

## LUMBERING IN ENGLAND.

THE English lumber trade, as seen by one who has been accustomed to lumbering in its various branches in the new world, is a peculiar institution. Some little time since a representative of the North-western Lumberman visited Great Britain, and while there made a study of lumber in that country. An attempt to learn it, he tells us, is about as novel as learning a new language. Although England is not in any comprehensive sense a lumber producing country, yet the stumps and bean poles which are periodically collected and advertised as timber sales, supply to some extent the domestic demand, and act as a check on the prices of foreign lumber.

In the northern part of England, and still more in Scotland, scientific tree raising has developed to such an extent that crops of trees are raised and sold like wheat or cabbages. These trees, however, are generally pine, spruce or larch, or else coppices of hardwoods, that is, small growths, the stumps of trees being cut back so as to produce an abundant crop of small poles from two to five or six inches in diameter. No boards can be sawed from such stuff, but it is useful for poles, mine-props, railway ties, fence posts and the like, and for firewood. A limited quantity of timber is also obtained from old trees on the various large estates which are cut down from time to time, and advertisements are often seen in the lumber journals like the following:

250 oak trees, with top, top and bark, contents seventeen feet average, 300 coppice grown ash trees, three birch, two maple, five pear logs, also alder and birch props, and a quantity of poles and tops.

Of course such trees have a very short trunk or "leg" as it is called, generally under ten feet in length, but everything is most religiously saved. These country auction sales are very pleasant affairs, but the buyers never allow feelings to influence their bids. One o'clock in the afternoon is a popular time for a sale, and it is frequently preceded by a substantial lunch, with liquid trimmings furnished at the expense of the seller, and this genial custom obtains even at some of the great Liverpool sales. These goods to be sold will perhaps consist of half a dozen small piles of oak, ash and elm logs, from five to fifteen feet in length, some piles of long, slender ash and alder poles, coppice grown, and a few heaps of brushwood for supporting peas and beans.

The buyer is expected to know what he purchases; every log is examined with almost microscopical minuteness before the sale, and a crowd of solemn, well-fed Englishmen poking around among a quantity of stumps and brush heaps, punching their canes and pocket-knives into every knot-hole or decayed spot, or passing funeral criticisms as to how far a crack extends into a log is a sight worthy of commemoration by a camera. The sales are generally made where the articles to be sold are lying: the bidders gather around as if to review the remains of the dear departed, the auctioneer calls out the bids in about the same tone of voice as a minister would use at a funeral, and after the lot has been bid off, the purchaser tears off the sale number for identification, and the crowd moves to the next grave. Larger sales are generally made by offers in writing, after advertisement, the highest bid being accepted. Buyers of course, remove their purchases at their own expense and take them either to the mills, or as is not uncommon, have the mills, small, portable affairs, come to them.

The timber yards, as they are called in the large cities, are very compact, and even in the great metropolis of London are to be found in the busiest part of the city. Generally they do not occupy more than 3,000 to 5,000 square feet of ground room, and the bulk of the lumber is stacked up vertically. This is covered over, and on an upper floor will be found assorted sizes of dressed lumber of various kinds. In the case of valuable kinds of wood, such as oak, mahogany, teak, walnut and the like, it is the practice to cut the logs without squaring, so as to keep all the boards of a log together, and then they are stacked vertically, so that a purchaser can easily examine each board. Such sawed logs are sold as a whole, though a purchaser can buy the center boards which will be rift-sawed, but will be compelled to pay a much higher price in proportion. Large stocks and extended yards, such as can frequently

be seen in the larger cities in the United States, are very rare in England, except on or near the dock in the few cities of Liverpool, Bristol, London, Grimsby, Hull, etc.

But to get a notion of the English timber trade, and to get at the secrets of its peculiarities, one must spend a day at the Surrey Commercial docks. One searches in vain along the vast river front of the Thames to find lumber vessels unloading at the wharves, and to see the adjacent piles of lumber, but once let him find the narrow entrances to the Surrey docks and the mystery is solved. These famous docks, the chief depot for the lumber and grain trade, not only of London, but of England, are situated in a curve of the river Thames, about four miles in a straight line southeast from the Bank of England and the centre of the city. They consist of a series of 16 ponds, connected with one another, and also connected with the Thames by four inlets. Ten of these bodies of water are called docks from the wharves that line them, the remaining ponds being used for storing floated timber. These docks and ponds cover 159 acres, and around them are 220 acres of piling ground for the lumber in store. The length of quayage or water frontage available for the discharge of cargoes is five miles.

There are charges for everything, from the time of entering the docks—for lirage, for dockage, for repiling, assorting, carting, calculating—though the charges of the dock company proper do not begin until after the piling is done. One case has become classic. A cargo of yellow deals, from Gefle, Sweden, comprising 350 stds. (700,000 ft.) of deals, 575,000 pcs. of prepared boards and a small quantity of moulding, was delivered at the Surrey docks. This sorting took six weeks, and the space occupied was 25,000 square feet during that time, and 12,000 feet after the cargo was finally piled. To ascertain the quantity so as to determine the charges and make out an invoice necessitated over 5,000 acts of calculation.

