to penetrate deep into the subsoil, and retains it for a proportionately long time. Besides, a good loam has great capillary action ; the water rises as absorbed moisture through the particles of soil, thereby leaving the spaces between the particles open for the free circulation of air, bringing up the moisture from the lower layers to the surface with sufficient rapidity. This action causes the roots of the growing plants to spread and flourish in all directions, a great reservoir of moisture being constantly at their disposal, and they cannot, therefore, be easily disturbed in their development by continued droughts. A genuine loam is specially adapted to extensive agriculture, but for garden purposes, or the cultivation of vegetables, a sandier soil is preferred.

There is another class of loamy soil, however, which is dreaded by the farmer. It is, indeed, composed of clay and sand, but these substances are imperfectly mixed. The sand separates easily from the clay, and the soil swims together after every heavy rain-fall, forming a crust on the surface, which admits air and water with difficulty. Such soils are usually poor, raw, and dead, and can only be ameliorated by diligent cultivation, the application of large quantities of vegetable manures, lime and marl.

In our next issue we shall describe sandy and calcareous soils.

Potato Tests on Our Experiment Grounds—Fertilizers and Methods of Planting Tested.

Our objects in conducting these experiments were : (1) To investigate inquiries overlooked by other experimenters; (2) to determine what plant food or foods our grounds were most deficient in; (3) to educate our readers in this important branch of agriculture; (4) to confirm or disprove other experiments made in the same line of investigation.

The tests were conducted on a light sandy loam mixed with abundance of vegetable matter to an average depth of nine inches. The soil is of a uniform nature, and is admirably adapted for these experiments. The grounds had been cropped the previous year with potatoes to which a liberal dressing of farm-yard manure had been applied in a practical manner. Before this time it had been lying idle for a number of years.

In order to obtain reliable results, we found it necessary to drain our grounds, as described in a previous issue. The potatoes for the fertilizer experiments were planted on the 13th of May in trenches four inches deep. The seed was cut into pieces weighing an average of 1.65 oz., and dropped exactly one foot apart in the row, so that each plot being of the same size, as well as having the same number of seed pieces, had the same weight of seed, viz., 30 bushels per acre. The fertilizers, excepting in two cases where it was top-dressed, were distributed in the bottom of the trenches before planting the potatoes.

Instead of applying the same weight of the different fertilizers, as done by some experimenters, we applied them in such weights that each one, of the same class, contained as much plant food as the other. For instance, in the phosphoric acid group, each fertilizer—mineral superphosphate, bone superphosphate, bone black (bone char), ground bone, and ground apatite—was applied in such quantities that the phosphoric acid it contained was equal to that found in 300 lbs. of chemically pure apatite, or pure phosphate of lime. The potash and nitrogen fertilizers were applied on the same basis. When combined fertilizers were applied, such as apatite and ashes, the phosphoric acid found in the ashes (a potash fertilizer) was deducted from the quantity of phosphoric acid to be furnished by the apatite.

The general fertilizer was a mixture of various fertilizers compounded in such a manner as to supply all the constituents of plant food. With this the bran, also a general fertilizer, was compared. The quantity applied had the same market value as the fertilizer with which it was compared.

The following table shows the analysis of the principal fertilizers employed :

TABLE SHOWING ANALYSIS OF FERTILIZERS.

Name of Fertilizer.	Total Phosphate of Lime. $Ca_3\ 2\ (P\ 04)$, %	Total Phosphoric Acid $P_2\ O_5$, %	Percent of Phosphoric Acid Soluble.	Nitrogen, %	Potash K2 O., %	Lime Ca O., %
Mineral Superphosphate	70	32	12	....	....	....
Bone Superphosphate	35	16	15	2.2	....	....
Apatite	75	34 3	.....	.....	....	....
Ground Bone	45	20.6	.....	2.	....	...
Bone Black	62.2	28.5	.....	.....	....	....
Wheat Bran	.....	2.8	.....	2.7	1.6	0.14
General Fertilizers	50.	22.9	9.0	3.4	6.6	....
Muriate of Potash	.....	.....	.....	....	53.2	....
Sulphate of Potash	.....	.....	.....	....	41.7	....
Ashes	3.9	1.8	.....	....	6.76	37.3
Nitrate of Soda	.....	.....	.....	16.	....	....
Sulphate of Ammonia	.....	.....	.....	21.	....	....

