

emptied automatically. As the filter fills, the semi-clarified liquid at the same time rises in the discharge well of that filter, from these discharge wells small pipes are led to discharge over two sets of buckets hung on rocking levers. On the same levers are also the valves controlling the delivery and discharge. The filter which has just filled discharges the one standing full, at the same time closing the discharge and opening the delivery valve of the filter next to be filled, which at the same time is aerating preparatory to receiving the sewage. In this way each filter in turn receives its sewage which is retained till the one next is filled, when it is discharged, it then stands empty to aerate whilst awaiting the next cycle when it will again fill, stand full, empty, remain empty to aerate, and so on.

The bacterial action which takes place in the filters is directly opposite to that which takes place in the Septic Tank; in case the aerobic bacteria perform their work. The presence of oxygen being absolutely necessary for their life and work.

This action consists of the oxidation of the ammonia formed in the tank. This is converted into nitric acid which at once combines with the bases present to form nitrates. This completes the process of purification the resulting effluent being perfectly clear, sparkling and agreeable to the palate and has undergone no putrefaction on being kept in stoppered bottles up till now.

One filter in each set of four is cut out of work each week and given a week's rest. This is necessary in order that the bacteria may exercise their full powers of purification. In conclusion I might add that this system of sewage treatment has been found efficacious at all temperatures experienced in England. In no case has the activity of the bacteria ceased through the formation of ice, the temperature of the sewage being at all times sufficient to prevent any stoppage through this cause in the filters exposed to the air.



### METRIC MEASURES.

Editor, Canadian Engineer;—

Sir,—May I be allowed space in your columns to call the attention of your readers to the Weights and Measures Bill which passed the House of Lords on May 17th, of this year,

The outside support which the Bill received is some indication of the favor with which the movement for a reform of our weights and measures is meeting on all sides. Petitions in its favor have been presented either to the Board of Trade or to the House of Lords by various bodies including 92 Town, City and County Councils, 49 Chambers of Commerce, 29 Retail Traders' Associations, 39 Trade Unions, 59 Teachers' Associations, the Inspectors of Weights and Measures in 91 districts, and several Chambers of Agriculture.

In addition to the support already quoted, 333 members of the British House of Commons have signified their approval of the reform, most of them being in favor of a compulsory measure.

The chief objection to the proposed change on the part of engineers is on the score of expense. Prophecies of total ruin to the engineering industry have been made as a consequence of the scrapping of machinery which would be necessitated by the change. That, of course, is a legitimate objection, but we must remember that in many works a scrapping process is more or less continuous, and the most enterprising manufacturers do not hesitate now to scrap machinery when they see any ultimate advantage.

While, therefore, it is unwise on the part of supporters of the reform to ignore this difficulty, it is very easy for their opponents to exaggerate the expense involved; and, further, the advantages of a uniform system of weights and measures are so great and so obvious that we have to decide whether the gain would not outweigh the sacrifice.

German engineers in 1870 were confronted with a similar position, with like difficulties, but we do not hear of universal ruin as a consequence to them of the change which took place at that time.

In a paper read by Alexander Siemens (President of

the Institute of Electrical Engineers), on this subject before the Royal Statistical Society on December 15th, 1903, he refers to the question of screw threads.

"As regards screw-cutting machinery," he says, "it should be known by this time that English threads can be cut with metric leading screws just as accurately as metric threads on English leading screws; all that is necessary is to buy suitable exchange wheels."

