In view of the marked increase in land values and general benefit to the community as a whole as result of subway construction it would seem equitable that those property owners who so materially benefit should contribute in some proportion toward the fixed charges for such improvement. In contradistinction of this, if the unit of fare was increased the tenants of the buildings in the territory involved would not only pay, as result of the subway, increased fare, but also increased rent, while the property owner would receive all of the benefits without participating in the expense.

It is entirely fair and proper that the community should have improved rapid transit facilities and thoroughfares just as rapidly as they are willing to equitably digest it.

In concluding, therefore, when the conditions on a certain highway have reached such a point that additional transportation facilities are necessary, there should first be an effort made to utilize parallel highways with surface tracks at a reasonable and proper investment consistent with the traffic offered. If this for proper reasons is dismissed there should then be effort made to construct surface tracks on private land or elevated tracks on either private land or the highway. If for good and proper reasons these other means are dismissed there is but one alternative left, and that is the construction of subways.

In other words, every conceivable effort should be made to provide additional transportation facilities at as low an investment as is consistent with the demands and the traffic offered, and the construction of subways should be only entered into after the most careful, thorough and conservative study and consideration of other means of furnishing transportation and with a full knowledge of the seriousness of burdening the community with tremendous investment and correspondingly large fixed charges.

If, therefore, it is finally concluded with a perfectly clear perception of what the financial results would be that subway construction is necessary it would seem fair that in the first place the Municipality, Metropolitan District or State should finance same, as undoubtedly money can be raised at a lower rate of interest than where such financing is done by private owners; and secondly, the community as a whole should participate with the company and riding public in the payment of interest charges.

More specifically, upon the completion of subways or tunnels built by the community, they should be leased to the transportation company serving that community on a sliding scale, charging such company rental in proportion to the relation of the capacity used to the total capacity. By such an absolutely fair and equitable arrangement the movement for subway construction automatically regulates itself in a fair and equitable manner to all interests.

SLAG PORTLAND CEMENT.

N a paper on "Portland Cement" recently read by B. J. Day, M.I.Mech.E., before the Institution of Engineers and Shipbuilders in Scotland, some particulars

were given regarding cement of which blast furnace slag forms one of the ingredients. Mr. Day, although recognizing that slag Portland cement is not as good as the best Portland cement, and hence does not command quite such a high price, yet is evidently in favor of its manufacture, and for several reasons. He states that, though it is true that it does not comply strictly with the British Standard Specification for Portland Cement, it nevertheless, if manufactured with care in accordance with the most up-to-date process, may be made to approximate very closely to it. As reasons why the manufacture should be proceeded with, Mr. Day shows first that the slag is in the ordinary course of events a waste product which costs in some cases a considerable sum annually to dispose of; secondly, that where the gases of the blast furnaces are available the cost of the power required to make the cement is a negligible quantity; and, thirdly, that in any case, owing to the fact that the lime in the slag occurs as oxide and not as a carbonate, as in chalk and limestone, less fuel is required in the kiln. According to him a plant producing 1,000 tons of cement per week would require 250 tons of coal less to produce that quantity if the cement were made with slag than it would if the raw materials were limestone and clay.

It is not all slags, however, which can be satisfactorily used to produce cement. Mr. Day gives some typical analyses of slags, as follows:—

	(1)	(2)	(3)	(4)	(5)
SiO ₂	30.00	30.72	32.51	32.90	31.5
Al ₂ O ₃	28.00	16.40	13.91	13.25	18.50
Fe ₂ O ₃	0.75	0.43	0.48	0.46	
CaO	32.75	48.59	44.75	47.30	42.22
MgO	5.25	1.28	2.20	1.37	3.10
CaS	1.90	2.16	4.90	3.42	

It will be observed that the composition of these five samples of slags varies pretty considerably. The variation as concerns silica is not great, but the alumina content varies between 13.25 and 28.0, that is to say, there is more than twice the quantity in No. 1 that there is in No. Then, again, there is considerable variation in the CaO figures, from 32.75 to 48.59 in the two extreme cases, the difference being thus nearly 50 per cent. Slags Nos. 2, 3 and 4 would be suitable for use in cement manufacture, whilst Nos. 1 and 5 would not be so suitable. The composition of the slag naturally varies with the composition of the ore, and the slags from some ores will not produce good cement. It is to this cause that certain failures of the past are attributed. Sufficient care was not exercised in ascertaining whether or not the slag possessed the requisite qualities for the purpose to which it was proposed to put it.

Mr. Day explains that, in order to treat blast-furnace slags, they should first of all be granulated. The effect of doing this is to cause the material to split up into fine sand-like particles; and to remove a large percentage of the sulphur and increase the hydraulic properties of the material. The ground slag is mixed with limestone in the correct proportion, the mixture being then ground and burnt in a kiln, the resulting clinker being in its turn ground to form the cement. The greatest care must, of course, be taken in getting the proportions right. All Portland cement manufacturers are aware of the vital importance of correct mixtures when using other raw

There are approximately 82,530 deaths annually in the United States due to accidents, and in connection with the carrying on of dangerous industries there are 25,000 deaths and 700,000 injuries involving a disability of longer than four weeks.

Stellite is not steel, it contains neither iron nor carbon, but is a tungsten. It is entirely unaffected by any degree of heat that can be generated by cutting, and, it is claimed, will maintain its edge at speeds which no high-speed steel can stand, as well as be used on materials which high-speed steel will not cut. Stellite must be held in a tool holder, as it is of a brittle nature.