

Using Nitrate of Soda.—G. S., La Plume, Pa.—Six dollars for 100 pounds of nitrate is too much—\$2.25 per 100 pounds is enough. Mix it with three times its bulk of soil and sow it at once. Use it only upon plants coming into bearing this season. It would be money utterly thrown away to use it upon plants which do not yield this season.—R. N. Y.

FERTILISER PRICES.

It will be seen by the following reports from our trustworthy correspondents at Liverpool, Messrs. Downs and Co., that *nitrate of soda* has risen considerably in price:

NITRATE OF SODA.—An increased business is passing in all positions, and several off coast cargoes have been realised at £10 to £10 2s 1d, now £10 2s 6d to £10 7s 6d is asked for handy sized cargoes. The improvement is ascribed to the strong statistical position—about 125,000 tons deficiency in the available supply for the season, contrasted with that of last year; and holders allege higher values will presently rule. To-day, the finest quality, guaranteed at least 95 per cent pure, and genuine as imported, meets an increased agricultural demand at £10 5s to £10 7s 6d; no firm offers are now obtainable owing to the daily hardening tendency of the market. For future deliveries, we are prepared to quote, and shall have pleasure in making offers on hearing the probable requirements and specified deliveries from intending buyers. To those who are not conversant with nitrate of soda it is well to remark that it contains but one essential element of plant food (nitrogen), consequently it should be applied only to land in good heart, unless the other fertilising ingredients are artificially applied."

In January last, the same firm sent us the annexed statement, showing clearly the prospects of the trade:

LIVERPOOL, SATURDAY.—Nitrate cargoes have been in active request, chiefly on Continental account, and the sales comprise several thousands of tons at advanced values; it is difficult to accurately estimate what the ruling prices will be during the period of the agricultural home demand (which, by the way, present data justify the opinion, will not be an extensive one), until the extent of the Continental requirements are known, and which solely influence the market at this period; but, suffice it to say, that at present the market closes strong at £9 17s. 6d. for port-of-call cargoes, £9 12s. 6d. to £9 17s. 6d. as in position for November-December sailings; and at £9 15s. to £10 according to quality on the spot.

Superphosphate, however, remains low—\$9.00 a ton of 2,000 lbs.—containing 26 o/o of soluble, guaranteed, phosphate of lime.

Basic slag is dearer; cannot we get it from our own iron-works instead of having to fetch it all the way from Liverpool?

Basic slag.—As the season for this fertiliser is now rapidly closing there is an extremely active demand, and values are very firm at late rates; makers experience considerable difficulty in supplying requirements and this has occasioned some delay. Purchasers will therefore observe that orders can only be executed in the priority in which they are received, and that delivery cannot be guaranteed under 7 or 14 days. The finest quality is 35s to 37s per ton, in bags, on rails, at works.

But the worst news of all, for those

who are intending to lay down permanent pastures in this country, is that Mr. Evans, the seedsman, has not been able to import any of the true *cow-grass* this spring; his correspondents in England inform him that the yield of that clover—*trifolium pratense perenne*—was so bad that the price is almost prohibitory. Mr. Evans thinks the *Rawdon* clover would answer, but never having tested its permanency, we do not feel inclined to back it. Mr. Evans has "Pacey's perennial ryegrass" and sainfoin for sale.

Monsieur Auzias-Turonno informs us that the orders for manures, &c., are coming in to the Central Syndicate in most unexpected numbers.

A LECTURE BY A. JENNER FUST

THE USE OF FERTILISERS IN THE GARDEN.

You will naturally ask me: What has been your experience of the articles on the use of which you propose to enlighten us this evening? When I reply, that I used guano very shortly after its first cargo was imported into England, that is, in or about 1844, and that I have used sulphate of ammonia, nitrate of soda, bone-dust, superphosphate of lime, wood-ashes, in large quantities, and over a considerable extent of land, you will probably allow that, at all events, I ought to know something of the matter I am about to discuss.

It is, I know, a common opinion among gardeners and florists—at least, it used to be—that however useful the above fertilisers may be to farmers, they are comparatively useless in the garden. This point, I hope to show you, later, is a fallacy. Time saved is time gained; and though dung must always be, on account of its mechanical effects on the soil, the mainstay of the gardener, the marvellously pushing effects of certain fertilisers must always render their use advisable by all those who desire to present to their employers, or on the market, the earliest specimens of flowers or of vegetables.

Farmyard dung need not detain us. It, if properly made and cared for, contains all the food necessary to the life of plants. The dung of an adult animal is richer than the dung of a young one, because the latter takes more from its food than the former, having to furnish the materials that go to form its flesh and bones out of the constituents of the rations given to it. For the same reason the dung of a milch-cow is far poorer than the dung of a fatting beast.

Food, too, affects the quality of dung. A beast fed on corn and straw yields only a poor manure; on the other hand, one fed on oil-cake, beans, and clover will yield rich manure.

Take care of the urine; for, though when used alone its effects are not what its composition, chemically considered, would lead one to expect, when mixed with the solid droppings of cattle, horses, &c., it imparts great strength to the whole.

Let your manure ferment but do not allow it to carry the fermentation too far: check it by turning before it becomes "fire-fanged." When the fermentation occurs in a place protected from rain, carbonaceous matter is destroyed, of course, but little loss of the most valuable constituent, nitrogen, takes place.

A ton (2240) lbs. of farmyard dung will contain: from 9 to 15 lbs. of nitro-

gen; the same amount of potash, and from 4 to 9 lbs. of phosphoric acid.

