Rule 12.—"Every aerial high-pressure conductor shall be efficiently suspended by means of non-metallic ligaments or suspending wires, so that the weight of the conductor does not product in it any sensible stress in the direction of its length, and the insulated conductors and suspending wires, where attached to supports, shall be in contact only with material of highly insulating quality, and shall be so attached and guarded that in case they break away it shall not be possible for them to fall away clear of the support."

Rule 15.—"Every aerial conductor, including its supports, and all the structural and electrical appliances and devices belonging to or connected with such conductor shall be duly and efficiently supervised and maintained for or on behalf of the owners as regards both electrical and mechanical conditions."

It will be seen that in the matter of regulations protecting life and property from the dangers of high-tension currents Great Britain is much more advanced than this Dominion, and, while it may be too much to expect that similar conditions could be obtained in the less populated districts of Canada, so far as the cities and towns are concerned, the adoption of some measures to render accidents from electric shocks impossible is most certainly an urgent necessity. The proper place for all wires in the larger cities and towns is underground, but failing that, no laws can be too stringent for the protection of human life.

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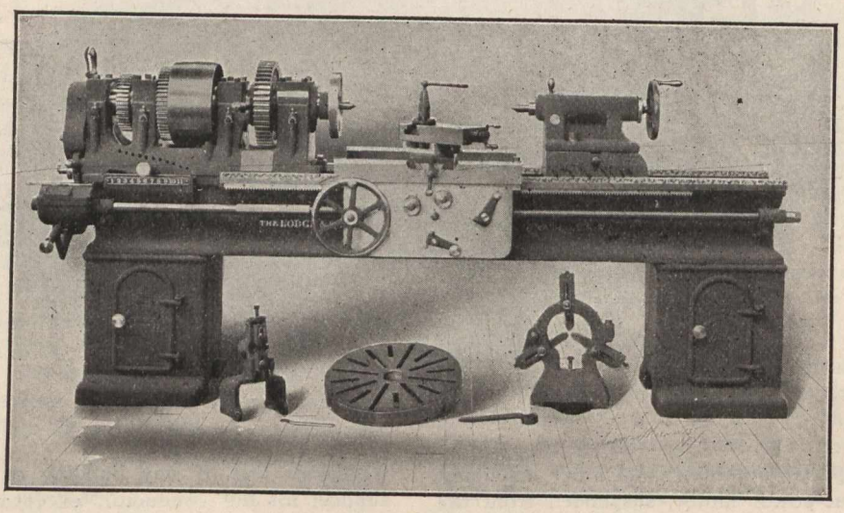

NEW PATENT HEAD LATHE.

The lathe here represented is made by the Lodge & Shipley Machine Tool Co., Cincinnati, Ohio.

The aim in the design of the head has been to provide a lathe that will maintain its life and accuracy and stand the hard abuse that a machine of this class is subjected to with the use of high speed steels. The construction of the pulley and sleeve is such that there is no belt strain whatever on the spindle—this is taken care of by two bearings that support the pulley sleeve independent of the spindle bearings. The sleeve has a hole through its centre, which is one-eighth larger in diameter than the lathe spindle, so that there is no point of contact between the sleeve and spindle. By this means we are able to supply the necessary high speeds through our back gears without running the pulley on the spindle, thus eliminating nearly all friction. The regular engine lathe is short-lived and troublesome in this respect when using high speeds and impossible to oil. The end of the pulley sleeve has a positive clutch so that it can be engaged with one which slides on the inside hub of the face gear. This in turn is operated by a lever handy to the operator for engaging the spindle or the back gears. On the pulley sleeve are keyed two gears of different diameters into which either of a pair of sliding gears on the back gear shaft can be engaged. The ratios of these gears are 3 to 1 and 9 to 1. The pulley on the sleeve is of a large diameter and made to take a much wider belt than formerly used on the standard cone pulley engine lathe. The spindle of the head is mounted in bearings, but passes through the pulley sleeve and does not fit, having one-eighth of an inch of clearance. From this it can be readily understood that when the head is at work there is no pull of the belt on the spindle. The belt pull is taken entirely by the bearings that support the pulley sleeve, as is also the pressure of the driving gears. This feature will add greatly to the life of the spindle bearings, and enable the spindle to maintain its perfect alignment many times longer than the old construction. The back gearing now revolves as one piece on its own journals, and in self-oiling bearings with a novel means of engaging and disengaging. This will be recognized at once as a much-desired improvement.

Oiling has been given a great deal of consideration, and it is stated that the oiling device will run at least three months at one oiling. The construction of this is such that it is impossible for any oil to get out of these bearings. Deep oil wells are cast in the centre of the bearings for the spindle and sleeve, and hold at least one pint of oil each. On the front of the head on each of these bearings is a lug which is bored out and a glass tube inserted in such a manner as to always show the level of the oil. Mounted on the spindle and sleeve and made to turn with them are brass rings with projections, on the principle of the "Bucket Pump," that have holes bored in the projections, so that when spindles are turning, these dip the oil out of the wells, and as they pass over the centre of the spindle they drop the oil onto the spindle, and continue to do this regardless of the speed at which the spindle revolves.

This is not a high-speed lathe only. It can be used to equal or better advantage on any class of work that has been done on the old type of cone pulley head engine lathe. None of the good qualities of an engine lathe are lost and many new good qualities are gained, notably about double the power.

The lathe is furnished with a countershaft giving the necessary speeds to operate, as above described, which is if anything simpler than the old style countershaft.

The details of the lathe, other than the head, are the same as those of the Quick Change Gear Lathe, made by the same company.

	20 in. Lathe, with usual cone pulley.	20 in. Lathe, with new patent headstock.
Pressure exerted by belt on spindle bearings in lbs. per square inch of bearing surface.....	17.6	None.
Pressure exerted by belt on spindle between bearings which affects the alignment of the spindle	393 lbs.	None.

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Construction of Sydney Mines (C.B.) waterworks is being commenced. D. Sutherland has the contract.