

unbuckled; give each strap a good washing, using lukewarm water with a little washing soda in it. Scrub well with a scrubbing brush, and be sure that you get all the grease and dirt off. Work well in the hands until soft and pliant, for it is no use to apply oil on dry, stiff leather—it will never become soft. After this has been done, hang it in a room where it will not dry too rapidly, until about three-parts dry.

Then apply plentifully on both sides pure cod-oil—this has more body and lasting quality than any other grease I have ever tried on leather tanned with bark. Besides, if you use neatsfoot oil, rats and mice will eat your harness, while they will not touch that greased with cod-oil. After giving it a good coating with this oil, hang it up until dry. Then I would go over it again with the oil, giving it but a light coat this time. After that dries, wipe off with a dry, coarse cloth. For common work-harness nothing more is needed, but for carriage-harness go over with a sponge and castile soap, and wipe with a dry chamois skin, and you may depend upon it there will be no black rubbing off on your hands.

Rats in Cellars.

Henry Ives, of Batavia, N. Y., in a letter to the New York World, tells what every farmer will be glad to learn, namely, how to keep rats out of cellars. He says:

When a cellar is infested with rats it is always found that they obtain their entrance under the cellar walls, or at least they must have holes or passageways there to retreat to, and places there to burrow. If not they will very soon abandon the premises. It is said that in making an entrance they first dig down just outside of the walls and under the bottom of it into the cellar; and that the holes they dig in the cellar are always to make passages under these walls instead of into the earth of any other part of the cellar bottom. Knowing this habit of theirs, one can so build that they will not be able to get under these walls, and then they will be most effectually excluded from the cellar.

This is easily done by following what is also a most excellent practice in forming the foundations for these walls. After the cellar is dug and the lines where the wall is to stand marked, dig a trench twenty inches or two feet deep and a little broader than the wall is to be, directly under where it is to stand. Fill this with small broken stone, say as small as for a macadamized road; or, what is better, break up loose, shelly flint stones in the trench, enough to fill it. Either of these will make a good abutment to construct the walls on, will act as a drain for the cellar, if it is needed, and above all will prove impenetrable to the entrance of rats. They might dig down from the outside, as their custom is, but, finding at the bottom of the walls this loose, broken stone, which they are unable to make a passage through, they will be obliged to stay outside, and the cellar will be practically "rat proof."

But if the walls of a building are not made as above, and the cellars are already infested with rats, they may be made nearly "rat proof" in the following manner: Dig a trench fifteen inches wide and eight or ten inches deep just inside, at the bottom of the walls. Fill this two-thirds full of pounded stones, and then with water lime cement, enough to be even with the cellar bottom and plastered a little way up from the bottom of the walls. This will prove so much of a barrier to the rats, trying to get a passage under the walls again, that they will doubtless abandon the premises.

Fertilizers.

NO. IV.
APATITE.

This fertilizer is one which is extensively mined in Canada, and used by its farmers to a limited extent. By far the greater portion is, however, shipped to other countries; the unground rock as well as its products, ground apatite and mineral superphosphate, finding ready sale in the foreign market. The phosphoric acid, the only fertilizing material apatite contains, is in its most insoluble form, and is therefore of only inferior value, being at the present sold for about two cents per pound, or $\frac{1}{4}$ of the price realized for the most soluble forms. Its returns are not nearly so rapid as those from superphosphate or bone; for, its phosphoric acid being insoluble, it must decompose before it can be taken up by the plant; and it being very hard, much harder than limestone, the decomposition is naturally slow. In fact on some soils poor in decomposing vegetable matter, viz., cold stiff clay or dry loose sand, its beneficial results are so slow that they are apparently lost. The finer the apatite has been ground the more valuable it is; for the surface exposed to the action of the decomposing agents of nature being increased with its fineness, the decomposition is more rapidly effected and therefore its value increased.

In order to obtain the most beneficial results, especially if the soil is of a cold nature or suffers from drought, it should be mixed with the barn manure or compost by sowing it broadcast on the heap as it accumulates; and as the barn manure is generally deficient in phosphate it is a very good plan to make it a practice to mix finely ground apatite or bone meal with the barn manure, which should then, if well taken care of, supply all the wants of a generally productive and well managed farm, especially if it receives an occasional dressing of ashes, which will be treated of later on.

