## THE CANADA LUMBERMAN

## A MODEL WOOD-WORKING PLANT.

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By GRAME LISTIC PARKES, in The Tradesman By GRAME LISTIC PARKES, in The Tradesman wood-working plant, and the subject reparts for many reasons, considerable study. Careful thought should be exercised as to the character of the building, the amount of power is the employed, and the selection of the best macharacter of the class of work to be manufactured. Excelent judgment should also be used in arranging each machine to the best advantage and extra economize time and labor in h ndling material as well as to avoid the use of n-ule stands and parts or quarter turn belts.

ideal building for a general wood-working should be, according to my views, a onestructure, where all machines are placed on one floor. This does away with all vibration, and with the expense of more than one foreman, of carrying material up several stories, bepossessing many other advantages. The possessing many other advantages. The bout the height of a wagon body, to facilitate ploading and loading material. Provision would also be made for an abundance of light. I fink 1 can safely say that nine out of ten practice too strict economy when it comes



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surchasing an engine. This is an important matter, and one that should he given careful deration. An engine which can barely do work, and which groans and grows weary its load, is an expensive and unsatisfactory to have around ; while an engine of generize running the same machines will give esset satistaction and accomplish the work with greater economy, both as to fuel consumpand wear and tear. Of course, in many working plants every machine is not runand all of the time, but to be on the safe side abato be prepared for an increasing business and Summing additional machinery I advise purand an engine of at least 50 per cent. more preser than what the combined power figures for the grigmal bill of machines. The engine should secated it possible nearest the group of marisings requiring the most power. This, however, exact always be done, but it is a good rule to observe.

accery concerns the size and speed of the maximum time shatt. A shatt 1 15-10 inches in magneter with a cycry case spring under its load

and create undue friction, while one 2 7-10 inches will run beautifully under the strain of any work it may be called upon to do. A slow running main line in a factory where machines require high speed necessitates the use of large driving p lleys and many times intermediate countershafts. As a result extra expense is i curred, slippage of belts and loss of power. To get perfect results the main line should run 350 or 400 revolutions per minute.

The next subject that presents itself is that of pulleys, and quite a difference of ominion exists as to which is the better kind wood or iron. The wood split pulleys are preferable for the reasons that they cost less, are lighter and easier to put up, cause less friction on the main line boxes, present a better surface for the belt, and at the same time are equal to any demand that may be made upon them.

Cheap machinery is to be avoided, and is dear at any price.

The plan herewith presented represents a small sized one-story factory, 120 by 72 feet, with engine and boiler in a detached brick building, and a small dry kiln. It is arranged as I would recommend it for an up-to-date plant, and one which could be operated with the greatest convenience and profit to its owner. The main line runs lengthwise of the building and the machines are so set and arranged that no twist or quarterturo belts are required.

With this arrangement the rough board enters at one end of the building to swing cut-off saw or to the self-feed rip saw and passes successively from these machines to each of the others until it comes out at the further end of the building in the finished product. Thereby the greatest economy is practised in the manipulation of the material worked.

The swing saw and self-feed rip saw are located in a group near the door where the lumber enters the mil<sup>\*</sup>. The material is here cut to an approximate length or ripped up into strips preparatory to being operated upon by the other machines.

The molder is conveniently situated at the side of the rip saw to receive from it the strips that have been prepared for the production of moldings.

Next comes the planer for smoothing the boards and for bringing them to the desired thickness.

The hand jointer or buzz planer is next in order. Following this are the band saw and shaper, with the combination saw by their side at the left in the plan. The latter machine is very convenient to the central and rear groups, to both of which it bears particular relation.

The tenoner and mortiser, which are even more dependent upon each other than the shaper is upon the band saw, are located in the rear group within close proximity to each other.

In this same group will also be found a boring machine of either the horizontal or vertical pattern, as may be preferred, and close to the side of the building, at the right of the plan, the wood turning lathe.

By reterence to the plan here shown, twelve machines will be found to be represented and would cost from \$1,500 to \$1,800. The combined power for all, including a blower system, figures about forty-five horse power; consequently the plant should have an engine of at least seventy-five horse power. The entire plant, including building, engine and boiler, machines,

main line and a good blower system, could be built for about \$8,000.

In such a building as has been described, with good arrangement, first-class machinery, and an ample amount of power, the work will be accomplished conveniently, economically and satisfactorily.

## ENGLISH OPINION OF WOOD PULLEYS.

The makers of wooden pulleys claim that they (1) have much greater driving power than iron pulleys, (2) that they are much lighter; (3) that they are cheaper. As regards the first claim, it cannot be denied that a good wooden pulley is superior to an iron one in driving power, owing to the increased grip of leather driving bands on wood. The best wooden pulleys are also about 45 per cent. lighter than wrought iron pulleys, and 65 per cent. lighter than cast iron, which means a considerable reduction in the power required to turn them round and in pressure on the bearings.

Another point in favor of wooden pulleys, at any rate for light powers and high speeds, is the question of centrifugal force and its effects on the shaft and bearings. In the case of heavy cast iron pulleys, this is often a matter of considerable moment, as the centrifugal force is as the square of the velocity. In some cases, with the object of strengthening the rim of the pulley, its thickness has been increased, but this only accentuates the evil; as the centrifugal force increases with the weight, the pulley becomes more dangerous for high speeds, and the strain on the driving shaft and bearings is increased in ratio.

Although wooden pulleys have been considerably improved of late, inferior ones are still made, and some of these will be found to wear out of shape or warp, especially if used in a damp atmosphere. Many wooden pulleys are built up in ring segments, glucd, nailed and dowled together and faced with poplar or maple, and it is claimed for this arrangement that as the wood alters only very slightly in the line of grain, the shape is maintained. Timber Trades Journal.

From a lecture delivered recently in the Sorbonne by M. Mangin, it would appear that Paris possesses about 80,000 trees in the streets and public places of the city. It is calculated there are 20,000 plane trees, 17,000 chesnuts and 15,000 elms, the remainder consisting of sycamores, maples, lindens, etc. Apparently there is only one oak and one mulberry. Although the trees add so much beauty to Paris, there is a large percentage of mortality among them. In the energy of the cit, the, suffer from want of air. In the gardens of the Luxembourg, Tuileries, and in fact in all which a. e surrounded with houses, what M. Mangin calls the reverberation of the sun's rays is fatal to many trees. He maintains that the trees breath not only by means of the leaves, but also by the roots, and consequently in streets where the ground is hard it is difficult for a tree to be in a healthy condition. Of late years the scavengers have cast salt on the pavement in order to dissolve the snow. The substance, he considers, is most prejudicial to the roots of trees. But M. Mangin believes the greatest enemy to the Paris trees is the engineer, who carries out excavations without regarding their existence