

location of the roads or in their original plan. Even with all the knowledge we have on this subject we split highway administration between colonization departments and ministers of highways so that our highway departments have to finance a system which they have not designed. As a concrete instance of the saving which can be effected in planning a single piece of road the "Municipal Journal" of America draws attention to a road at Cape Cod, Mass., where the estimate of cost varied from \$14,000 to \$36,000. The layman, without the assistance of the engineer, guessed within 61 per cent. of the actual cost, the engineer, without special examination, guessed within 39 per cent. and after a proper study he arrived at approximately the true cost. What, however, is really more important is that he reduced the cost by 25 per cent. by planning a more economical location.

The moral in this is not only that preliminary plans of roads should be made by competent engineers in the interests of economy, but that the engineer should have the power to exercise discretion as regards location of the road.

As the County Roads Board in Australia said in their report of 1914, "Badly located and badly laid roads are a constant tax on any community." No matter what the construction, they increase the cost to maintain and determine the amount of load to be carried. We all recognize that well-planned and well-made roads would help to build up manufacturing industries, cheapen production and reduce the cost of living by bringing the farmer nearer the consumer. Incidentally it would make it easier for the motorist to get about the country, but he is only a secondary consideration. Good roads would also attract settlers to areas that must remain unsettled without them. But in order to get good roads within the paying capacity of the people we will have to be less extravagant in regard to the width of all secondary roads; and in order to be more liberal in regard to width of the main thoroughfares we will have to be less wasteful in regard to second and third-class roads and streets. We simply cannot raise the money to make our present road and street system efficient, and the 66-ft. minimum in this province is an economic absurdity. When we lay out roads we should do so on a practical basis.

Roads should be planned, designed and constructed, as a rule, to suit the particular form of land development to be served by them. They should be made with due regard to the best use to which the land can be put. Provincial aid should be confined to improving the principal lines of communication. The system of planning highways in country districts determines the street system of the city; but we do not attempt in designing the one to consider its effect on the other.

The actual cost of a street 66 ft. wide, including a 9-in. sewer, a street pavement of asphalt on concrete foundation 28 ft. wide, two cement sidewalks each 5 ft. wide and 28 ft. of boulevard in Ottawa in 1916 was \$27.50 per lineal foot. Thus, for a 25-ft. lot the cost of local improvements alone amounts to \$343.75. If the cost of land is added it means that \$700 to \$1,000 has to be paid by the working man for a properly improved lot in a city area.

Owing to their more economic method of planning, widths of streets and frontages of lots, in England, e.g., a working man can obtain a site for a home, including local improvements, on a street 36 ft. wide for \$214 as against \$725 in a similar location in Canada. Allowing for the difference in the value of the dollar in both countries, the cost is even then from two to three times as much in Canada.

Narrow minor streets, in residential and rural areas, enable wide thoroughfares to be secured where they are wanted; they enable more air space to be given to the buildings,—although one of the reasons for making a wide minimum is for the purpose of giving the buildings air space in the street instead of from the space reserved on the lot; they enable a highway system to be developed on the only sound basis, namely, that the cost of building up the system shall not exceed the ability of the people served by it to pay for it. But there is no particular virtue in the wide street or the narrow street—the only virtue is in planning all streets to adapt them for the purpose they can best serve in connection with the development of land, and above all with due regard to the economic relationship between the value of the land and other property they serve, and the cost of the road or street. Excessively wide streets cause overcrowding—although they are designed to prevent it.

Until we have a properly planned system of highways adapted for all purposes, and economically sound, we will not be able to deal effectively with bad land development in town and country, and we will only be able to go on dealing with the improvement of roads in a sporadic and haphazard manner—good enough in its way and a satisfactory advance on the past, but far short of the ideal which we should seek to attain, and costly and wasteful in the extreme.

The want of a properly designed system of highways is one of the chief causes of the social isolation in rural districts, of lack of co-operation and of development of rural industrials. It is more correct to say that rural prosperity and increased production depend on a sound economic system of road planning than to say that those things depend on good road construction, for the simple reason that good road construction can only be widely applied if we alter our system of planning.

CANADA BUILDING STEEL AND WOODEN SHIPS.

Orders have been placed for steel ships in Canada up to the full limit of all steel plants available during the next fifteen months. The question of developing wood shipbuilding in Canada has been under investigation during the last month. It has been presented to the imperial government that substantial tonnage of suitable wooden vessels could be obtained. The Dominion government, in order to assist the development of shipbuilding in Canada, Finance Minister Sir Thomas White has offered to find credit to the extent of \$10,000,000 for the Imperial Munitions Board for this purpose. This offer has been accepted and will greatly facilitate progress. Specifications and designs of the type of wooden vessels required have been under discussion between the board, representatives of the British ministry of shipping and various shipbuilding people. They are now almost complete, and will be available as the standard pattern of design. It is hoped to begin work on vessels of this type very shortly and the building of a considerable number will be arranged for in Canada, where suitable lumber is available in abundance.

Sir Thomas White stated in the House on Monday that orders have been placed by the imperial government for the construction of 22 steel vessels, with a total tonnage of 175,000, with Canadian shipyards, while orders for eight others are pending. This will keep all Canadian shipbuilding plants busy until well into 1918.

James Whalen, president of the Port Arthur Shipbuilding Company, has announced that contracts have been secured by the company for work totalling more than five million dollars. The capacity of the local plant is being doubled, and even at the work now in hand will keep it busy until well on into 1918.