THE FARM.

LIMING THE LAND.

The use of burnt lime is as old as history, and its beneficial effects on the soil too well known to need emphasis. But a great discovery was made, only a few years ago, when it was found that the raw ground limestone had equally as good an effect on the soil, besides being cheaper, easier to handle, and not injurious to the soil, when applied in large quantities. In the hands of an experienced farmer, raw ground limestone is the most powerful agent he possesses, not only in the cultivation of crops and pastures, but also as a means among others, of breeding healthy live stock.

THE ORIGIN OF LIME.

The majority of farmers nowadays know a great deal about lime and its origin, but a very considerable number are taking up farming at the present moment who possess little knowledge of the art of agriculture profession generally, and it is for the benefit of those that such articles as this are written. It is true that "the whole need not a physician," but even they may occasionally receive benefit by exchanging opinions.

The carbonate of lime, which is used for agricultural purposes, is found in enormous masses in the form of limestone, chalk, and marble. These great masses are composed of the remains of sea urchins, shell fish, and other such forms of life, which have accumulated under water through countless ages, and are bound together by chemically deposited calcium carbonate. This solid rock, in the limestone form, simply ground to a fine powder, is what we apply to the land, under the name of carbonate of lime. The burnt lime is the same variety of rock heated in kilns to 1,000 degrees centigrade, or nearly so. The heat drives off the carbonic acid gas, and only the lime remains. When the burnt lime is applied to the soil it again takes in the carbonic acid gas and returns to its original carbonate form. The first effect of burnt lime when applied to the soil, is to check the process of nitrification, and it must first be converted into carbonate before the nitrification process can be renewed beneficially. This is why very heavy dressings of burnt lime are so injurious to many soils.

ACTION ON THE SOIL.

Although lime is to some extent a plant food, its value principally lies in the fact that it brings into use elements that would remain dormant in its absence. It is also claimed that lime strongly influences the soil toxins, or poisons, and that other constituents are changed to a state in which they become available as plant food. Lime is also of importance because of its beneficial effect on the mechanical condition of the soil. It renders clay soils more friable, thus assuring a finer tilth, which provides a greater range for the roots of plants. On sandy soils, lime has the effect of binding the particles more closely together, thus making them more retentive of moisture. When manures, such as sulphate of ammonia, or superphosphate, are regularly applied, a free use of lime is essential, otherwise the soil becomes acid. The addition of lime to the soil improves the quality, and increases the quantity of crops. Plants grown on land rich in lime are the means of producing healthy, vigorous stock, because they are rich in matter that is used in building up bone and muscle, and many injurious parasites are destroyed, which are numerous on land deficient in lime.

We may safely conclude that soil devoid of lime is of little use to the farmer, and that no soil can be really fertile which contains less than a half per cent. If a soil contained no lime it would require a dressing of about 27cwt in order to supply one per cent in the surface nine inches. On cultivated land lime disappears more quickly than on pastures, because it is more easily washed into the subsoil, and for that reason it should not be ploughed under, but applied on the surface and incorporated with the soil by means of cultivators or harrows.

AIDS TO THE BENEFICIAL ACTION OF LIME.

Certain soil conditions are essential before lime is applied, otherwise its application will mean a loss of money. Draining is imperative when the land is not naturally dry, and the soil must receive good cultivation and judicious manuring. The four, working together, are the foundation of successful farming, but if only one is present and the other three absent its beneficial action is cancelled. Fertility in the soil is de upon the activity of certain soil organisms, or very minute forms of life, which cannot work beneficially in the absence of the above four essentials. The first to be attended to is the draining, followed by good cultivation and manuring. Lime may then be applied with every confidence.

QUANTITIES TO APPLY.

Although carbonate of lime may be applied to the land in very large quantities it is not desirable to apply more than is necessary to produce maximum cropping results. The old system of applying enormous quantities of burnt lime once in seven years (in some cases as much as 20 to 25 tons per acre), has been entirely discarded as being not only wasteful but extremely injurious to the soil, and it has been found infinitely better to apply a few hundredweights every second or third year. Such a system keeps the soil in healthy condition. It is true that a dressing of lime will give good results on very poor soil for a short time, without the assistance of manure, but it does not follow that lime alone can be applied continuously to such soils with the same results. It acts beneficially for a time, because it corrects the soil acidity, and enables the soil organisms to work and make available the meagre quantity of plant food that is present, but when that is exhausted further liming is useless, except it is accompanied by the application of manure. If the soil has been proved to be very lacking in lime, a heavy initial dose should be applied—say, 20 to 30 cwt per acre—then follow up, every second or third season with 5 cwt per acre.

EFFECTS ON CROPS.

All cultivated crops require lime, but to some it is more essential than to others. Leguminous plants, such as lucerne, clovers, beans, peas, etc., will make no progress in soil that it deficient in lime, and in the cultivation of lucerne the application of lime should be the first consideration. All legumes are extremely susceptible to the influences of soil acidity, hence they cannot succeed in soil that is acid through lack of lime. Cereals are also benefited by an application of lime, and two hundredweight per acre drilled with the seed is beneficial. For the root crop it is a necessity, because, among other benefits, it keeps fungoid diseases in check. It has also been proved that some weeds, such as spergula, or spurry, and sorrell, do not flourish on land that contains a high percentage of lime.

