



Know that the pulleys are well balanced before they are put in position, as a pulley much out of balance is quite a sure method to throw shafting out of line.

If the speed of a conveyor connecting the flow between two performances alternates from fast to slow, and vice versa, an interruption to regular flow will result on the last operation.

When a grain cleaning machine runs above proper speed it is liable to break the wheat, and if it runs below it will not make an accurate separation; hence, if for nothing else, it will pay to provide a reliable speed governor to keep the grain cleaning machinery at proper speed.

The steam engines of the world represent, approximately, the working power of 1,000,000,000 of men, or more than double the working population of the world, the total population of which is usually estimated at 1,455,023,000 inhabitants. Steam has accordingly enabled man to treble his working power, making it possible for him to economize his physical strength while attending to his intellectual development.

Here is a method of making an emery-wheel dresser: "Take a piece of $\frac{3}{4}$ -inch round iron about 14 inches long; heat it and split up about four inches; bend the two sides made by splitting into the form of a letter U, leaving a handle 10 inches long. Now drill $\frac{3}{4}$ -inch holes in each end of the U, put $\frac{3}{4}$ -inch bolt through and fill with $\frac{3}{4}$ -inch washers. This will make a perfect emery dresser."

Smoke pipes may be preserved from rust by painting the pipe thoroughly, either with coal or wood tar, then filling it with shavings and setting them on fire. The heat roasts the tar, and, at the same time, opens the pores of the iron, which become filled with carbon, and thus preserved from rusting for an indefinite period. A smoke flue is mentioned which was thus treated twenty-six years ago, and is still in good condition.

Air is an absolute necessity in good combustion. That is understood pretty generally, yet there are engineers who forget it when they put in grates with insufficient openings for air or think that cleaning a fire often does little good. Select a grate that has over 50 per cent of air space, and a rocking grate makes cleaning the fire an easy operation and without cooling down the boiler.

Possibly it is not in order to criticise old sawyers, but there are men who claim the title of sawyers who do not know the first principle of milling. They file saws to the disadvantage and ruination of their employers. A saw should be swaged with a lever or tongue swage or set with a Disston saw set. In order to cut smooth lumber, a side file should be used. A good sawyer will not depend upon the guide pins. File the saw correctly, and the result will be satisfactory to yourself and employer. Too many sawyers do not file the saw correctly, and depend upon the guide pins for good work, and when the saw does not do good work it is blamed for what is really the sawyer's carelessness.

The practice of removing the manhole plate in the front head of a hot boiler, says Mr. W. H. Wakeman, in the *Manufacturers' Gazette*, and then inserting the hose, and allowing the cold water to run along the bottom to the blow-off pipe, is a bad one, for if the bottom of shell is suddenly cooled off, while the top is still in contact with the heated masonry and other covering, unequal contraction and a severe strain on some of the parts is the inevitable result. This may be practiced for years without ruining the boiler to outward appearance, but the worst defects we have to contend with are those which would escape the notice of the casual observer, and when boilers that are thus misused finally "let go," it is voted a mysterious dispensation of Providence.

Edwin A. Kimball, instructor of the shops at the University of Illinois, writing on the subject of preventing slipping of belts, says: "I do not know that washing soda may not be as good as castor oil, for I never used the former; but I do know that castor oil is effective and safe in the hands of a competent person. There is no occasion to soak a belt in any sort of oil. A little applied to the surface is sufficient. There is nothing that I have ever tried that is so effective as castor oil, especially for wood-working machinery belts. The way to apply it is to let it run from a bottle in a small stream on the belt while this is in motion, commencing at one edge of the belt, moving the stream over a little at every full travel of the belt, until the whole width of the belt has received its portion. I know of belts that have been treated in this way for years, and they are whole yet, and doing their work without a murmur."

LUMBERMEN IN THE LEGISLATURE.

THE lumbering interests of the Province of Ontario are represented in the Local Legislature by fifteen members engaged in lumbering pursuits either as owners and operators of saw mills or as holders of timber limits, and in some instances as both. Of these the Hon. E. H. Bronson, whose picture we here publish is a Minister of the Crown.

Mr. Bronson is a member of the well-known firm of Bronson & Weston, who operate extensive mills and control large interests on the Ottawa. He is the eldest son of Mr. H. F. Bronson, a native of Warren County, N. Y.; he was born at Bolton, Warren Co., in 1844. He received his education at Ottawa and Sandy Hill, N. Y. He has been a member of the Ottawa city council for seven years and of the school board for a much longer period. In 1874 he married the only daughter of Prof. N. B. Webster, of Norfolk, Virginia. He was first elected to the Legislature as a member for Ottawa in 1886. Last June he was re-elected by the enormous majority of 1,460.

It is in keeping with the fitness of things that a business holding such an important relationship to the prosperity of the entire Province should be thus fully and ably represented in its councils.