As an indication of how this reform is regarded in England by scientific men and by manufacturing firms, it is sufficient to quote the names of the following who strongly advocate the adoption of the Metric System:

Lord Alverstone, F.R.S.; Lord Avebury, F.R.S.; Sir Benjamin Baker, K.C.B., etc.; Sir Lowthian Bell, F.R.S.; Sir J. T. Brunner, Sir Wm. Farrer, F.R.G.S.; Sir Michael Foster, K.C.B., etc.; Earl Grey, K.C.M.G.; Sir William Huggins, O.M., F.R.S.; Mr. W. Henry Hunter, M.I.C.E.; Lord Kelvin, O.M., F.R.S., etc.; Lord Lister, O.M., F.R.S.; Sir Oliver Lodge, F.R.S., Sir Hiram Maxim; Sir Guilford Molesworth (Pres. of Inst. C.E.); Sir Andrew Noble, K.C.B., etc.; Sir William Preece, K.C.B., etc.; Sir William Ramsay, K.C.B., F.R.S.; Lord Rayleigh, O.M., F.R.S.; Sir Henry Roscoe, F.R.S.; Mr. Alexander Siemens (Pres. I.E.E.); Armstrong, Whitworth & Co; Babcock & Wilcox; Birch, J. & Co.; Birmingham Small Arms Co.; Boake, Roberts & Co.; Bovril, Limited; Briggs, Thomas (Manchester) Limited; British Mannesmann Tube Co.; Broughton Copper Co.; Brunner, Mond & Co.; Egerton, Burnett, Limited; Burroughs, Wellcome & Co.; Central Marine Engine Works; Clarke, Nickolls & Coombs; Clayton & Shuttleworth; Cleveland Bridge and Engineering Co.; Colville, David, & Sons; Crosfield, Joseph, & Sons, Limited; Debenham & Freebody; Deloitte, Dever, Griffiths & Co.; Elliman, Sons & Co.; Fleming, Birkby & Goodall; Sir Douglas Fox & Partners; Fraser & Chalmers; Gosnell, John, & Co.; Gossage, William, & Sons; Guthrie, Edwin & Co.; Harland & Wolff; Harrods Stores, Limited; Hollins Mill Co.; Horrockses, Crewdson & Co.; Imperial Tobacco Co.; Jaegers Sanitary Woolen Co.; Jenson & Nicholson; Johnson Matthey & Co.; Jonas & Colver; Johannesburg Cons. Investment Co.; Kayser, Ellison & Co.; Lancashire Explosives Co.; Liberty & Co.; Main, A. & J. Co.; Mather & Platt; Maw, S., & Sons; N. F. Marine Engineering Co.; North British Locomotive Co.; Pears, A. & F., Limited; Perfecta Seamless Steel Tube Co.; Ransomes, Sims & Jefferies; Rudge-Whitworth, Limited; Ruston, Proctor & Co.; Salt, Sir Titus, Bt., Sons, & Co.; Salt Union, Limited; Salter, George, & Co.; Sandycroft Foundry Co.; Sassoon, D., & Co.; Siemens, Alexander, & Co.; Simpson, James, & Co.; Smith's Dock Co.; Summerscales & Son, Limited; Swan, Hunter & Wingham Richardson; Tapling, T., & Co.; Thornycroft, John I., & Co.; Tyne Iron Shipbuilding Co.; United Alkali Co.; Venesta, Limited; Vickers, Sons & Maxim; Waverley Iron & Steel Co.; White, J. G., & Co.; Whiteley, William, Limited; Whitwell & Co.

In short, the popular demand for the change is now so strong in England that there is little doubt that the Government will be compelled to grant the reform.

It should be remembered, moreover, in the event of the Liberal party coming into power, that the Lords Spencer, Rosebery and Tweedmouth warmly advocated the reform when the Bill was under discussion in the House of Lords.

E. Johnson, Secretary Decimal Association,  
London, England.



—The American Society of Heating and Ventilating Engineers holds its eleventh annual meeting at the Astor Hotel, New York, on January 17th, 18th, and 19th.



—The Kerr Engine Co., Walkerville, are to be congratulated on the tasty calendar which they are issuing for 1905. The heavy dark board with its wide margins enhances the beauty of the picture which it supports, and the printing, while perfectly legible, is not so intrusive as to mar the general effect.