cubic yards were removed. In the Marsh Creek at the terminal flushing pipe, quite an extensive bar was formed by the material discharged from the main, and the current carried a large quantity away. When flushing into Little River by means of three different branches within one mile of Silver Falls the water of the falls assumed the color of strong coffee, and Major's Brook looked like ink at its confluence with the Marsh Creek, though it had received the flushings of the main 7,500 feet further up. These facts are given to show the impossibility of measuring the quantity of material taken out of the pipe. At No. 3 Hatch Box, where the cleaner had been taken out fifteen times when cleaning the upper end of the main, 108 bushels of heavy material, which would not flow off by the drain, remained, and had to be taken up in buckets as it accumulated, but all the more pulverulent scrapings were carried off in the drain, and as stated, blackened the water of the brook upwards of a mile away. At the other hatch boxes where the current was much stronger, an aggregate of 44 bushels of heavy material had to be hoisted out. The improvement in pressure ascertained in the same manner as at the end of the 1897 cleaning, viz., by sending the whole city's supply through Nos. 1 and 2 and leaving No. 3 shut off during the test, amounted to eleven feet. That is to say, that the two pipes, whose combined capacity before the cleaning began was only equal to that of raising the water 80 feet, can at the present time supply the whole district and deliver up to a level of 141 feet above high water datum in the harbor.

The lightness of the cleaner is a great advantage, the entire weight being but 263 pounds, and the bulky portion being made of wood, which weighs less than the water itself, it floated along with the water. This quality was well exemplified when the broken portion was taken from the main as related in last annual report. The hatch boxes were of cast iron, consisting of a section of pipe with the upper half removable and secured in place by means of screw bolts and nuts, the flanges being gasketed with Tuck's 1¼-inch round packing, which adapted itself to all the inequalities of the casting and to the curved form of the flange. Each one weighed about 3,300 pounds, and required 26 square necked bolts, besides about 18 feet of Tuck's packing. On completing each one, the pit was walled up with dry rubble and covered with timber, outside the city. Inside the city the covering was arched in masonry and cement, and an iron manhole left in the crown; the manhole being large enough to pass the cleaner through. The force employed to operate the cleaner consisted of a foreman, a mechanic, two watchers, six assistants and two express teams and drivers.

FIRES OF THE MONTH.

Nov. 2nd. Murray's planing mill, Winnipeg, Man.; damages, $12,000.—Nov. 3. The barrelling department of the Sun Oil Co., Hamilton, Ont.; loss, $6,000.——Nov. 4. Ontario Power & Flats Co., Toronto; the damages amounted to $17,000, divided among W. Spanner & Co., Gilchrist & Co. and Fraser & Co., woodworkers.——Nov. 5th. Webster & Boyes' carriage factory, Napanee; loss about $1,600.——Nov. 5th. D. I. Hamlin's evaporator, Port Hope, Ont.; loss, $4,000.——Nov. 9th. MacNeil's sawmill, West Devon, P.E.I., wholly destroyed.——Nov. 10th. T. Peters, tannery, St. John, N.B.; damages, $40,000.——Nov. 12th. Viau & Bro. biscuit and candy factory, Montreal; loss, $300,000. ——Nov. 15th. W. W. Gordon's planing mill, Glencoe, Ont.; total loss.——Nov. 22nd. R. T. Houston's sash factory, Tweed, Ont.; loss from $6,000 to $8,000.——Dilworth's elevator, High Bluff, N.W.T.; insurance, $12,000.

THE PRACTICAL MAN.

STANDARDS OF LENGTH.

The standard yard was first legalized in England, in 1824; this standard, however, was destroyed in 1834. The standard imperial yard "Bronze No. 1," was then prepared and legalized in 1855. Forty copies were made, and one of these, "Bronze No. 11," was presented to the United States by the British Government in 1856. At the same time another copy, known as the Low Moor Iron No. 57, was sent. These were accurately compared, before being sent, with the standard imperial yard, and the record of the variations sent with them. Although the Constitution of the United States empowered Congress to fix the standards of weights and measures, no legal standard of length was adopted until 1866, when a law was passed making the metre legal, the first and only measure of length legalized by the United States Government.

METRIC MEASURES.

The metric unit of length is the metre = 39.37 inches.

The metric unit of weight is the gramme = 15,432 grains.

The following prefixes are used for subdivisions and multiples: Milli = 1/1,000, Centi = 1/100, Deci = 1/10, Deca = 10, Hecto = 100, Kilo = 1,000, Myria = 10,000.

METRIC AND BRITISH EQUIVALENT MEASURES.

MEASURES OF LENGTH.

French.	British.
1 Metre.....	= 39.37 in., or 3.28083 ft., or 1.09361 yds.
.3048 Metre.....	= 1 foot.
1 Centimetre.....	= .3937 inch.
2.54 Centimetres.....	= 1 inch.
1 Millimetre.....	= .03937 inch, or 1-25 inch nearly.
25.4 Millimetres.....	= 1 inch.
1 Kilometre.....	= 1093.61 yards, or 0.62137 mile.

MEASURES OF WEIGHT.

French.	British.
1 Gramme.....	= 15 432 grains.
.0648 Gramme.....	= 1 grain.
28.35 Grammes.....	= 1 ounce Avoirdupois.
1 *Kilogramme*.....	= *2.2046 pounds.*
4536 Kilogrammes...	= 1 pound.
1 Tonne or Metric ton, 1000 Kilogrammes	= .9842 ton of 2,240 pounds, 19.68 cwts., 2,204.6 pounds.
1.016 Metric tons, 1016 Kilogrammes....	= 1 ton of 2,240 pounds.

MEASURES OF CAPACITY.

French.	British.
1 Litre (= 1 cubic Decimetre).....	= 61.023 cu. in., .03531 cu. ft., .2642 gal., 2.202 pounds of water at 62° F.
28.317 Litres.....	= 1 cubic foot.
4.543 Litres.....	= 1 gallon, Imperial.
3.785 Litres.....	= 1 gallon.

NEW CATALOGUES.

We have received Catalogue 64 of the Sprague Electric Co., which discusses Lundell Generators, direct connected and better types, from the Canadian agents of this company, Jack & Robertson, Montreal.

The Dodge Mnfg. Co., Toronto, Ltd., is sending out a catalogue illustrating a full line of power transmission machinery. This is a work of some 270 pages, and should be found very useful to superintendents of mills and factories, also to mill architects and mechanical engineers. The work not only illustrates and describes fully and completely transmission machinery, but it also provides complete dimension tables covering each line; so that work may be provided for and laid out accurately from the beginning. We think the Dodge Co. is to be congratulated upon the volume. The Dodge Co. makes a specialty of shafting, hangers, pulleys, friction clutch pulleys, friction couplings, self-oiling bearings, belt tighteners, rope driving, chain and sprockets, jack shaft equipments, etc.

The B. Greening Wire Co., of Hamilton, has just issued a catalogue on "Wire Rope" as the first of a series of special catalogues to be sent out soon. Besides being a price-list of all kinds of wire rope, it gives particulars of fixtures and appliances to be used with wire rope, and what we think a great many regard as most useful, a number of valuable tables as to the working, etc., of wire rope under different conditions. Inside the front cover is a telegraphic code to be used when ordering, and on the back of the book is a cut of the works showing the new power loom mill just erected. This catalogue will be followed by one of Wire Cloth and Perforated Metals, which is now in the press. The company will send any of these catalogues to readers of The Canadian Engineer, if they will say what department they are particularly interested in.