

The official figures for the Dominion for the year 1937-38 showed that the average mileage travelled by each vehicle in the transport industry was 14,209. In order to achieve an economic spread of costs, this mileage should be increased to 20,000 per annum. On the other hand, farmers complained that in many instances they were compelled to purchase their own trucks because of the high rates charged by local carriers.

No comment on transport by road would be complete without stating the position from the point of view of the operators. The cartage of lime is one of the most difficult jobs undertaken by carriers, due chiefly to the unwieldy method of bagging at present in practice. It is also stated that lime is seldom true to weight and is frequently 5 per cent. to 10 per cent. above the declared weight. As the cartage is based on this declared weight, the affect is that the transport industry is in some cases giving a substantial bonus on this class of work.

The peak period affects the transport companies by creating seasonal conditions that do not make for an even spread of overhead. The result is that many lorries are out of commission for a considerable part of the year. If the period of maximum demand could be spread, then costs might reasonably be expected to be reduced.

It is understood that cartage rates on lime have now been fixed for the greater part of New Zealand. The fixing of a standard rate for the whole of the Dominion, or in the event of that being impracticable, then the fixing of rates in all districts where agreements are not yet in operation, would appear desirable as a means of assisting in the administration of any scheme of road transport subsidy.

6. STANDARDS AND CONTROL.

QUALITY OF AGRICULTURAL LIME.

The quality of agricultural lime sold throughout the Dominion shows a considerable degree of variation. Selling-prices, however, do not vary according to quality, for in actual fact these two features are in no way related.

The subject under discussion can be more easily clarified if viewed under four main headings :—

- (a) Chemical composition :
- (b) Hard and soft stone :
- (c) Moisture content :
- (d) Fineness of grinding.

(a) *Chemical Composition.*—The carbonate content of agricultural lime varies to a considerable degree throughout the country, the variation being due to the dissimilar qualities of the quarried stone and to other factors such as the geological origin of the deposit. Analyses taken show that the percentage of calcium carbonate ranges from as low as 63 per cent. to as high as 98 per cent. This variation is accentuated by the fact that even at a single works the carbonate content of the finished product is rarely constant from day to day. This may be caused by a variation of the quality of the stone in different strata of the quarry or by the fact that stripping is not always efficiently controlled. In this connection it should be mentioned that variation in the quality of the product could to a certain extent be controlled by having the stone tested regularly and poor-quality stone discarded or avoided. The analysis of the lime is a vital factor as far as the farmer is concerned, as the balance of the product which does not consist of calcium carbonate is chiefly silica or other mineral of no known value as a soil-dressing.

It has already been mentioned that the price of lime does not vary according to the carbonate content ; in fact, it is found that the lower grades of lime are often sold at the higher prices.

This is a point of contention among farmers, and even among the lime companies themselves. It has been suggested that prices should be controlled and fixed according to quality, the higher the carbonate content the higher the price. The Committee considers that such a system would prove impracticable in operation. For instance, in certain districts where high-grade lime is produced the price is low, and any effort to raise the price would meet with strenuous opposition from the farmers. Then again, in some districts only low-grade deposits occur. If the price were reduced, the effect would probably be that these companies would be forced out of production and farmers in these districts would have to go further afield for their lime, resulting either in more money having to be paid by way of subsidy or the farmer having to pay excessive railage.

The present position is not satisfactory, as the farmer is not always aware of the quality of the product he is buying. It has been suggested that a certificate of analysis be supplied with each invoice so that the farmer may be fully aware of what he is buying. This should provide a sufficient safeguard to the buyer, and beyond this precaution it is doubtful if any further steps can be recommended.

(b) *Hard and Soft Stone.*—One physical dissimilarity of limestone is the hardness or softness of the various stones. It is contended that a soft stone weathers quickly and is more easily available in the soil than a hard stone. For these reasons also it is contended that soft stone need not be ground as finely as hard stone. Unfortunately, at the moment experiments with soft and hard limestones are not sufficiently advanced to arrive at any satisfactory conclusions on the subject. It may be mentioned that a considerable number of the low-grade limestones are of the soft variety.

(c) *Moisture Content.*—Since lime is purchased by weight it is essential that as much moisture as possible should be eliminated from the finished product before sale to the consumer. Again, if the lime is not dry it does not flow freely through the top-dresser, involving the farmer in unnecessary and costly delays.

Water does not penetrate the harder stone to the extent that it does the softer stone, so that some companies are in the fortunate position of not having to dry the stone by mechanical means, and a saving in cost results.