TIME TO APPLY.

To land that is in need of lime, the application may be made at any time of the year, but to land under cultivation it is better applied just after ploughing, or it may be sown with the seed. Early spring is considered the best time for liming pastures, but there is much truth in the old Yorkshireman's statements that "only one mistake could be made in liming, and that was the mistake of forgetting it altogether."

LIME AND MANURES.

Generally speaking lime and manures are better applied separately, and, in any case, lime should not be mixed with nitrogenous manures, as it has the effect of releasing this valuable ingredient, and it is lost as plant food. No kind of artificial manure can take the place of lime—not even basic slag. The lime in superphosphate is not the carbonate form; it creates acidity instead of correcting it, hence the value of basic superphosphate, which is simply superphosphate mixed with a certain quantity of burnt lime with the object of neutralising the acidity of the superphosphate. The lime slag is not in sufficient quantity—even when the slag is applied in very heavy dressings—to keep the average soil in sound condition, it must be aided by special applications of lime alone.

There are soils that naturally contain a sufficiency of lime, but there are very few that will not respond to an occasional light dressing. In rare cases it may be more economical to apply the ground burnt lime instead of the carbonate, particularly where the freight charges are heavy, because a less quantity may be applied per acre. Peat swamps that contain a great deal of humic acid are said to respond more quickly to application of burnt lime.

In the rigid airship structure, excluding the machinery, there is a total length of structural material of 20 miles, and over 2,000,000 rivets.

PRESENTATION.

MR A. W. RODGER'S SERVICES RECOGNISED.

BUSINESS MEN'S APPRECIATION.

The very high esteem in which Mr A. W. Rodger is held by citizens generally was expressed very definitely this morning when a number of the district's leading business and commercial men waited upon that gentleman at the Southland League rooms.

Mr J. Stead (Mayor), who acted as spokesman, said: "Mr Rodger, I have, during my term of office as Mayor of Invercargill, performed many pleasing functions, but never have I taken part in one that affords me more gratification and pleasure than coming here this morning and on behalf of a few of your friends in town and country and a few of the business men express their recognition of the unequalled, splendid services that you have rendered to Invercargill, to Southland—in fact to the Dominion. We are proud of the work that you have done, proud of the results that you have obtained."—(Applause.) It was their wish, said Mr Stead, that they should be given the opportunity to recognise in a substantial way what he, Mr Rodger, had done. They did not know of another man who could have achieved such undoubted success.—(Applause.) Not the least important of the work accomplished was that of convincing the rest of New Zealand, and the few croakers in our own midst that the spirit of progress and advancement abounded in Southland.—(Applause.)

Mr Stead then read a letter addressed to Mr Rodger by a number of citizens, the terms of which were:—

"As Chairman of the Southland League and the Southland Electrification Committee you have for several years, and with unexampled generosity, been spending your time and your money in strenuous and untiring endeavour to advance the interests of Southland. Your activities have, we are sure, been prompted by patriotic and unselfish motives, and have been carried on without fee or reward. Your successful work in connection with the scheme for the electrification of Southland will, we are convinced, result in enormous benefit to the people of the district. We, as business men, have interests in the district which will, we believe, be greatly enhanced by the promotion of your great scheme, and we feel that the least we can do is to see to it that you are not permitted to continue your self-sacrificing efforts without an attempt on our part to make you some return if only by way of acknowledging a past debt which the people of Southland can have little hope of ever being able to repay. With this object in view we gladly and respectfully ask you to accept, as such acknowledgment, the attached Bank Draft for £2000, accompanied by our best wishes for your own prosperity and for the success of the great undertaking with which you are so closely identified."—(Loud applause.)

His Worship then handed the letter and the bank draft for £2000 to Mr Rodger, and asked him not to look upon it in any way as a payment for his services or as a discharge for his services. It was an acknowledgment, or part acknowledgment, of what had been done at great personal sacrifice.—(Applause.)

On rising to respond, Mr Rodger was received with great warmth. Speaking with emotion, he said that he had never found it more difficult to utter what he would like to express. He appreciated very fully their feeling of goodwill, and in accepting their splendid gift he wanted to tell them that it was the first money he had ever accepted. He had done the work for the pleasure of doing it, and would have been pleased to have continued to do so. Mr Rodger referred to the great war work that had been accomplished by one and all, and indicated that his own motive had been to do something during war time that would be of benefit after the war. Their expression of goodwill had been sprung upon him, and he felt it too keenly at the moment to make any lengthy reply. He referred to the devotion with which Mrs Rodger had aided him in his public work, and he asked their kind permission to transfer their token to Mrs Rodger. He thanked them very sincerely for their magnificent gift.—(Loud applause.)

Cheers for Mr and Mrs Rodger were then given, and the gathering dispersed.

The Monument in London sways so much in the wind that it cannot be used as an astronomical observatory, the very purpose for which it was built.