G. B. GREENE HEADS OTTAWA BRANCH, C. B. & C. I.

At the annual meeting of the Ottawa branch of the Association of Canadian Building and Construction Industries held December 10th, G. B. Greene, general manager of the General Supply Co. of Canada, Ltd., Ottawa, Ont., was elected president.

Other executive officers chosen for the ensuing year were: Vice-president, H. Graham (general contractor), J. L. Douglas (trade contractor) and R. Hooper (supply man); honorary treasurer, E. M. Barrett; and honorary secretary, G. A. Crain.

In addition to many prominent contractors, there were present several members of the Board of Trade, including the secretary, Cecil Bethune, and E. R. Bremner, both of whom addressed the meeting. F. B. Belfry spoke on behalf of the Ottawa Housing Commission, urging greater interest on the part of contractors in the work of that body.

TORONTO HARBOR COMMISSION'S WORK

Between the years 1912 and 1918 the Toronto Harbor Commission accomplished works amounting to $9,764,800. From the Dominion government 257.5 acres of water lots were acquired by patent; the commission also acquired 4,700 ft. of frontage or riparian or water rights between Bathurst and York streets. Business and industrial properties and parks required the handling of 16,000,000 cu. yds. of material in reclaiming 1,057 acres of water lots and marsh lands.

Approximately 2½ miles of commercial dock walls were constructed, which, with the exception of the Don retention walls, are in the inner harbor.

At the eastern harbor terminal, the work done includes 11,630 ft. of sidewalks, 9,350 ft. of concrete pavements of various widths, 9,500 ft. of storm sewers from 12 ins. to 42 ins. in diameter, and 4,500 ft. of overflow sewers (sizes 6 by 18 ft., 6 by 16 ft., and 6 by 8 ft.).

NATIONAL HIGHWAY TRAFFIC ASSOCIATION

At the annual convention of the National Highway Traffic Association, which is to be held January 29th, 1920, in Chicago, the morning session will be devoted to the reading of reports of committees on highway transport franchises; interrelationship of highway, railway and waterway transport; traffic limitation strips on roadway surfaces; and sign posting for detours and through routes to municipalities; and an address by George W. Tillson, consulting engineer, La Grange, Ill., on "The Effect of Car Tracks on Traffic Capacity of Roadways."

"Highways and Motor Transport" will be the general theme of discussion at the afternoon and evening sessions, which will be joint sessions of the National Automobile Chamber of Commerce and the National Highway Traffic Association. The addresses to be delivered include: "Taking an Interest in Motor Truck Legislation," by Harry Meixwell, Jr., secretary, Automobile Industries Legislative Commission, New York; "Value of Highway Transport Surveys," by F. Van Z. Lane, transportation engineer, Packard Motor Car Co.; and "Interrelationship between Highway Transport and the Back-to-the-Farm Movement," by L. C. Hargreaves, of the Goodrich Rubber Co.

Arthur H. Blanchard, of the University of Michigan, who is president of the association, will speak on the "Relation of Highways to Motor Truck Operating Cost," and William G. Edens, president, Illinois Highway Improvement Association, on "Progress in Highway Improvement."

"Constructing Roads for Motor Truck Traffic," is the title of a paper by Prof. T. R. Agg, Iowa State College. Raymond Beck, chief of the Goodrich National Touring Bureau, will discuss the "Status of Legislation Relative to Snow Removal from Interstate and Intrastate Highways."

COMPUTING CROSS-SECTION AREAS BY THE METHOD OF CO-ORDINATES

By J. A. McDonald
Provincial Land Surveyor, Hermanville, P.E.I.

In spite of its simplicity, the computation of areas by the method of co-ordinates is not often practised by engineers and surveyors. In the following article a formula is obtained for a given area in terms of its co-ordinates, and a general formula derived which is applicable to a cross-section area of any shape.

Referring to Fig. 1, the area of the figure 1234 is equal to the trapezoids $(a12b)+(b23c)-(a14d)-(d43c)$.

Expressed as an equation in terms of the co-ordinates:—

$$\text{Area } 1234 = (y_1-y_2)(x_1+x_2)/2+(y_2-y_3)(x_2+x_3)/2-(y_1-y_4)(x_1+x_4)/2-(y_4-y_3)(x_4+x_3)/2$$

$$= \tfrac{1}{2}[y_1(x_2-x_4)+y_2(x_3-x_1)+y_3(x_4-x_2)+y_4(x_1-x_3)].$$

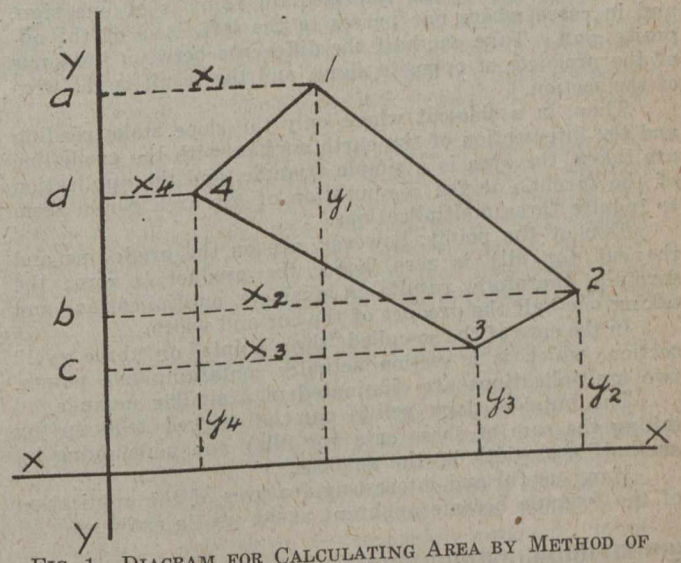

Fig. 1—Diagram for Calculating Area by Method of Co-ordinates

From this equation is derived the following rules for obtaining the area when the co-ordinates are given:—

(1) Number the corners consecutively.

(2) Multiply each ordinate by the difference between the abscissae of the points preceding and succeeding, and take half the sum of these products.

The adoption of this method in computing railway and other earth cross-sections is quite simple. The cross-section

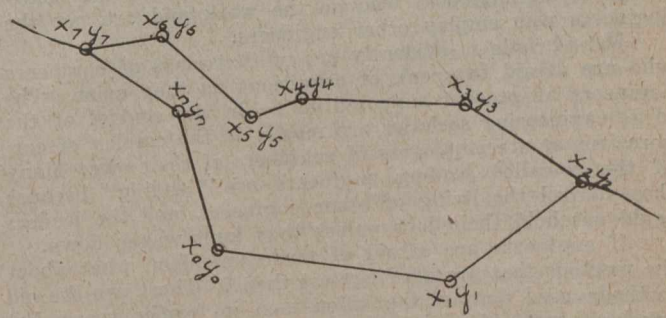

Fig. 2—Diagram Showing General Application of Formula

is considered as an area all of whose co-ordinates are known; the cuts or fills are represented as ordinates and expressed in terms of y, whilst the distances out from the centre become abscissae, and are expressed in terms of x.

The general formula for any possible shape of cross-section whose area is A would be (Fig. 2):—

$$A = \tfrac{1}{2}[y_0(x_1-x_n)+y_1(x_2-x_0)+y_2(x_3-x_1)+y_3(x_4-x_2)+y_4(x_5-x_3)+y_5(x_6-x_4)+y_6(x_7-x_5)+y_7(x_n-x_6)+y_n(x_0-x_7)].$$