Crossing over from the Government benches to the opposite side of the House, we find in Mr. A. Miscampbell the new member for East Simcoe, a man prominent in lumbering sections and who is destined to come quickly to the front in Legislative circles. His speech on the Budget



HON. E. H. BRONSON, MINISTER WITHOUT PORTFOLIO.

in the recent session of the Legislature was perhaps the ablest delivered by any of Mr. Meredith's supporters. In another column along with a portrait of the author, we publish an extract from this speech, touching specially on lumbering interests and which will furnish a good illustration of this gentleman's style in debate and trend of thought on public questions. Mr. Miscampbell spoke with force on the Mining measures of the Government and also on the shantymen's Lien bill.

Another member who delivered one of the chief speeches in the mining debate was Mr. Jas. Conmee, member for West Algoma. He was born in Sydenham in 1849, and is now a resident of Port Arthur. He is extensively engaged in lumbering and railway construction.

Mr. W. C. Caldwell, B. A., of North Lanark, is another lumberman, and son of the former member Mr. Alexander Caldwell. E. C. Carpenter representing North Norfolk, whilst now engaged in agricultural pursuits was for some years in the employ of the Rifle River Booming and Rafting Co. in Michigan. South Norfolk is happy in its choice of a lumberman, in the person of W. A. Charlton, a resident of Lynedoch, and where he is engaged in mercantile and lumbering business and with his brother John Charlton, M. P., for North Norfolk, has interests in the Georgian Bay region and Tonawanda, N. Y. One of the most active members of the Assembly is Mr. James Clancey, of West Kent, a lumberman of Wallaceburg. Mr. John Fell, of North Victoria, for some time ran a shingle mill at Fencelon

Falls. Robert Ferguson the member for East Kent lives at Thamesville where he carries on a lumber business. One of the new members of the Legislature brought in by the June election is Wm. McCleary representing Welland. He is a member of the firm of McCleary & McLean, lumber dealers and sash and door manufacturers. Centre Simcoe claims a new member in Mr. Robert Paton, of New Lowell, who is extensively engaged in stock raising and lumbering. David Porter, of North Bruce, has been engaged in saw milling since 1877. Jas. Reid, of Addington, worked for many years in his father's saw mill and was engaged in lumbering. The member for North Waterloo, Mr. Elias W. B. Snider, is a manufacturer and owner of several mills including a saw mill. One of Mr. Meredith's most active supporters is Mr. A. F. Wood, of North Hastings, a gentleman largely interested in manufacturing and railroad interests, holding for some time the position of president of the North Hastings' Lumber Company.

THE BIG TREES OF BRITISH COLUMBIA.

It may well be imagined that it is no boy's play to cut down a tree from five to ten feet in diameter. The axemen work in pairs, and after selecting the place where they desire the tree to fall, they begin operations. Trees generally have a swell at the base that is cross-grained and gnarled, hard to cut, and not good timber, and as it is not desirable to have this in the log it becomes necessary to cut the tree above this defect. Some trees, especially the fir, have a great deal of pitch at the base, and this, also, renders it desirable to begin cutting some distance from the ground. Another advantage of getting above the ground is being out of the way of crush and fallen timber.

In order to do this the axeman chops a notch in the tree nearly as high as his head, the notch being about six inches deep and about the same in length, and inserts in it the end of a board, upon which he stands to wield his axe. The board is a piece of oak or fir from four to six feet long and about ten inches wide, the inserting end being narrower and bound with steel, upon which is a calk like that on a horseshoe, which holds the board firmly when the man's weight is on it. If the first notch is not high enough he cuts another higher up, and still another, if necessary, using the boards as steps, until he is often ten or twelve feet above the ground before he finds a suitable place for chopping. The two axemen, having thus gained a position on opposite sides of the tree, begin the work of chopping with their double-bladed axes, working carefully so as to direct the fall of the tree in the line selected. Of late years the improved style of two-hand saws has been made to do the chief work. After cutting with the axe a deep line in the tree on the side to which it is to be made to fall, the men begin sawing on the opposite side, wedging the cut made by the saw as they progress, thus keeping the saw clear and gradually inclining the tree in the right direction. In this way a tree may be made to fall in the direction exactly opposite to its natural inclination. When the tree shows symptoms of falling the men give a few well-directed strokes with the axe to guide it in its course, and then spring lightly to the ground, standing near the base of the tree, which experience has proved to be the safest position. Gradually the forest giant bows its head, its fibres cracking like pistol shots, until, at last, it comes down with a rush, its limbs dragging down others with it, and the under ones being splintered into pieces.

HOW WOOD PULP IS MADE.

IN wood pulp making by the sulphite process, the wood is peeled, discolored or decayed parts are removed, the wood is cut across the grain into thin chips, which are dropped into large drums about 14 feet in diameter, 24 long, and strong enough to sustain a pressure of from 75 to 200 pounds to the square inch; when packed full of chips the drum is filled with sulphuric acid and other chemicals, and the cotton-like product is pressed dry and mashed, mixed with water, rolled flat and cut into shape for bundling, being 60 per cent. moisture and 40 per cent. fiber. Thus it goes to the paper mill. One cord of spruce makes 1,200 pounds of dry fiber worth from \$100 to \$150 a hundred pounds.