

different aspect. It is not only that such roads are less easily broken down by weather, but the material, being of greater specific gravity, is not so easily moved by wind. The argument against the more general use of basalt, in districts remote from basaltic quarries, is its cost. But it does not necessarily follow that a material which is cheapest in first cost will be cheapest when the cost of maintenance is taken into account.

In Bristol we have about 234 miles of macadamized roads, of which thirty-two miles are repaired with basalt and the remainder with local mountain limestone. We have been considering the advisability of repairing an additional thirty-two miles with basalt.

The effect of the increased use of granite will be to increase the expenditure for four years, and afterwards to decrease it, so that on an average of thirteen years the actual additional outlay will be only 354l. per annum. Against this must be set the saving in cleansing and watering, which is always less with granite than with limestone, so that the probabilities are that the granite road will cost less to the ratepayers than the limestone one, although the limestone quarry that would be

given up is worked by the city itself, and lies close to the river in one of the finest possible positions for supplying stone economically.

This may be an answer to the natural argument that expenditure in dust-prevention may be all very well for towns, but quite out of the question in the country, for in many parts it is possible, by means of a bold capital expenditure, to provide a better and less dusty road at practically no greater cost to the ratepayers, especially if a short-period loan can be obtained. The City Engineer has also kindly furnished results of some tests made by him into the wearing properties of different classes of stone. The first test was in Clarence-road, New Cut, where ten different kinds of stone were tried. Three basaltic areas outlasted the period of the test. The basaltic stones also gave off less debris as measured by the loads of slop removed.

NEW ENGINEERING FEATURES.

There will be some noteworthy features in connection with the power house which the Montreal Light, Heat & Power Co. are erecting near lock 4 of the Soulanges canal. The company will have, in the

hydraulic development, for which Allis-Chalmers-Bullock, Limited, of Montreal, have the contract, the first plant of such capacity and class to be designed and built on this continent.

The principal turbines, three in number, will each be capable of delivering 5,350 brake h. p. on the shaft, under a head of 50 feet. Each of them will drive a 3,750 k. w. generator and will be provided with oil governors for the regulation of the speed. There will also be two smaller turbines developing each 800 h. p. to operate the electrical exciters. Heretofore it has been necessary to go to Europe for such high-class work.

In another respect, also, the plant will be unique, as the drafts tubes for the larger units will be moulded in concrete. It will be the first construction of this kind in the country. The wheel chambers will be built in concrete and the roadway along the canal will pass over them. It is claimed that with concrete the necessary curves in the tubes can be made so as to cause less friction than with the ordinary steel or iron penstocks and that, therefore greater power can be developed from the fall at the command of the company.

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