

## Road Improvement in America

J. B. STONEKING.

There is such a heavy increase of traffic on all roads in this country, more especially on the main trunk highways between cities and towns of importance and the roads leading from the more populous country districts into the markets, that a very necessary and radical change has been forced in road building and improvement methods. Not many years ago plain graveled and water-bound macadamized roads stood the wear and tear of the then comparatively light and slow-moving vehicles. Light surfacing was the rule and materials which would stand up under the traffic were found to be inadequate when subjected to the abrasion and hard pounding of our heavier and rapid-moving vehicles of the present day.

Since the development and perfecting of the auto truck for hauling and delivery purposes, the slow, wide-tired wagon has been largely replaced. This type of traffic has spelled the doom of earth roads, and tears holes in lighter, more easily worn surfacing with amazing ease and rapidity. It has also caused a cry to be raised for easier grades. The lighter pleasure automobile is almost as hard on road surface as the truck, and the higher speed had increased the number of bad accidents on sharp curves and steep grades. These causes have not only made a heavy, wear-resisting road surface necessary, but in the rebuilding and improvement now being done the roads are widened, grades reduced, sharp turns and dangerous curves eliminated.

The vast amount of work to be done, coupled with the high cost and shortage of labor, has led to the development of successful labor-saving road machinery of many different and highly specialized types. One of the labor savers adopted from quarry, railroad and mining work and applied with success to road building is the low-freezing, slow-acting, heaving, low-grade dynamite for earth work in deepening and widening cuts, widening curves around hillsides and points, blasting out stumps, boulders and trees and in making side and outfall ditches for drainage. Considerable saving is accomplished by its use in loosening material in conjunction with steam shovels, graders, scrapers and other machinery.

Each type of road has its particular advantages and disadvantages, and local conditions must govern the selection, frequently combining parts of each type. Standard types, although more or less inter-related, are macadam in its different forms, bituminous or asphaltic, brick or stone paved, wooden block, and concrete roads.

Macadamizing is probably the oldest and most widely used method of surfacing, having more modifications than any other type. It consists primarily of crushed stone or gravel held together with some form of applied "binder." This type of road is most generally the cheapest in first cost, hence it is not suitable for use as city paving nor on main roads near the larger cities and markets.

Crushed stone having sharp edges is a more satisfactory material than round-edged gravel, for it compacts with less "creeping" and gives a better binding. Trap rock, diabase, basalt, porphyry and other fine-grained rock are very good on account of their hardness and wearing qualities, although somewhat low in "cementing" quality.

### OUR MENTAL DEFECTIVES.—Cont'd.

as follows: "Johnnie had gone out to play on a vacant lot with some other boys and the children were alone. The older girl was lying on the floor and the baby in a carriage. Both were in a filthy condition. Screens for the windows were standing against the wall, and the screen door was open. It was a hot day and the children were literally covered with flies. The only food for these children had been prepared by the mother before she left the house in the morning, and Johnnie had been too indifferent to give it to the children."

It was no unusual thing to find the woman entertaining men friends and all more or less under the influence of liquor. Is it surprising that the boy who came to Canada with his parents ran away from home as soon as he was old enough to work?

Can we any longer tolerate this condition of affairs?

Should people like the Adams', the Bromleys', the Schneiders' and the Marczeskis' be allowed to enter Canada; and should such people be allowed to marry and bring defective children into the world?

Do we want their children to associate with our children?

Surely the time has come for more stringent methods of detecting the mentally unfit who seek admission to Canada; and for adequate legislation to enable us to really cope with such conditions as we have outlined.

Granite is usually too coarse-grained, and limestone too soft for a first-class road surface. A small amount of limestone is frequently mixed with the harder rocks to increase their cementing effect. The binders used are fine stone screenings and water, sand and water, limestone screenings and water, or clay and water.

