

WATEROUS ENGINE COMPANY'S NEW WORKS.

THE accompanying cut illustrates the new buildings being erected in Brantford by the Waterous Engine Works Co. Ltd. The buildings are what may be called gallery construction. The main one is 300 feet long and 120 feet wide, having a central space of 40 feet wide running to the roof, over which a traveling crane will be operated. On each side of the centre is a 40-foot space with a gallery the full length of the building.

The foundry, or moulding shop, is 80 feet wide and 100 feet long, with a central space of 40 feet and two side spaces of 20 feet each; in one of the latter the cupolas will be placed. On one side of the foundry is the pattern room or vault, separated by a solid and heavy fire wall. The power house is 40 x 60 feet, and in this building next to the main building will be the wash room of the men. The building will be large enough to contain the boilers, engine, dynamo, pumps, air compressor, etc.

It was thought advisable to place the blacksmith shop, boiler shop, and main building together to avoid any long distance between them. Thus the blacksmith shop, which is 50 x 80 feet, is between the main building and the boiler shop; one wall of the main building forms one side of the blacksmith shop, and the wall between the blacksmith shop and the boiler shop forms the other wall, so the blacksmith shop, main building and boiler shop are all connected. The boiler shop is 87 x 120 feet.

Lighting is done from the sides and the roof. Heating will be by the hot blast system, and for water, an excellent supply has been found on the premises. Railway tracks will enter the main building and the boiler shop, and other tracks will be laid in the yard, from which shipments can be made and material received without the need of teaming. The works when completed will be capable of giving employment to at least 400 men. Every care will be taken and arrangements made to insure their convenience, and to permit of handling the work to be done with the least possible labor.

The company are pushing the work forward as fast as possible, and expect by the 1st of January, 1896, to be fully settled in their new premises. They have occupied their present site for 51 years, and although they have rebuilt, enlarged, and secured all available space, they have entirely outgrown the premises. For the past year they have been forced to run much of the time from 15 to 17 hours per day, although employing 240 men in premises not adapted to more than 150 to 170 with comfort.

ASPEN WOOD FOR MATCHES.

WE are now aware that aspen has ever been employed in Canada for making matches. There is indeed no occasion to use it, pine being so plentiful, but experiments made in other countries show that it is particularly well fitted for this purpose.

The manufacture of matches in Germany, which has risen to be an industry of importance, employs pine, poplar, aspen, linden and birch woods. Of these woods, aspen has proved itself indispensable in the manufacture of matches by reason of its natural qualities and the ease with which it can be worked up. It is distinguished by its large structure, ready combustibility, freedom from knots and uniformity of substance.

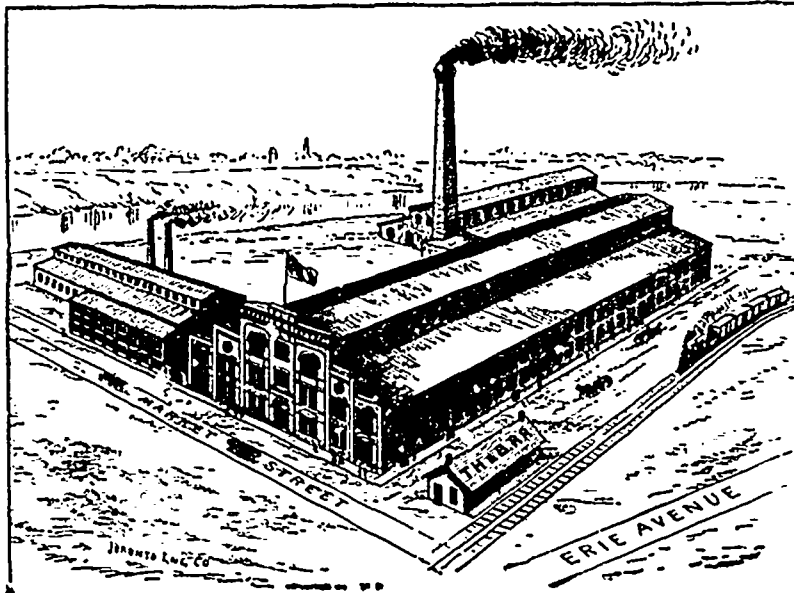
The flame of a match, as is well known, is conveyed by the wood from the igniting composition of sulphur, as in the case of lucifers, into which the splints are dipped. In the case of Swedish matches the sulphur is substituted by paraffin. The sulphur, where this is used, remains on the outside of the wood and dries at once. The paraffin, however, must penetrate into the wood, partly because the matches would otherwise stick to each other, but principally because the paraffin becomes fluid again at even low degrees of heat, and would penetrate the igniting composition and render it useless. For safety matches, therefore, a wood is required which

has light and spongy pores, as found only in the aspen, whose bright white color further gives it an agreeable appearance. Poplar has a gray color and is brittle; birch wood becomes yellow and is seldom attainable in stout logs. These woods are also slow of combustion. Pine and fir woods take up little paraffin, owing to the resin they contain.

