

soil is little better than so much ground brick and inactive chemicals, a medium from which only a very low degree of crop-production can be achieved. In one of the illustrations humus has thus been chosen as the limiting factor. The humus-content is supposed to be low—it is figured as being the lowest stave of the barrel—and the highest level of potential profits is reached with the limit of the lime-supply. In the other diagram lime is represented on similar principles as the limiting factor.*

It is quite clear that methods of farm-management, if they are to be successful, must take into consideration these and other fundamental factors governing fertility. The essential facts connected with fertility have frequently been reviewed by agricultural writers and speakers, so that I shall not discuss them at length; but it will be well for me also to add my testimony as to the expediency of current exhortations.

The Humus-supply.—As already indicated, this is a very important matter. Without an adequate supply of humus or mould a satisfactory degree of plant-production cannot be maintained. Fortunately, the North Island being to a very great extent a pasture country, if the soil is kept right in other respects the humus-supply, generally speaking, will look after itself. On the other hand, there are many soils in the North Island of a very light description, lacking in lime and lacking in plant-food, which in consequence are apt to be deficient in humus also, for the one is inseparably associated with the other. A system of farm-management which will lead to an all-round betterment of these soils is required, and I shall offer suggestions along these lines later.

Just here, however, I may put the question, "How is a deficiency in humus to be made up?" The reply which may suggest itself to your mind may be "green-manuring." I am averse to this practice, not because the desired result cannot be achieved in this way, but because, farming being a business as well as a science and an art, the result can be obtained in a more economical way. If a soil is so poor that the range of plant-production is limited to such things as lupins, then these may be grown purely as a green-manuring crop; but, as is more frequently the case with land that has any agricultural value, if food crops such as rape and mustard, red clover, tares, peas, &c., can be grown by suitable manuring even moderately well, it would

* The lime-factor diagram was reproduced in the June issue of the *Journal*, page 490.