

Concrete arches of all types and of spans over 60 ft., or total length of bridge over 200 ft., are distributed as follows: Nova Scotia 11, Quebec 7, Manitoba 2, Alberta 2, and Saskatchewan 1, making 23 outside Ontario, which has 57, making 80 in Canada. It is remarkable that approximately one-third of these are concrete trusses.

Concrete beam and slab bridges are not here being considered, but it may be said that although there are a great many of quite short span there are few of spans over 50 ft. and not more than a half dozen of considerable length, the two C.P.R. viaducts at North Toronto, of length 380 ft. and spans of 35 and 37 ft., being the longest.

It may be of interest to place the longest Canadian concrete viaducts and the greatest Canadian arches in their places in the list of the world's bridges. From lists compiled by the writer, there are 32 concrete arch bridges and viaducts longer than the Saskatoon bridge and 29 longer than the Peterboro bridge will be. There are 13 arches greater than the main span (235 ft.) of the Peterboro bridge, six of these in America.

If information later comes to hand of any arch bridges of spans of 60 ft. or greater which have not been mentioned, the omissions will be made good by a letter to *The Canadian Engineer*.

ONTARIO GOOD ROADS ASSOCIATION

IN the York County Building, Toronto, March 5th, 6th and 7th, was held the 17th annual meeting of the Ontario Good Roads Association, attended by 150 delegates from all parts of Ontario. C. R. Wheelock, of Orangeville, presided.

Addresses were delivered by Hon. F. G. Macdormid, C. R. Wheelock, Geo. S. Henry and A. W. Campbell. Papers were read by J. G. Wilson and F. A. Senecal.

A number of resolutions were passed and the following officers elected:—

Hon. presidents, J. A. Sanderson, S. L. Squire and C. R. Wheelock; president, K. W. MacKay, St. Thomas; 1st vice, J. Parsons, Jarvis; 2nd vice, W. H. Pugsley, Richmond Hill; 3rd vice, Capt. L. E. Allen, Belleville; secretary-treasurer, Hon. G. S. Henry, M.L.A.; assistant secretary-treasurer, Major T. L. Kennedy, Dixie.

Directors appointed were F. A. Senecal, T. J. Mahoney, W. H. Brown, C. Edgar, John Currie and H. Jamieson.

In the next week's issue of *The Canadian Engineer*, Mr. Wilson's paper on "Stone and Gravel Roads," and Mr. Senecal's paper on "Road Maintenance" will be published; also summaries of the resolutions passed, the addresses by Messrs. Campbell and Wheelock, and the executive committee's report.

The city council of London, Ont., have recommended the acceptance, subject to the consent of the city engineer, of the Imperial Oil Co.'s tender for the year's supply of asphalt. The firm's tender was \$25 per net ton in packages, f.o.b. London, and \$19.65 in tank cars.

The principal heavy structural tree species of Canada, named in order of merit and resources, are: Douglas fir, western hemlock, eastern hemlock, western yellow pine, western larch, red pine and eastern larch. The average weight per cubic foot of dry Canadian structural woods is from about 25 to 30 pounds. The heavier the wood the stronger and stiffer it is, according to a bulletin issued by the Forestry Branch, Department of the Interior.

The old-established contracting and supply firm of Schultz Brothers Co., Ltd., Brantford, has been reorganized in the anticipation of increased business during the reconstruction period. The officers now are: Geo. C. Schultz, president; Wm. D. Schultz, vice-president and managing director; Arthur E. Foulds, secretary-treasurer; Wm. C. Schultz, order department and factory production; J. Albert Taylor, estimating and structural engineer; Hugh W. Turner, general construction superintendent; J. I. Crowe, local construction superintendent; and T. W. Cleator, sectional building department.

The Engineer's Library

SEWAGE DISPOSAL

REVIEWED BY R. O. WYNNE-ROBERTS
Consulting Engineer, Toronto

By the late Leonard P. Kinnicutt; C. E. A. Winslow, and R. Winthrop Pratt, consulting engineers. Published by John Wiley & Sons, Inc., New York, and Chapman & Hall, Ltd., London. Renouf Publishing Co., Montreal, Canadian sales agents. 547 pages, 6 by 9 ins., 141 figures, cloth. Price, \$4 net.

This volume contains 17 chapters dealing with the many complex problems of sewage disposal. The authors have laid emphasis upon broad general principles and have freely used detailed descriptions of the engineering details of typical plants, and extensive analytical tables, both chemical and bacteriological, as illustrative material.

The disposal of sewage by every practicable process is described in clear, terse and ample terms. The authors are well-known specialists in sanitary engineering and whilst the fund of material available for their purpose is voluminous, they have presented the information in a very acceptable manner. This is, the volume is not over-loaded with data; the reader is given the essential particulars such as are ordinarily required by a busy engineer.

The disposal of sewage by dilution is a very tempting one in many localities in Canada. The permissible dilution will naturally vary with the degree of oxygen exhaustion accepted as a safe standard. Some authorities limit this at 70 per cent. saturation, others at 30 per cent., whilst the authors consider 50 per cent. saturation as reasonable. Theoretically, while any dissolved oxygen remains in a stream there should not be putrefaction, but, practically, any value below 50 per cent. of saturation may be taken as a danger signal indicating that malodorous conditions are likely to occur.

Coarse screening is, of course, essential in most sewage works, but the adoption of fine screens is somewhat problematic, since matter can be renewed in settling tanks at a less cost. The experience had in the United States in connection with the use of septic tanks is interesting. The liquefaction of septic sludge may be expected to be about 20 per cent. of the sludge obtained from plain sedimentation. The litigation over the patent rights of septic tanks has been long and costly and continues at the present time, despite the fact that septic tanks have been somewhat superseded.

The use of Imhoff or Emscher two-story tanks has not been uniformly successful owing to a variety of reasons mentioned in this book. Why these tanks work well in one place and badly in another is not clear, but deficient capacity and lack of skilled operation are usually factors in the problem. Intermittent filtration, contact beds, trickling filters, activated sludge process and the disposal of sludge are all carefully discussed.

With regard to the activated sludge process the authors state that the experience of the past few years has made it clear that this process fills an important place in the art of sewage treatment. On the other hand, they state that it is by no means a panacea and whether it should be preferred to treatment on trickling beds will probably depend upon various combinations of local conditions.

Sixteen pages of references to articles dealing with sewage treatment will be found very useful. This volume is recommended to all engineers who are interested in the subject as a valuable addition to their library of books dealing with various phases of sanitary engineering.

The Brant Township Council, Ontario, has accepted the tender of J. A. McKinnon, of Paisley, Ont., at \$1,718 for buttressing the concrete abutment of Trainor's bridge.