be caused by an inadequate supply of water to the bed of porous limestone which forms the filter.

If the supply of water available from the wells is inadequate could it not be increased? Could not the lakes and streams which now drain the water from the country to the northwest be diverted into this great natural filter, or even would it not be possible to divert some of the water of Lake Manitoba itself into it?

These questions are worth deciding before the present methods of obtaining pure water from artesian wells is abandoned.

J. B. TYRRELL,
Consulting Geological Engineer.

Toronto, March 31st, 1914.

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Jointing of Water and Gas Mains.

Sir,—I notice a letter in your issue of the 26th inst., by "Hydraulic Engineer," on "Jointing of Water and Gas Mains."

In regard to his remarks on steel pipe my own experience may be of interest.

I have laid for the Montreal Water and Power Company something over 8 miles of steel main in 60-in., 48-in., 36-in. and 30-in. diameter, and from 7/16 in. to 5/16 in. thickness for working pressures ranging from 200 to 65 lbs. per square inch.

The first mile of 36-in. was laid with a single rivetted butt strap joint. This was found to be a nuisance and expensive to lay as the joint made at the mill (the strap being rivetted to each 30-ft. length of pipe) had to be completely gone over in the field to render tight.

The remaining 6 miles of this line was obtained in tapered pipe with a total taper in 30 ft. equal, approximately, to twice the thickness of the plate. A single row of holes was shop drilled at the end of each length and a single rivetted lap joint, made entirely in the field, thus obtained. This has proved an absolutely satisfactory joint and no trouble has been experienced even with pressures up to 250 lbs.

The high pressure of 250 lbs. has been recorded due to "surging" after a sudden and accidental stoppage of the pumps.

At one point in the main a crossing of the Lachine Canal occurs. This was made in flanged steel pipe, the flanges being steel angles. Experience has shown this to be a weak and unsatisfactory joint, difficult to get tight.

I have not had experience with the lead yarn spigot or faucet joint in steel pipe, but would doubt its durability at high pressures and in large sizes.

F. H. PITCHER,
General Manager and Chief Engineer,
Montreal Water and Power Company.

Montreal, March 31st, 1914.

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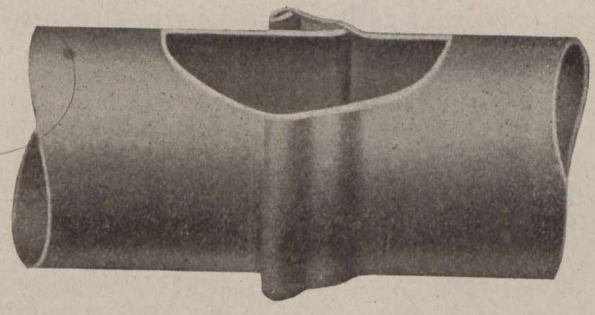
"Jointing of Water and Gas Mains."

Sir,—It is unfortunate that your correspondent "Hydraulic Engineer" did not take a little trouble to become acquainted with the actual facts of the case before making such statements as appeared in his letter in your March 26th issue. Certain of these statements are so misleading that it may interest you to have the exact position placed before you.

Your correspondent states that the process of oxy-acetylene welding is so expensive and difficult to perform, that it can be discarded as not practicable. To the contrary, the new process of welding joints is an acknowledged success, and it may interest your readers to know that orders and repeat orders have been received from about thirty gas and water companies in Great Britain, where, if anywhere, the engineer is most conservative in his ideas. To give one special instance: The City of Birmingham has installed about three miles of 9-inch pipe with this patent joint for gas work, and the probabilities are that many repeat orders will be secured from the same source.

The article in your recent issue on this new process of welding joints gave an account of the effect of expansion, and perhaps your correspondent will be good enough to read that over, so as to improve his ideas on the subject.

Another point to which exception can be taken in your correspondent's remarks is the type of sockets which he advocates for pipe lines. The consensus of opinion of engineers is strongly in favor of the following type:



The reinforced bell end removes any danger of splitting of the pipes during the caulking operation, and the turned-up spigot makes it impossible to draw the pipes apart after they are joined with lead and yarn. There is, also, a very deep groove in the socket for lead, which is a feature wanting in the special type of sockets shown in the sketches in your article of last week. The extensive mileages of pipes with this type of socket now in use can verify its popularity with engineers.

It is hoped that the above remarks will now make matters quite clear to your correspondent as they can be proved by actual fact.

A. HUTCHISON.

Montreal, March 30, 1914.

NEW SURVEYING ACT FOR SASKATCHEWAN.

The old Land Surveyors Act has given place in Saskatchewan to an act passed at the recent meeting of the Legislature of that province. The new legislation differs from the old principally in that the examination of all candidates desirous of obtaining a commission as an S.L.S. is now placed entirely in the hands of the Saskatchewan Land Surveyors' Association. This association is now placed on the same basis, and will receive the same recognition as other professional associations. It is now necessary for Saskatchewan land surveyors desiring to practise in the province to conform to the requirements of the association respecting registration.

The recently-issued report for 1913 of the city of Vancouver gives the following mileages of improvements in the city at the close of the year:—Permanent street pavements, 51.453 miles; permanent lane pavements, 3.213 miles; streets, rocked, 146.556 miles; lanes, rocked, 25.050 miles; cement concrete sidewalks, 202.184 miles; sewers, 170.01 miles; water mains, 298.84 miles.