In our next issue we shall give the results of our experiments with the above fertilizers; also the results of the different methods of planting, different quantities of seed per acre, etc., and shall make the necessary comments thereon.

We are indebted to Messrs. Peter Lamb & Co., Toronto, for furnishing us with the ground bone and bone superphosphate free of charge.

Farming in the Northwest.

BY A FARMER'S WIFE.

It has been a vexed question for some years as to whether the Northwest will ever be a farming country or not. Now that we have had one fairly good year, the question to many will have reeeived a favorable answer, and no doubt down in Ontario, people will hear fabulous accounts of enormous crops without stopping to consider the vast extent of land on which these same crops were grown, will jump at once to the conclusion that without much trouble we can in the space of a few years grow grain enough to make us wealthy.

Another thing that will help these ideas is the visits just paid by some of the leading press men of Ontario (the editor of the FARMER'S ADVOCATE, amongst others,) to our fairs. These gentlemen have seen the country at its very best ; they have seen our enormous vegetables, bags of splendid grain, etc., everything being of its kind good, and they also will think that if we only continue to have favorable seasons our troubles will be all over, and we are on the straight road to fortune.

In order to show that this is not exactly the case, I am writing this. No doubt, if the seasons are good, we can grow good grain out here, but there are difficulties as yet in the way, and very great ones. Manuring here so far is purely experimental ; no one really knows yet what the land wants. They know it is good, first rate soil, but one thinks summer fallow, and another breaking, gives the best crop, etc., none knowing exactly what to do to ensure a good crop. Still farmers are finding out that where the land is hard and firm enough to retain moisture for a long time, they are sure of a crop, and this is shown by seed falling on the hard road, the wheat from which is always tall, strong, and fresh looking, when the adjacent fields are burnt up ; also volunteer crops are sure to be good. When the Experimental Farms are in running order, they will try all these various ways, and will in time be able to decide the right thing for the land, and help the farmers out of some of their present troubles.

Then, "the gophers," and no one who has not had dealings with gophers has any sort of idea what pests they are. One farmer here has devoted all his time this summer to killing gophers, and he calculates that on his crop of thirty or forty acres he has killed no less than four thousand gophers, and saved his crop. Now, no ordinary farmer has time to kill four thousand gophers and attend to his other work—and it is a stubborn fact, that unless gophers are killed daily, from early spring until the grain is harvested, they will come in and mow down a crop as though some one with a scythe had been through it. As the country gets settled, no doubt, gophers will be exterminated, for every farmer must in self defence wage war against them ; but until there are no gophers, no farmer in the gopher regions can ever be quite sure of a full crop.

Vegetables—such as roots of all kinds, potatoes and cabbages, can easily be grown where there is some shelter from the wind, and plenty of manure used, and there are certainly some grand vegetables grown here by people who devote their time to them.

It is also a fine country for stock, the grass being so very nourishing that cattle fatten in a very short time.

Gopher Lodge, Indian Head, N. W. T., Oct. 13, 1887.

PRIZE ESSAY.

Can a Provincial Exhibition, Purely Agricultural, be Made Successful and Self-Supporting ?

BY JOHN S. PEARCE, LONDON, ONT.

In reply to this question I would say that it should ; but to do this would require a great deal of close and careful attention on the part of a board of live, competent men, who would have to elicit the sympathy and hearty support of the farming, mechanical, stock, poultry, horticultural and dairy interests of the country. How to elicit this sympathy and support is the question, and with a view to give your readers some idea of what a real agricultural show should be, I will go over a few of the leading points.

To be successful it must be self-supporting, and to be self-supporting it must have a large attendance, and to draw this large attendance is what would tax the members of the board. The day for an ordinary agricultural show has gone by, and the public demands a variety of sights and subjects, and we notice that many of our staid farmers are being carried away with these new side shows and other attractions that infest our agricultural fairs, and instead of making the horses, cattle, sheep, etc., a study, they spend a large share of their time looking at some follow talking himself hoarse and trying to draw from