ly increasing, also, and already considerable shipments are made to British Columbia, where a market is ready for a very large quantity, as soon as reasonable transportation charges can be counted on. Great hopes of a market in this direction are held by those on the farms of Alberta for all their produce when the new transcontinental lines are pushed through to the coast, and the increase in shipment is very great, even with present transportation facilities.

One thing very evident is, that the products of this western portion of the North-West will not largely compete with the east in the transatlantic markets. The number of cattle produced is not likely to increase materially for some time, notwithstanding that so many farms are being slowly stocked in the northern part of Alberta. Improvement in quality and size, however, will be noticeable; a better selection of animals to breed from, and better winter feed and care will add much to the value of each annual produced.

The failure to provide sufficient food and protection from cold has a decided effect in reducing the size of the cattle under ordinary range conditions, which the most careful introduction of the best blood cannot overcome, and where any other than the Shorthorn breed is used for crossing the decrease in size is marked.

The enhanced value of horses has led many who had herds of cattle to reduce the numbers of the latter largely while increasing the number of horses. The fact that horses will fight through winter conditions under which the cattle will succumb, is also a very strong incentive, and while the present high prices for horses continues the prospects are enticing. But the anxiety to get a lot of horses at small cost leads to the use of means for breeding that cannot produce a desirable class, nor those that will command an extensive market in case of a drop in values to the level of a few years ago.

There are not enough good stallions now either, which gives an excuse for breeding to horses without sufficient good blood, for the best results.

That the effect of the past winter will permanently injure the live stock interests of the West, I cannot believe. On the contrary, I think it will work out very beneficially in that it will hasten the change already at work to bring about a better system of breeding and caring for the stock, and a better demand for the pure-bred sires to improve it.

The loss by death among the cattle this winter will inevitably be heavy by the end of April. Many experienced ranchers put it as high as 70 to 75 per cent. This, of course, is only conjecture, but the mortality among cows soon to calve will be very great, yet, I think, the loss all told will be under 50 per cent.

A. W. S.

Needed Relief

A Baltimore man recently invited his nephew, aged 12 years, to attend a series of travel lectures, it being thought that the lad would welcome the opportunity to hear of the recent explorations in Africa. To the uncle's surprise, the boy seemed disinclined to avail himself of the invitation.

"Why, Tom," exclaimed the uncle, "don't you want to learn what the great explorers are doing in the Dark Continent?"

"No, sir," was the boy's answer. "There's enough geography already."

—Boston Post.

THE FARM

How to Apply Potash Fertilizers

For years it has been known that the application of nitrogenous and phosphatic fertilizers is necessary for the production of maximum crops. Recently, however, potash has come into prominence and an addition to the soil is now recognized to be essential if continued good results are to be obtained and the soil kept in a constant and progressive state of fertility. As a result the annual consumption of potash in Germany, Britain and the United States has reached an enormous quantity.

Soils which in years past gave only poor results, scarcely paying for the labor, are now producing abundantly by the application of potash salts. Theory and practice have been working steadily hand in hand in order to ascertain the most advantageous application of this plant food for the various crops to be grown. Hence the adoption of the most economical methods with regard to fertilization is an important consideration in maintaining soil fertility.

Last year we conducted a number of very successful experiments with artificial fertilizers at Waterloo, and it is our intention to continue along similar lines again this year.

In order that the use of fertilizers prove profitable to the farmer they must be applied in an intelligent and economical manner. It is poor economy to purchase ready mixed fertilizers and apply them indiscriminately without any knowledge of the crop to be grown. The question arises, how can we ascertain the deficiencies in the soil, the different requirements of the different crops and the various forms of fertilizers to apply? The chemical analysis of a soil cannot be depended upon; unfortunately it is a long and tedious process and farmers have not the means at their disposal for conducting such an analysis. But by experimenting with small plots dressed with phosphoric acid, nitrogen and potash and carefully noting the results one can usually find what necessary constituents are lacking in the soil. An analysis may show a large amount of potash in the soil but this may be in a form unavailable for plant nutrition and hence a healthy and vigorous crop cannot be obtained. Other soils, again, showing only a low percentage of potash, gave larger returns. In the latter case, however, the salts in the soil were held in solution and in a form accessible to the plants. From the foregoing we may conclude that in certain soils the plant food is locked up, whereas in others it is in a form easily assimilated by the plants. The various soils of the farm differ in their crop producing power, therefore every farmer should experiment for himself in order to find out what essential ingredients are lacking and then apply the knowledge so gained in the purchase and economical use of the required fertilizers.

Repeated experiments and investigations have been carried on on all soils and under various conditions by the different experiment stations in Europe and America and certain principles have been established. It may be depended upon that a light sandy soil with only a small percentage of potash contains it in a soluble form, easily accessible to all plants. But in heavier soils, though showing a high percentage of potash by analysis, it has been found that the salts are locked up in an insoluble form, which makes an artificial application necessary.

Most of the potash fertilizers come from Germany, where it is mined near Stassfurt, a short distance from the Hartz mountains. On account of the excessive transportation rates only the high grade fertilizers are exported to America.

These fertilizers may be advantageously applied to nearly all plants. If done properly and judiciously, corn and other vegetables will be marketable eight days earlier. The market gardener will at once see the advantage of this. Experiments have conclusively proven that the sugar beet responds quickly to an application of potash. It promotes maturity and ensures better quality and also counteracts the effect of an excess of nitrogen in the soil produced by too heavy an application of farmyard manure or other causes. Pasture crops and all cereals are much improved by an application.

Potatoes planted on a freshly manured soil require only a small application of potash to give best results, but to ensure a corresponding increase on a soil not freshly manured a larger quantity of potash is necessary.

The potash fertilizers should be applied early in the spring in conjunction with a phosphatic fertilizer, at least a week before sowing. For pastures and clover it is advisable to spread the fertilizer broadcast in winter on mild days.

In this article special attention has been given to the advantage to be gained from the use of potash fertilizers, but, of course, in order to apply a complete fertilizer it is necessary to add phosphoric acid and nitrogen. The fact that all three elements are needed must not be overlooked. The lack of one element cannot be compensated for by the over-supply of any other.

I shall be glad at any time to hear from any farmer or market gardener who is interested in artificial fertilizers and wishes to conduct experiments, and shall cheerfully offer suggestions or give advice. Visitors will be always welcome on our trial grounds in Waterloo.

—Otto Herold, manager of the seed farm and trial grounds of the Ontario Seed Co., Waterloo, Ont.

The Mathematics of Manure

Manures are now known to increase the growth of plants through the action of three certain substances they contain, and which are known by the names, nitrogen, potash and phosphoric acid. These three substances are called the plant food elements. Taking all three of them, there are but 25 pounds to the ton of average farmyard manure, and the remaining 1,975 pounds of the ton are absolutely valueless as plant food. This is an important matter to remember; we must cease to consider manure of itself as plant food, but rather the nitrogen, potash and phosphoric acid.

These plant food elements are still plant food, in whatever form they are found. For example, the potash in farmyard manure is not one whit better as plant food than the potash in wood ashes, or in the German potash salts. All forms of crude materials containing plant food, even if only one of the three elements, are as useful so far as they go as farmyard manure. Crude materials are mentioned because they are cheap, but the high grade materials containing plant food are equally useful. We must now take up the point that plants must have all three of the plant food