The soils especially benefited by bone dust are those on which apatite will give its best returns; for it is the most insoluble member of that group in which bone dust holds an intermediate place and in which superphosphate forms the most soluble fertilizer. As these fertilizers have various grades of solubility depending upon their fineness, they form a complete chain, and the remarks made in one will, therefore, largely apply to the others.

Apatite, which is by some scientists supposed to be the petrified remains of the excrement of sea fowl, or, in other words, guano turned to stone, is a greenish crystalline rock found in various portions of the earth's crust; but that found in Canada is by far the richest deposit of any yet discovered. It contains fully $\frac{1}{4}$ more phosphoric acid than that found in the States, generally known as "Carolina rock."

The Canadian deposit contains from 75% to 80% of phosphate of lime, or 32% to 34% of phosphoric acid, and should therefore not cost more than 70 cts. per cwt.

GUANO—MANURES FROM FOWL.

With the rise which our poultry industry has taken, and which it will likely continue to take, more fowl will be kept and, consequently, more of their excrements made and utilized as a fertilizer. As a commercial fertilizer the excrements of sea fowl, known as guano, have been used for a little over fifty years. It was the first commercial fertilizer used in England and was the means of opening the way for the various other

organic and mineral fertilizers now in use in the more progressive agricultural countries. It is more nearly related to farmyard manure than any of the other commercial fertilizers. Its main difference from the latter being that in addition to its nitrogen it has a larger percentage of phosphoric acid but is comparatively poor in potash, while the farmyard manure is poor in phosphoric acid but has a fair supply of potash. The guano is, however, much more concentrated, and for a clay loam, on which it gives the best results, is a better balanced fertilizer than farmyard manure. When first introduced it was much richer than it now is, for the most valuable deposits have since become exhausted, and it is likely owing to this fact that it is not more popular than it is.

It has the best effect on fall grain crops if applied a short time before they are sown; but on all other crops, save the legumens (peas, beans, clover, &c.,) it makes a marked improvement, if not applied in too large quantities—200 lbs. per acre is sufficient for any crop. Owing to its great concentricity it should be very intimately mixed with the soil. The finely powdered fertilizer should be sown broadcast over the field, which should then be thoroughly cultivated or plowed. Some experimenters claim that to cover the fertilizer eight inches deep is not too deep, but we would prefer a covering of four inches. When applied to vegetables it has given very satisfactory results when steeped in water and the liquid applied in small quantities at short intervals. It should, however, never be used in this way during a dry season, care should be taken not to touch the leaves or stems with it, and the soil should be frequently stirred; but under ordinary circumstances the better way to apply it, to even these plants, is to sow it on broadcast as directed above. What has been said about guano applies also to the excrements of other fowl.

The following table gives the average composition of guano, as it is now sold in the market, and of the excrements of various domesticated animals and birds:—

TABLE OF ANALYSIS.

NAME OF FERTILIZER.	Water.	Nitrogen.	Potash.	Phosphoric Acid.	Value per cwt.
	%	%	%	%	
Peru Guano.....	15.0	7.0	3.3	14.0	\$2.28
Horse Manure.....	71.3	.58	.53	.38	13.8
Cattle ".....	77.5	.34	.40	.16	08.5
Sheep ".....	64.6	.83	.67	.23	18.3
Swine ".....	72.4	.45	.60	.19	11.3
Hen ".....	56.0	1.63	.85	1.54	41.5
Duck ".....	56.6	1.00	.62	1.40	23.0
Goose ".....	77.1	.55	.95	.54	17.0
Pigeon ".....	51.0	1.76	1.00	1.78	45.5

The values of the various manures has been calculated at the present market value of their constituents. The composition of these manures, especially those of the quadrupeds, varies materially in composition, depending upon its management and the food consumed by the animals.

[TO BE CONTINUED.]

The Drover's Journal says: "Dehorning is one of the barbarous acts of this age that should be condemned by every citizen, good and bad."

One of our Canadian exchanges, replying to a question, says that a gallon of milk weighs 8 6 lbs. This is a gross mistake, for the accurate weight of an average gallon of milk is 10.31 lbs; but for most purposes it will be accurate enough to call it 10 lbs., the same weight as water.