

The total weight of the smaller roller, with heavy back roller empty, is about $6\frac{1}{2}$ tons, and $7\frac{1}{2}$ tons full. When the back roller is filled it carries a weight of about $5\frac{1}{2}$ tons, the remaining weight being on the front of the machine. Petrol rollers are also made to a weight of 12 tons.

The consumption of petrol, or paraffin, varies from about one-third of a gallon an hour for the smaller roller, to about $1\frac{1}{4}$ gallons an hour for the larger size.

The roller is usually speeded to 1 and 3 miles an hour, either forwards or backwards, when the engine is running at its normal revolutions per minute. It is possible to vary the engine speed above or below the normal by a hand control, when a corresponding variation in the travel of the roller follows.

All gears are of steel, and are machine cut, to ensure smooth running. The change speed gears are enclosed within an oil-tight box providing thorough lubrication. Ample allowance is made for shocks and strains to a much higher degree than is met with in regular work.

The chain is of $2\frac{1}{4}$ inch pitch hardened steel, with a breaking strain of 20 tons. Both the wheels on which it runs are machine cut.

The roller is steered by a simple and direct chain arrangement, connecting the front roller to a hand wheel immediately in front of the driver, and the front roller is in two parts to enable it to move quickly and readily in answer to the steering wheel.

A detachable awning of galvanized sheet-iron, for the driver, is carried from the frame, provision being made for canvas or other curtain to be hung as desired.

A band brake, acting on the intermediate shaft, is provided for ordinary use, and an emergency brake, acting on a drum on the back roller, is also supplied.

The motor has a leather-faced cone clutch, suitably designed to transmit the full engine power.

The motor is a governed 2-cylinder engine, giving off 16 brake horse power when running at a speed of 850 revolutions per minute, and the motor is capable of driving the roller, fully loaded, up an incline of about 1 in 5.

The ignition is by low tension magneto, and if petrol only is used an approved carburetter is usually fixed to the motor.

If paraffin is used a specially designed vaporizer is fixed in addition to the carburetter.

The water circulation is usually on the "Thermo-Syphon" principle, no pump being required, and the inlet and outlet pipes are $1\frac{1}{4}$ inches in diameter.

The crank shaft is of steel, of 40 tons tensile strength, the connecting rods are of drop forgings, and the valves are usually of nickel steel.

The chief advantages claimed by the makers for motor rollers are:

(1) About an hour is saved every morning, owing to the motor being started to work at once by the man in charge, instead of having to wait to get up steam, as with a steam roller.

(2) No cartage for supplying the motor with coal, as water is required as in the case of a steam roller.

(3) The rollers being much shorter than steam rollers, they are considered to be less objectionable in traffic than the latter.

(4) Motor rollers are practically noiseless as compared with a steam roller, and are smokeless.

(5) The rollers are placed in "tandem fashion"—that is to say, the back roller follows the front roller, and does not consist of two large wheels as in a steam roller.

(6) For repairs, patching, trench work, tar-macadam and asphalt work the "tandem fashion" construction is claimed to be more convenient than two large back wheels, with their

perimeters extending beyond the line of the front roller, as in steam-driven machines, and

(7) Where new roads are being formed, over soft ground, it is claimed that petrol motor rollers, by reason of their lightness, are an advantage.

The working charges connected with a 5-ton motor roller are stated to be at the rate of about 1s. $6\frac{1}{4}$ d. an hour, including wages, petrol, stores and repairs—equal to about 12s. 2d. per working day. This size roller will consolidate about 3,000 square yards of tarred materials on footpaths in a working day of eight hours duration. In rolling tarred-macadam on carriage-ways the quantity rolled is reduced owing to the interference of other traffic, etc., and it also varies with the rates of the supply and quality of the materials consolidated.

NOVA SCOTIA SOCIETY OF ENGINEERS.

The Nova Scotia Society of Engineers held their fourth annual meeting at Halifax, N.S., August 18 and 19, 1910.

The following is a list of the delegates present: S. Fisher, Sydney; H. Donkin, Deputy Commissioner of Works and Mines; P. A. Freeman, Halifax Electric Tramway, Halifax; J. W. McKenzie, Assistant Good Roads Commissioner, Halifax; R. McColl, Provincial Engineer, Halifax; W. L. Bishop, Dartmouth; W. G. Yorston, Sydney; F. W. W. Doane, City Engineer; J. G. McKenzie, Westville; J. L. Allen, Dartmouth; F. H. Sexton, principal Technical College, Halifax; D. McD. Campbell, Assistant City Engineer, Sydney; Prof. Hewardine, Provincial Technical College; R. W. McKenzie, Sydney; John R. McKenzie, Windsor; E. Kaizer, Halifax; J. Wright, N. S. Telephone Co.; W. Dolan, N. S. Telephone Co.; P. Colpitt, City Electrician; W. A. Hendry, Chief Engineer Halifax & Guysboro Railway; A. G. Robb, Amherst; J. D. Briggs, superintendent construction N. S. Telephone Co.; J. Belliveau, F. G. McPherson, H. A. Russel, R. Anderson; J. W. McKenzie, A. R. MacCleave, Jas. Farquhar, Halifax; Fred. A. Bowman, Sydney; J. A. Comeau, Halifax; J. S. Misener, Dartmouth.

Water Powers in N. S.

The paper on "The Water Powers of the Province of Nova Scotia," by W. G. Yorston, C.E., of Pictou, was a very interesting one and attracted much attention. Mr. Yorston has been connected with the water powers of the province for some time and is an enthusiast on the subject. He believes Nova Scotia's water powers are destined to become of great value in her industrial life, and he watches carefully the increasing development of those powers. While holding those views, Mr. Yorston does not attempt to compare them in magnitude with those of sister provinces in the Dominion.

In his paper Mr. Yorston said Nova Scotia, for its size, is one of the richest provinces in Canada, and its resources are for the most part only in the beginning of development. Projecting into the Atlantic it was only natural that inhabitants of the province so largely depend upon products of the sea for a living. But Nova Scotia is rich in minerals and forests that cannot long lie undeveloped.

He referred to the coal mining and lumbering interests, and said it is beginning to be realized that our forests are being rapidly depleted and that we are awakening to the fact that much of it has been sacrificed. It is not improbable that in a few more years will be heard a similar cry regarding the coal deposits. People are beginning to take cognizance of the fact that the great natural resources of the country are available and worthy of preservation. Already in the province a halt has been called in reckless disposition of Crown lands.

Before the perfection of the steam engine water powers were largely depended on to furnish power for all kinds of in-

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