Since the establishment in foreign countries, particularly Norway, Sweden and Russia, of huge saw and planing mills, the tendency has been to send all lumber cut to size, and, where possible also dressed, and the size and qualities now used comprise many utterly unknown to the trade a few years ago. Competition has made it necessary for manufacturers to cut as near as possible to the requirements of the buyer, and in the future this will be done more than ever. The log trade is almost wholly confined to shipment of expensive foreign woods, such as mahogany, rosewood, amboyna, tulip-wood, and sometimes poplar, walnut, teak, etc., where extra size or extra fine boards are wanted. The tendency to complications from the multitude of different sizes and qualities explains the difficulty, not only of comprehending the English trade, but of catering to it successfully.

Of course, with the centralization of trade, many of the importers do not pretend to keep yards. If they buy to arrive, the cargoes, when received, are piled, and the invoices turned over to them. The "timber travellers," as the druggers are called, are then put on the road, and sales made without the owner having any further trouble or even seeing his own stock. If the vessels arrive without sales having been made, the cargoes are unloaded and piled on the docks, and then sales made either privately or at auction.

Retail sales are also made direct from the docks, and these small sales have grown to astonishing figures. The deliveries of wagon loads of less than 2,000 feet in 1882, numbered 78,100, while in 1891 it had grown to 101,810. Figures are dull reading, but to give a slight idea of the business of the Surrey docks, it may be stated that the number of orders for transfer and delivery in 1875 run 70,888, and in 1891 149,970, nearly doubling in seventeen years. The "wood goods," comprising all kinds of timber and lumber received in 1891, was about three hundred and eighty million feet board measure, and the deliveries from the docks, which approximately represent the sales for the same time, were 418,000,000. The amount of lumber exclusive of firewood consumed in London in 1891 was 33,198,000 pieces of sawed wood, including deals or plank of all lengths, two inches thick and seven inches or over wide, "battens," or similar pieces under seven inches wide, boards and "ends" or short pieces, from two to six feet

long, and 218,700 "loads" of 50 cubic feet of timber square and round.

"Where does all this lumber go to?" is naturally one of the first questions which one will ask on reading the above figures and the question is not very easy to answer. The wood industries of Great Britain are very numerous, there being some thousands of firms in London alone engaged in various lines of business in which wood is employed. The importers in the city number 86, the timber dealers or wholesalers, 55, and the timber merchants or retailers, 470. Then there are 139 packing case manufacturers, 221 firms engaged in running saw and planing mills, 95 mahogany merchants, 43 firewood importers, and nearly a hundred agents and brokers of various kinds.

## ELECTRICAL POWER.

IN the present day it is not enough that the proprietor, or his expert in charge of the mechanical operations of mill or factory, should be possessed of an intelligent knowledge only of the uses of steam and its various properties. It is important that he should fully understand these things. But with the developments in electricity and the extent to which this newer power is being applied to manufacturing purposes, it becomes almost as necessary, that the mechanical manager of to-day should know as much of the uses of electrical power as of steam power. How to handle the electrical motor; what to do when an awkward balk asserts itself, is a part of his education that he cannot afford to neglect. On this line the matter of reversing a motor is made the subject of intelligent discussion by a writer in the Tradesman. He says: "To reverse the direction of any electric motor it is only necessary to change the direction in which current passes through it. But simply taking down the wires and attaching the + wire where the - wire formerly was, will not answer. That will cause the motor to run in the same direction as before. The way to do it is to take down the connections between the brushes and field magnets and change the direction of the current there, through one, either through the armature, or through the field magnet coils. This will change the direction in which the armature will revolve.

"Current always flows from the + or positive line wire into the - or negative one. Here is a handy rule for telling which way the current is passing in any dynamo: First, find the direction in which the lines of force are passing between the field magnets; this can be done with a pocket compass. Hold the instrument over the dynamo, half way between, and six inches above the armature; the compass needle will immediately arrange itself in line with, and pointing directly from one field towards the other. The north end of the compass needle will always point towards the south pole of the motion field magnet, and as the lines of force always travel from the north to the south field of any motor or dynamo, it is known that the lines of force are always passing in the direction pointed out by the north end of the compass needle.

"We can now lay the hand on the dynamo, the thumb pointing in the direction taken by the lines of force. The first finger pointing parallel with the armature winding, while the other fingers are bent slightly, and point around the armature in the direction of its travel. The flow of current in the armature winding will always be in the direction toward which the first or index finger points. Only, bear in mind that the armature coil is always supposed to be between the eye and hand while making the test. Thus, if the dynamo run in a certain direction called "right-handed," the right hand can be used to bring in all the conditions mentioned above. But if the dynamo runs in an opposite direction, the left hand must be used.

"This matter is very useful in determining which way a motor will revolve after it is started up. It is only necessary to find which way the current will pass in the armature, then lay on the hand as before, with index finger pointing in the direction current flows. The thumb points in the direction taken by the lines of force, and the other fingers will, when slightly bent, point in the direction in which the motor armature will revolve. Always bear in mind, that with a dynamo and motor connected in the same circuit, the armatures will revolve in opposite directions."