Upon the compacted earth foundation is spread a layer of broken stone of sizes between one or two and one-half inches in diameter. This is rolled and re-rolled until it is well compacted; a thin coat of binder material is spread over this and rolled into the interstices of the larger stone. Next a coating of finer material of one-half inch to three-quarter inch is rolled, on top of which is spread and rolled very thoroughly a finishing coat of binder, using water freely. The finished sub-base of coarser stone is usually about four inches thick and the surface coat two inches, thus making a six-inch pavement.

In bituminous or asphaltic roads, the crushed stone sub-base is coated with a small quantity, approximately one gallon per square yard, of asphalt cement or tar, then the surface course, consisting of three-quarter to one-inch stone, which has been heated and thoroughly mixed with asphaltic cement, is spread on and rolled while hot. A thin dusting of sand or stone screenings is spread on top to keep the surface from running and becoming sticky. Often a concrete sub-base is used with the surface left rough purposely to prevent the creeping of the surface course. This type of road has a certain "springiness" which saves the horses' hoofs from too much jarring, it is easily repaired, the surface is not easily abraded, but it has the disadvantage of disintegrating after a length of time, due to the presence of a certain amount of volatile oils.

Brick, paving stone and wooden block pavements all require a good, substantial, smooth-surfaced foundation, preferably of concrete, to insure permanency. Concrete, while having been used extensively for foundations, has not been used very much for the wearing surface until late years.

The cost of roads varies with so many factors in different localities that an average figure means very little. However, a few average contract prices per square yard obtained from different sources are as follows: Macadam, 90 cents; stone paving, \$2.73; brick paving, \$1.95; wood block, \$2.82; bitulithic, \$2.25; asphaltic, \$1.91, and petro-lithic, or oiled roads, 36 cents.—The Craftsman.

### THE CITY IMPROVEMENT LEAGUE OF MONTREAL.

(Affiliated to the Civic Improvement League of Canada.)

Executive 1916-17.

President, Hon. J. J. Guerin, M.D.; Vice-Presidents, Far. F. Benson, Victor Morin, N.P.; Hon. Secretaries, C. H. Guhar Robertson, U. H. Dandurand, Zephirin Hebert, G. F. Benson, Victor Morin, N.P.; Hon. Secretaries, C. H. Gould, B.A., J. U. Emard, K.C.; Hon. Treasurers, J. F. Boulais, N.P., Mrs. J. B. Learmont, Mrs. Macdonald McCarthy, Hon. Sen. R. Dandurand, J. N. Dupuis, Lieut.-Col. J. G. Adami, M.D..

The Clean-Up Committee is composed of the following: Directors: Dr. J. J. Guerin, Fire-Chief J. Tremblay, Professor J. G. Adami, Lyon Cohen, Dr. S. Boucher. Hon. Auditors, Sharpe, Milne & Co.

At present the following Chief Committees are at work on Civic Legislation—Town Planning—Housing—Vacant Lot Gardening and "Clean-Up."

This latter, which has worked so successfully in the recent Spring clean-up weeks is now in operation all the year, as a formal Committee of the League.

The officers are as follows:

Frederick Abraham, Hon. Chairman; U. H. Dandurand, Hon. Chairman; F. A. Covert, Chairman; Ed. Montet, Vice-Chairman; J. Sophus, Hon-Secretary; J. Thurston Smith, Hon-Treasurer.

Committees: P. Angers, F. Abraham (Finance), Dr. B. A. Conroy, A. Angers (Home Garden Contest), J. E. Nantel (Sanitation), Zephirin Hebert, Fred Stewart (Education), Dr. W. G. Kennedy, Ed. Montet (Press Service), Dr. W. H. Atherton (Co-operation), Dr. E. Dubeau, W. W. Grant (District Organization), Guy Dobbin, Ludger Gravel (Vigilance), O. S. Perreault, A. B. Ware (Judging), E. T. Sayers (Emergency).

A "Vigilance" Committee has been appointed to receive complaints and to work with the City Hall. A "Sanitation" Committee has been appointed to receive complaints and to work with the City Hall.