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**Canadian Society of Civil Engineers.**

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**TRANSACTIONS.**

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To be read on Thursday 9th, April.

**SEWERAGE AND WATER-WORKS OF ST. JOHN'S,  
NEWFOUNDLAND.**

By ALAN MACDOUGALL, M. CAN. SOC. C.E., M. INST. C.E.

Devastated by a fire which left hardly a single building standing in 1846, hampered by the peculiar policy of the Imperial Government towards the colony, which only received Responsible Government in 1854, governed by the Provincial Government as a part of the general property in the island, and only now permitted to enjoy a partial self government, and sadly hindered by a most curious system of land tenure, the city of St. John's certainly did not rise like the Phoenix out of its ashes! The city has had a great deal to contend with during the past 45 years, and more so in the period more immediately passing away. Absent landlordism and absent capitalists draw all the profits from the city, and leave the money makers to battle with all the expenses attendant upon the building up of the city. The whole of the city is built on leasehold. Nearly all of the earlier leases are non-renewable, and contain provisions that all improvements belong to the owners of the land at the termination of the leases. The system of land tenure savours more of the feudal and vassal system than of nineteenth century advancement.

The city of St. John's is built on a steep hill-side. It is surrounded by high steep hills rising 300 to 600 feet above sea level, with a land-locked harbour of 345 acres in extent.

The entrance to the harbour is through a narrow gorge bearing evidence of having been scoured out by glacial actions. The rocks in the neighbourhood are Huronian.

The present population is estimated at 30,000. Nearly all the buildings are of wood; the only stone and brick buildings are on the two principal business streets—Water and Duckworth. Public buildings, such as Government house and buildings, the principal churches and so forth, are of stone imported from Ireland. After the fire no re-survey was made, or any regulations passed governing the erection of buildings; consequently a town has grown up full of curious irregular streets, full of encroachments and narrow spaces such as one meets with in European Continental cities, where people can almost shake hands out of their windows. The streets are all closely built upon, there are no spaces between the houses; the blocks are solid masses, in many cases without any means of access to the rear of the houses, and in many cases the backs almost touch each other.

The streets rising from the harbour are very steep, the ruling gradient is about 1 in 9. The rear parts of houses in many streets are so much below the street level, the lowest portions cannot be connected to the sewers. The city is practically built upon rock, it crops out everywhere in the streets; huge masses overhang the backs of houses; it has been quarried out to allow the houses to be built. The problems relating to sewerage are complex and interesting from a variety of circumstances, the discussion of which will occupy more space than the limits of this paper will allow.

The population consists largely of working people, who are poor. Nearly everyone of them is engaged in the fishing trade, either seal or bank fishing. The houses are of poor construction, of small rental, and incapable of bearing the expense of such sewerage and plumbing as the experience of the present day teaches to be necessary. Under one roof can be ordinarily found six to eight different families, occupying one or two rooms each, and in many cases being the proprietors of these small apartments, thus illustrating the "tenement" house of the Eastern