In order to keep the pores as open as possible, and also to work up the wood to the greatest advantage, the aspen splint is produced by flaking. Aspen possesses the quality of being flakable to a very high degree. The flaking is done by causing a knife to revolve around a log which rotates on its own axis. The wood is divided into ribbons of the thickness and width of a match; these ribbons are laid evenly, one above the other, and cut into square splints.

In consequence of the uniformity of the annual layers, aspen wood produces perfectly homogeneous ribbons or splints. This is not the case when other kinds of wood, like fir, etc., are flaked. The absence of all structure or grain further enables aspen wood to be flaked into thin shavings, which are worked by other machines into the familiar match boxes. Just this fact that both match splints and box shavings can be produced by one machine from one material calls for the employment of aspen wood.

Attempts have been made to flake fir and pine woods as substitutes for aspen, but it is not known that any results of importance have been obtained. The reason why the last-mentioned woods cannot be flaked is



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probably because of the difference in the annual rings between the spring and the fall wood—that is, between the inside of the ring and its extreme outside the difference is too great. The fall wood is too solid, the spring wood too soft, and the annual rings are of varying thicknesses, according to the location of the tree, while, even in the case of pine, the knife is apt to slip and cut ribbons of unequal thickness. In the case of aspen wood, each ribbon is like the other, a circumstance of the utmost importance for the further processes.

Match manufacturers require that the aspen wood should be free from rotten pith, and, as far as possible, free from knots—free from pith, otherwise the wood cannot be fixed in the flaking machine. free from knots, because the wood round the knots is decayed. The wood should be further straight grown and of loose texture. The aspen is available for match making as soon as the trunk has a diameter of 8 inches. The demand is greatest for trunks with a diameter of 10 to 24 inches. To attain this size a period of twenty-five to sixty years is necessary, according to the nature of the soil, position, etc. Trunks from twenty to thirty-five years old are preferred to younger growths, for the reason that the method of manufacture produces the same amount of waste, whether the trunks be small or large.

The match factories which employ aspen wood are mostly situated in Silesia, Pomerania, Schleswig-Holstein, Bavaria, Rhine Province, Alsace-Lorraine, Rhine

Palatinate, and the Duchy of Anhalt. These factories use on the whole 4,000,000 to 5,500,000 cubic feet of aspen wood, of which about 3,000,000 cubic feet are imported from Russia.

A FEMALE REPORTER IN A SAW MILL.

NATURALLY, I visited the big mill first. At the St. Paul and Tacoma Lumber Company's Mill I found everything going to beat all. Capt. Everett Griggs, the superintendent, told me that the best way to see how lumber was manufactured would be to follow a log to the saw, then see a board cut and follow it until it was on the cars. Well, I waited until I saw a log coming up on the back porch and pulled on to what they called a deck, but which in reality was the floor. A man with the awfulest dirty hands yanked a piece of iron, and a great black iron fixing came up through the floor and hit the log a pop that knocked it clear across the mill, then it popped back out of sight. I asked a Swede what he called it, and he said "a steam nigger." I didn't say anything, but I felt like asking the Swede if he saw anything green about me.

I am sure the men had been posted about my coming, and just lied to me from one end of the mill to the other. They spoke about "dog" and a whole lot of things I know are not in any saw mill. Well, they got that log on to some kind of a machine, drove something into it that looked like picks, then a man pulled another piece of iron and away went that log, and buzz—the big saw took it. Well, it wasn't a minute before they sawed off a great big board with bark on one side of it. They run it along on rollers so fast I could hardly keep up with it. I ran nearly the whole length of the mill to catch it. Just as I caught it two men pulled it against a round saw, and when I asked them where that board would go next they smiled and said it wasn't a board, but only a slab, and good for nothing but fire wood.

I went around to what they called the pond. It was full of logs. I asked a man how much lumber they got out of a log. He said sometimes they got 24 or 22 feet. Then I asked them what they did when they came to a log with a hole in it. He said they sawed it up until they came to the hole, then run it through the scantling machine and made lath of it.

Then I went to H. C. Foster's office. When I asked him how old a tree should be before it should be cut up, he said he has issued orders to all of his millers not to cut a tree under 148 years old nor over

219. He said when they were cut too young the lumber was liable to be too fresh and if cut too old much of it was bultus. That seems reasonable enough to anyone.

Then I asked him what he thought of cedar. He said that whenever cedar was indigenous and grows prodigious that the vivisection of them showed a longevity of them unparalleled since the days of the flood. The only trouble he had with cedar was in the tendency of the knot holes to work out and leave the knots sticking in the board. Many carpenters object to it for that reason. Again, a great many eastern carpenters fail to get their squares right angled before the spring building begins, and as a result often make bad joints and blame our lumber.

I then asked him for an opinion as to what could be done in the saw mills to do away with the sawdust nuisance. He said it should be saved and a company organized to manufacture dolls. No stuffing is so cheap and valuable as sawdust for dolls.—Women's Tacoma News.

The Cookshire Mill Co., Sawyerville, Que., are building a small mill for cutting pulp wood. This is the only move yet made towards replacing the property destroyed by the late fire.

Talk of building a large mill in Newfoundland to manufacture sulphite and ground wood pulp for the European markets is renewed. Some German experts have been looking over the field during the past two months.