

If You Want an Ornament in your yard, plant a row of sweet peas, using wire netting as a support.

**Cinerarias.**—Seed should be sown at once for early winter flowering and when the plants are large enough, transplant to small pots, using loam, sand and leaf soil well sifted. When the pots become filled with roots but are not pot-bound, transfer to a larger size pot and finally into 6 or 7 in. pots. Keep them in as cool a spot as possible and give drainage. Watch carefully for the aphids or green-fly and use tobacco stems chopped up, freely around the plants as a mulch. This villainous little insect is easier kept away than driven away and cinerarias are troubled by them very much, as much as any other plant. It does not pay to keep the cineraria after a full crop of flowers. By cutting off the faded flowers a few extra ones can be obtained, but they will be greatly inferior to the first blossoms. The double flowers are not nearly as handsome as the single ones, as when the flower becomes double it loses its distinct markings and coloring, which are its chief beauty.

*Farm and Home.*

## Manures.

A Pembrokeshire farmer once asked Mr. Bernard Dyer, consulting chemist to the Pembrokeshire Farmers' Club.—"Do you consider that phosphates derived from bones are better than those obtained from minerals?" The answer was:—"I do not think plants are as yet sufficiently educated to distinguish the difference." This I heartily endorsed. It matters not from whence the elements of fertility are drawn and supplied to the soil, so long as they reach the crop in a suitable form and in a sufficient quantity. The crucial point, and the only one of importance to the farmer, is that of cost; and as such the cheapest per unit of strength is the best, if it is applicable to the soil and crop. We will now turn for a moment to an old and well-known fertiliser—farmyard dung. This is suitable in certain quantities to almost every soil and crop. Is this always handled in the most economic manner? I think it would be too much to say "always." The most economic fashion known to the writer would be to keep it unmoved where it is made until autumn. Cart direct to the field, either lea or stubble, then spread, and plough in with digging ploughs (other ploughs would not cover long dung, with a shallow furrow immediately). Will anyone say that the value of manure is enhanced by being carted about from place to place, or by being put into mixens in the field, with an occasionally turn over with the hoe and shovel? I think not. Exposure to atmospheric influence would seriously deteriorate its value, by allowing the fertility to escape in the air; to say nothing of the cost of extra labour, which, of course, we know is a serious item, and must be reckoned with. Every practical farmer will understand that those remarks do not apply to compost for meadows or grass land, where the use of straw dung in a semi-rotten state would be absolute waste. We are all familiar with the term "muck." Every homestead and road, if kept in a decent state, must yield "scrapings" at times, which generally contain more fertilising matter than field soil, and as such it claims the title of manure. Other-wise soil must be richer, much richer,

in fertility than field soil before I should be disposed to give it a ride from one part of the farm to the other. Since there are cheaper methods of manuring, it could not rank within the rules of farming economy. Of course our fathers used muck in the absence of fertilisers, at that time unknown. We should no more call them "dolts" than we would apply that epithet to George Stephenson simply because his locomotive was not equal to those which ply on the Great Western Railway to-day. Our fathers were equal to the exigence of the age in which they lived; and it will be well if the same may be said of ourselves.—*Ag. Gazette.*

## AGRICULTURAL EXPERIMENTS.

I am exceedingly glad to see that Dr. Newton draws attention to the uselessness of most of the agricultural experiments which have been conducted for many years past in different parts of the country, so far as regards the effects of manures. More than ten years ago I gave up the study of the records of such experiments, as they only led to a hopeless muddle, and for at least the last five years, in lectures and published articles, have affirmed that these inquiries are only a waste of time, money, and nervous energy, leading to no good results in ninety-nine cases out of a hundred. I have therefore studiously kept myself free of connection with any series of such trials in recent years, because of the excessively doubtful results which are obtained.

Let anyone who is interested in such matters just think for a moment what it is he is inquiring into, and the circumstances under which such an inquiry is made. The experiments at Rothamsted and other places have shown a generation ago that what plants require for their successful growth are nitrogen, phosphoric acid, and potash, and that all other things may be left out of account. Manurial experiments, therefore, resolve themselves into a ringing of the changes on all possible combinations of these three substances in the various commercial forms in which they are to be had. But all this has been done over and over again, and long ago, and there is nothing further to be gained by repeating *ad lib.* To quote my own words, delivered to a class of teachers some five years ago—"The great outstanding truths were demonstrated at Rothamsted long ago. If any set of experiments corroborate these, then they teach nothing we do not already know, if they disagree with Rothamsted, then they are open to grave suspicion." The reason for this state of matter is not difficult to find, as it is wholly due to the immense variation we find among soils, coupled with the uncertain effects of successive seasons. If the soils of a whole district were alike, or even that on one field, there would be some good derived from these laborious inquiries; but if there is one thing certain about the whole matter, it is that the results derived from even large plots only apply to the plots on which they have been tried, and in the majority of cases do not apply anywhere else. If a ridge or stretch of a field is dressed with a mixture of chemicals, it will often be found that the crop is affected at the top and not at the bottom of the field or vice versa. If, therefore, a series of plots were tried on a part of a field, they would give results which might be entirely wrong for another part of the same field, and therefore still more wrong for the neighbouring farm or the next parish. Results, again, are

