiffness and lightness are to be combined in one kind of lumber. Spruce lumber has always been supplied so cheaply to builders that its real value has been underestimated or perhaps overlooked. It is a lamentable fact that the grand spruce forest of northern and eastern New England have been largely sacrificed without any corresponding gain to owners, operators, mill men or even to lumber dealers.

The principal growth of spruce in America is confined to Maine, New Hampshire and Vermont, the Adirondack region in New York and to Lower Canada, including New Brunswick and Nova Scotia. There is little spruce west of New York state and of the Ottawa river in Canada. Spruce is in much smaller supply on this continent than either pine or hardwood, and is of much slower growth than sapling pine. A scarcity of spruce, which is not likely to occur this generation, would, however, prove a most serious inconvenience to builders.

The supply of pitch pine in the southern states is greater than the aggregate growth of spruce in the northern states, and for many purposes in heavy mills, bridges and warehouses the former is the better wood. On the other hand, in the construction of ordinary dwelling houses, roofs and light work, spruce is preferable. It is light, strong and easily worked. When spruce can be used it is much more economically handled and framed than southern pine. A carpenter would hardly take the gift of southern pine for the plates, girts and posts of an ordinary frame house if he could buy spruce at present rates. Norway pine has only about two-thirds the transverse strength of spruce; sapling pine is deficient in strength in comparison with spruce, although easily worked.

The great development of southern industries has infused new life and enterprise into the lumber manufacturing of that section. Northern capital and machinery, tram railways, improved logging, manufacturing and freighting facilities, have reduced the cost of southern pine lumber delivered in northern markets. Again, during the past few years the pitch pine business has been overdone, and many a cargo has sold at less than cost. Yet a singular fact has developed during the last year or two, and that is that in New York and Boston markets the price of large-sized spruce dimensions has reached within a very few dollars per thousand feet of wholesale rates on ordered lots of southern pine. This shows that dealers and builders will have spruce lumber even when its cost nearly approaches that of the southern lumber. The days of extreme low prices for spruce have gone, never to return. The demand now fully equals the supply, and timber land owners and mill men are beginning to appreciate the situation and to act accordingly.

RUNNING THE RAPIDS.

The first man to accomplish the daring feat of running the Arnprior slide on a stick of timber, says the *Chronicle*, was Alexander Oran, foreman for Conroy Bros. It was shortly afterwards performed by our Mr. James Havel, Jr., and "Chain Lightning Stewart," who went through safely on the same stick. It was a very common thing for Stewart to do, and many a time he did it, just for amusement. Stewart was a remarkable man, and it is said that he did many daring acts on the river. He could handle a log or stick of timber, as fast as any one, and it was a common thing for him — in the shanty, during the winter season—to mount the grindstone and have the boys run it as fast as they were able, so as to give him feet practice for the spring drive. He came very near losing his life several times through his fool-hardiness. Once, I think it was on a slide somewhere in the vicinity of Black Donald Creek, Stewart undertook to run through on a stick of timber. It was a rough place, and the logs were very often broken after they got through, so steep was the pitch at the end. Stewart was warned by his companions not to make the attempt, but warnings were not new things to him, and, watching for a good piece, he jumped on it and was soon sliding along the narrow passage at a lightning speed. His comrades shouted at him to jump for they well knew that to go over that frightful pitch was certain death. At the end of the slide was a projecting beam, and when Stewart neared it, his well trained eye measured the distance, and making a bound, alighted safely on it. It was well he did, for if he had struck the timber his reckless career would certainly have terminated there and then.