

with a spirit level, by which a horizontal level may be ascertained independently of the plumb-bob. For testing the uprightness of the work a plumb-bob is used, which consists only of the bob or weight, suspended by a string from the top of a strip of wood. This strip is of exactly parallel width throughout, and the point of suspense of the bob and the gauge mark below are exactly in a line with each other, and equidistant from the edges of the strip. Particular sectional forms, to which many blocks have to be prepared, are the most readily and truly multiplied by using moulds or templates. Zinc is a very suitable material from which to cut these templates. An exact correspondence in form of the surfaces which, when combined, are jointed together, and requiring to coincide, is thus secured; the only thing necessary to secure this being that the mason shall mark the outline of his template or pattern correctly upon the levelled surface of the block, and direct his chisel accordingly.

#### ROOF TIMBERS.

The following instructions have been circulated to all officers of the P. W. Dept., Madras, India, by the Chief Engineer, and may be of general interest:—(1) It should be a standing rule that no timber supporting a roof should ever be built into masonry. A space of not less than half inch in width on either side should be always left between the two for the circulation of air. (2) The ends of all timber in contact with masonry should be invariably tarred two coats. (3) Rolled steel beams should always be used, when possible, instead of timber. (4) In new buildings danger from white ants can always be avoided by moving the top 6 inches of soil over an area exceeding by 20 feet all round the site of the buildings. If a white ant's nest exists on the site, the removal of the soil will betray its presence in a day or two, and it can then be dug up and removed. It is a well ascertained fact that white ants do not infest a building unless their nest is under its site.

It is reported that Mr. J. E. Vanier, town engineer, of St. Lambert, Que., will be asked by the council to resign.

Mr. T. H. Allison, civil engineer, of New York, is spending his Christmas holidays with his father, Mr. James Allison, 52 Murray street, Toronto.

The firm of Curry Bros. & Bent, contractors, Bridgetown, N. S., will hereafter be known as the Curry Bros. & Bent Co., Limited. The capital is \$30,000.

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#### CONVENTION OF CIVIL ENGINEERS.

The thirteenth annual meeting of the Canadian Society of Civil Engineers will be held in the city of Montreal on Tuesday, Wednesday, Thursday and Friday, January 10, 11, 12 and 13. The following is the official programme:

TUESDAY, JANUARY 10TH.—11 a.m., meeting for the election of scrutineers in the society's rooms, 112 Mansfield street, Montreal. 2 p.m., excursion to the Bonaventure station to the new Victoria bridge, by courtesy of the Grand Trunk Railway. 8 p.m., meeting in the society's rooms. Paper upon the construction of the new Victoria bridge, prepared under the direction of Mr. Joseph Hobson, Chief Engineer Grand Trunk Railway, illustrated by lantern projections.

WEDNESDAY, JANUARY 11TH.—Excursion of the Society to visit the works of the Laurentide Pulp Company, Grand Mere. A special train, which will leave Place Viger station at 8 a.m., has been placed at the disposal of the society by the management of the Canadian Pacific Railway.

THURSDAY, JANUARY 12TH.—10 a.m. and 2 p.m., technical meetings in the society's rooms, at which the following illustrated papers will be read: The Soulanges Canal, by Thos. Monro, past president Can. Soc. C.E.; The Trent Canal, by R. B. Rogers, M. Can. Soc. C.E.; The Georgian Bay and Ottawa Ship Canal, by H. K. Wicksteed, M. Can. Soc. C.E. 8 p.m., members' annual dinner at the Windsor Hotel.

FRIDAY, JANUARY 13TH.—10 a.m. and 2 p.m., business meeting and an address by the retiring president, Mr. W. G. McN. Thompson.

Some idea of the extent of Ottawa's waterworks system may be learned from the annual report of the city engineer. The city has over 97 miles of pipes in use, with 11,955 services. During the past year nearly two miles of main pipes were laid, and 533 new services put in. Forty-two hydrants were put in in 1898, making 751 in all. The average number of gallons pumped daily was 8,481,499. The total waterworks receipts for the year to December 1st were \$157,000, and the expenditure to the same date \$153,759.63, as compared with \$186,559.89 for the whole of 1897.



#### WATER SUPPLY FOR MONTREAL WEST.\*

By WILLIAM THOMPSON.  
(Concluded).

There is still one method of securing supply with which I wish particularly to deal—the method of securing supply by what is known as driven wells. This type of well is nearly always sunk into a gravel deposit, and the ultimate source of the ground water in this, as in rock wells, is the rain. The advantages to be derived from the adoption and use of such wells as these in particular localities is becoming more and more apparent, and they have already proved of immense value. For instance, during the Abyssinian expedition in 1867-68, they were extensively used by the British army, and again by Sir Herbert Kitchener's expedition against the Khalifa just so successfully closed.

Many advocates of the driven well system claim that such a supply is inexhaustible, that well after well can be driven in any given locality with impunity; but with regard to the absolute amount of water that can be obtained and utilized in any given locality, common sense, as well as science, tells us that the amount of water which a given deposit can yield must be a definite quantity, although to us unknown and varying in accordance with locality. While we cannot agree with all the claims of the enthusiasts of the driven well system, there are many strong points in its favor that render it worthy of close consideration; it has wonderful advantages over surface wells or ordinary surface supply. A driven well ordinarily takes its water from a lower point than that to which a surface well could possibly be sunk in the same locality, and for this reason is less liable to pollution; and moreover, the driven well usually passes

(Continued on page 6).

\* Paper read by special request as a farewell address to the residents of Montreal West, Que.

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