

# The Canadian Engineer

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## The Canadian Engineer.

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THE MANUFACTURER, THE CONTRACTOR AND THE  
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### CANADIAN TRADE WITH SOUTH AFRICA.

A steamship has been chartered to convey Canadian exhibits to the Exhibition to be held shortly in the city of Graham's Town, Cape Colony. She will remain at Quebec till the end of the month to load exhibits. We understand that further information may be obtained from the Department of Agriculture at Ottawa regarding the Exhibition, and that exhibits will be carried and returned free of charge. South Africa is a promising field for Canadian trade. It has been exploited very successfully by American manufacturers and by a limited number of Canadian firms who have had the enterprise to invade that field. For the information of our readers we may mention that the population of Cape Colony at the census of 1891 was 1,527,000, of which 377,000 were whites. The population of Natal was 555,500, of which 42,759 were whites and 43,000 East Indians. The population of Pondoland was 200,000, of Zululand 146,000, Amatongaland 38,000, Swaziland 60,000, Basutoland 218,000, and of Betchulana land about 66,000; these native territories having so far but a limited white population. The colonies and dependencies just enumerated are all British, but besides these there is the Transvaal Republic under the suzerainty of Great Britain, having a population of about 850,000, of which over 160,000 are whites. Besides the Transvaal there is the Orange Free State with a population of about 210,000, of which 78,000 are white. In the early days of sewing machines the Canadian Wanzel Machine was among the most popular in use in South Africa, and Cana-

dian stoves, office and school furniture, sashes, doors, and house-building material, window shades, bicycles, type setting machines, agricultural implements and other lines of Canadian manufacture, have found greater or less favor in those colonies. American manufacturers, however, have hitherto had the lion's share of the trade because of their greater facilities for shipment and because of their greater enterprise. There is a large market, however, for Canadian goods in South Africa, and it only requires a little investigation to commence on, and a little courage and enterprise to follow it up, to develop a large and steady trade in that quarter of the world. The bulletins which the Canadian Manufacturers' Association propose to publish should serve a very useful purpose in directing Canadian trade into new channels abroad, and in the meantime much can be done by judicious exhibits at such exhibitions as that at Graham's Town.

### PURIFICATION OF SEWAGE.\*

BY E. G. BARROW, CITY ENGINEER, HAMILTON.

There are few questions of more interest than that of the best manner of disposing of the sewage of our towns and cities, and it may be also said few questions are beset with greater difficulties. When it is considered that this subject has occupied the minds of some of the most practical analysts, engineers and scientists of Europe for many years back, and even at the present day there still exists a great diversity of opinion as to the best method to be adopted, it may well be pronounced a question difficult of solution. It would seem wisdom to avoid becoming a partizan of any particular system, because it frequently happens that the surroundings of a city, the nature of the soil in its vicinity, value of land, etc., dictate the best methods to be adopted in each particular case.

The methods of purification best known at the present time are: 1st. Broad irrigation, or the distribution of sewage over large tracts of land, having in view the growth of useful crops, called sewage farming. This system will take 4,000 to 6,000 gallons per acre per day. 2nd. Land filtration, in which purification is obtained by the passage of the sewage through light soil with little or no attempt to grow crops; 60,000 gallons may be used to the acre on this plan. 3rd. Chemical precipitation, in which the purification is obtained by means of certain precipitants such as lime, alum, salts of manganese, sulphate of iron, which precipitate all the suspended matter in tanks, and also remove a small part of organic matter in solution.

Combinations of the above are frequently made. To these methods have been lately added the septic tank system adopted at Exeter, England; the biological method, by which the purification is sought to be obtained by means of bacteria contained in filters, generally made of coal, coke, pularite, etc.; the treatment lately advocated by Mr. Adeney, of Dublin, Ireland, in which after precipitation with salts of manganese the effluent is treated with nitrate of soda to complete purification.

Ordinary city sewage is a mixture of a very complex character and is derived from the discharge taking place

\*A paper read before the Canadian Association of Stationary Engineers.