Now these three constituents of farmyard dung are the three matters that are more generally wanting in all soils, that is, in a state fit for the consumption of growing plants. There may be plenty of each kind present, but unless they are prepared by soil cultivation, which subjects them to the influence either of the air or of the action of the acids in the land, they will be in an effete state, and might almost as well be absent altogether. And so it is with the same elements in farmyard dung. When in a fresh state, the above elements are not immediately available as plant food. And here comes in the true value that our chemical fertilisers possess. The nitrogen in sulphate of ammonia is at once assimilable by plants, and the nitrogen in nitrate of soda is even more soluble than in the former manure. This is the reason why the three elements we are considering are worth more per pound in the chemical form than in dung: because they go to work at once. So we arrive at this conclusion: fill your gardens as full of farmyard manure as possible, but when you wish to bring any crop fruit, flower, or vegetable, very forward, add to the topsoil the chemical manure that contains the elements likely to produce the effect required.

Chemical fertilisers, or artificial manures, for both terms mean the same thing, are those that contain the three elements, nitrogen, potash, and phosphoric acid in a state fit for immediate consumption by plants. Bear in mind, please, that these elements have specific effects. For instance, if you want to get a rich, luxuriant growth of leaf and stem, practice concurs with science in advising the use of a manure containing nitrogen. If bulb, like the turnip, is wanted, phosphoric acid is required. If grain, both nitrogen and phosphoric acid must be employed. Of potash I take but little notice, as in all comparatively new soils, in all heavy soils, and wherever farmyard dung has been largely used, the quantity of potash is so great in the soil, and that in its most available form, that it is sending crops to Newcastle to add more. Of course, I am not depreciating the use of hardwood ashes, for, in addition to the potash, these contain a notable proportion of phosphoric acid, so much so, that, in England, I once grew a very fair crop of white-turnips with no other manure than 30 bushels of wood-ashes an acre.

The principal forms in which these elements are to be found are the following:

Nitrogenous.	Phos. acid	Potash
Blood	Bones.	Wood ashes.
Nitrate of soda.	Carolina rock.	Kainit
Sulphate of ammonia	Coprolites	Muriate of potash.
Guano.	Superphosph. of lime.	
	Basic slag.	

And first of **BLOOD**. Dried blood contains from 10 to 13 o/o of nitrogen. This element is not quite so ready in blood for plant consumption as in some other forms, but it soon decomposes in the soil, yielding ammonia and nitric acid.

NITRATE OF SODA is found in Peru, in an enormous deposit of the crude salt, containing much chloride of sodium or common salt. It contains, as it is put on the market, about 15½ o/o of nitrogen, which is its sole manurial constituent. It is the quickest to act of all nitrogenous manures, and there-

fore the best suited to the purpose of the florist and the vegetable gardener. It should be used as a top-dressing, its extreme solubility aiding it to escape readily into the subsoil.

SULPHATE OF AMMONIA.—Prepared from the liquor of the gas-works. Not quite so rapid in its effects as nitrate of soda, but rapid enough for all purposes. It contains about 20 o/o of nitrogen, and no other constituent of any value as a manure.

These two matters, nitrate of soda and sulphate of ammonia, are the best sources of nitrogen for your purpose. Let us now consider their real value to a purchaser.

According to their contents in nitrogen, we see that one should be worth more than the other in the proportion of 20 to 15.50, and, of course, we have to find out, as regards their relative money value, what is the value of a pound of nitrogen in each, if bought in the usual course of trade.

Mr. Vasey, of the Hochelaga works, offers sulphate of ammonia, guaranteed to contain at least 10 o/o of nitrogen, at \$3.50 a 100 lbs., therefore it follows that the value of nitrogen in that form is 7½ cents a pound. Mr. Evans, the seedsman in McGill Street, tells me he cannot afford to sell nitrate of soda—contents in nitrogen not mentioned—for less than \$3.00 a hundred lbs. Taking the latter to contain 15 o/o of nitrogen, that element will, in this form, cost 20 cents a pound. In England, nitrogen, in nitrate of soda, is worth about 11 to 11½ cents a pound: such an enormous difference in price ought not to go on much longer. I have done my best to get the price reduced, but, hitherto, unsuccessfully.

BONES.—M. Ewing, of McGill Street, has very fine Indian bone-meal, beautifully ground, containing about 4 o/o of nitrogen and 23 o/o of phosphoric acid. But for your purpose, in which rapid action is the main point, I should recommend the invariable use of superphosphate, made from our own Canadian apatite dissolved in sulphuric acid. Do not be tempted to get this anywhere but at the manure-factory at Capleton, and order either the plain superphosphate, 8 to 10 o/o phosphoric acid guaranteed, which is sold at the very reasonable price of \$12.50 a ton, or a very high grade superphosphate, which is to be had at the works containing from 17 to 20 o/o of phosphoric acid, the price of which is \$25.00 a ton. You will observe that the price of phosphoric acid in the former of these samples is, taking the average of 9 o/o, 7 cents a pound, in the latter, 6.80 cents; not much difference, practically, but the more concentrated form is the better suited to your purpose; besides, there is a saving in carriage.

All the bones in every house should be carefully collected, and mixed with hardwood ashes, in a box or barrel. If kept moderately moist, they will heat and moulder down in a few weeks, when the mixture is most useful for all kinds of turnips, and for the kitchen-garden in general.

For common purposes, where the land is fairly manured with good farmyard dung, it will be found useful to sow broadcast—always on the top—the following mixture:

300 lbs. of sulphate of ammonia; and 400 " of superphosphate of the best quality.

The dung will provide all the potash necessary. The above is sufficient for an acre imperial measure.

On some of the very highly manured market-gardens on the "Old Kent Road," near London, there used