still further complicated by the conflicting figures obtained on the same plots in successive years (caused by variations in the seasons) by the previous manuring and cropping on other farms which apparently have the "same soil similarly situated," so that we are brought back to the inference that manurial experiments produce results which are only true for their own particular plots and that particular season. There is an exception in the case of any new manurial substance which is brought out. We can always, from analysis, tell what is the valuable ingredient in such, but we cannot tell, till tried, how it will affect crops on all the varieties of soils. Such substances as basic slag and mummy cats have to be tried to find out how they will act; but in the case of the great majority of standard commercial manures the ordinary run of experimental plots with these, as carried out, at great expense of money, time and worry, by county councils, societies, and institutions, is complete waste of their resources. There are many problems awaiting solution, as pointed out by Dr. Newton, but I do not think that manurial experimental plots will solve any of them. I do not, of course mean to say that such experiments are absolutely worthless, because here and there some one may get a valuable hint, but the game is certainly not worth the candle. Let any reader take up the records of any set of experiments and just see how little there is shown from them he did not know in a general way before; let him follow out the records of successive years and see how often the results are negative or actually contradictory—owing, no doubt, to the vagaries of the seasons—and I think he will come to the same conclusion that I have, that these inquiries, as usually conducted, are of little use, and only tend to bamboozle ordinary folks.

On the other hand, I have maintained for many years that every farmer ought to experiment for himself. Farms and their circumstances are so dissimilar that results obtained on one do not apply over the edge, and it is only by endless little trials that a farmer can find out what suits his own farm. For many years I have had little experiments going on at home, which cost nothing and do not interfere with the ordinary cropping and work, but which have given me information of the utmost value. For instance, if I manure a field with an artificial manure, I leave a ridge undressed from top to bottom, so as to see the effects. Sometimes the ingredients have been tried separately, and also in different combinations and quantities. In this way I have found out what manures and mixtures I may rely upon, but as there are other matters of quite as much importance, these have not been neglected. This year I am trying seven different kinds of oats—not less than 3 acres of each—to see if I cannot find some to do better than the usual black oats of the district, which have never satisfied me. Again, the grass-seed mixture which I use has been arrived at after ten years of watching the results of various different mixtures. And so on. I shall probably have some twenty little experiments going on like this during the present year; with none shall I take the trouble to weigh or measure, but judge by appearances alone. None of these experiments are important enough to publish the results, and it is doubtful if they could be depended upon by my nearest neighbour, but I certainly have gained and will gain information of great value to myself. It is such-like trials by farmers that I advocate, believing

that they will do more good than the more expensive official trials conducted by committees and institutions.

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*Ag. Gazette.*

## POTATO MANURE.

We have received the complete Report of the Wiltshire Technical Education Committee on experiments with potatoes and onions in the Warminster district, carried out under the superintendence of Mr. BEAVEN, Mr. E. H. SMITH, and Dr. MUNRO. The soil must be remarkably well suited for potatoes, and in very good condition too, if there is no miscalculation in the reckoning which credits three unmanured plots with an average yield of 17 tons 9 cwt. of tubers. The size of each plot was one perch. No doubt a good deal is due to the variety, Reading Giant. The same variety or one of the plots dressed with the complete chemical manure is reported to have yielded at the rate of 22 tons 14 cwt. per acre, while Imperator, on a plot dressed with 4 cwt. of farmyard manure to the perch, is credited with 21 tons 11½ cwt. per acre. Several other plots are said to have yielded at the rates of 15 to 22 tons per acre. As confirmatory of the heaviness of the crops credited to the small plots, it is stated that 21 tons 14 cwt. were taken out of an acre of land upon which Dr. MUNRO experimented with various quantities of nitrate of soda.

The complete chemical manure in the Warminster experiments was a mixture of sulphate of ammonia, superphosphate, and kainit. It was applied on the plots which yielded the greatest crops at the rate of 12 cwt. per acre, which gave better results than 32 tons of farmyard manure. The proportions of the mixture of the three manures are not stated, but the mixture contained 53½ per cent. of nitrogen 4.2 per cent. of phosphoric acid, and 4 per cent. of potash. But when the sulphate of ammonia was omitted, the yield was no greater than on the unmanured land, and this was the case also in the preceding season. Trials were made with different quantities of manure, winter and spring planting, close and wide planting different varieties of potatoes cut and uncut seed tubers, deep and shallow cultivation, and spraying with Bordeaux mixture.

The conclusions indicated by the Warminster experiments of last season are, (1) that close planting is best in a very dry season, (2) that deep cultivation increases the yield, (3) that uncut tubers are most productive, (4) that chemical manure containing the proper proportions of nitrogen, phosphoric acid and potash is more profitable than farmyard manure for potatoes, (5) that the application of mineral manure without nitrogen has proved useless, (6) that very heavy crops of late varieties can be grown on good soil in a very dry season (7) that Imperator is of exceptional feeding value, (8) that dressings of the Bordeaux mixture are of uncertain effect in a dry season, but have proved profitable on an average for two seasons, one wet and one dry (9) that late varieties of the Imperator type under favourable condition will probably yield a larger quantity of digestible matter per acre than any other crop in cultivation. With respect to onions, it is concluded that the onion maggot is unaffected by dressings of paraffin, root, gas liquor, gaslime, and wood