The experiments were conducted for four years on the same plots, with a duplicate series for checking, and the results were substantially alike throughout. The details given by Mr. Jamieson are too elaborate to be repeated; we give carefully the pith of his results. It is abundantly evident that Phosphorus is essential to the growth of the Turnip plant.

POTASSIUM.

Similar results were obtained when Potassium was withheld, but the decrease in the crop was not well marked in case of Turnips; it was only in case of Peas that a decided decrease took place. The results varied considerably with the forms in which the potash was applied.

One thousandth part of an acre, with Potash Nitrate, yielded 47 ozs. Peas.
" Phosphate ......33 "
" Sulphate.........33 "
" Carbonate.......30 "
" Chloride......... 1 "
No potash..............2' "
No manure.............. 3 "

Turnips.

Potash Nitrate yielded.73 ozs. Turnips.
" Sulphate.........41 "
" Phosphate.......40½ "
" Carbonate......36½ "
No potash..............38½ "
No manure.............. 0 "

Subsequent experiments showed that Carbonate of Soda could not take the place of Potash. This is a remarkable result, as we know from Dr. Voelcker's analyses of seaside plants grown on the shore and inland, that the inland specimens had their soda partly replaced with potash.

Mr. Jamieson's experiments show conclusively that Potash is an essential element to the Pea and Turnip plants.

CALCIUM.

Calcium Oxide is ordinary lime. In experiments with pure chemical salts as manures, the following results were obtained. The crops were weighed without extracting water:—

Nothing withheld...... ..42 lbs. Turnips.
Lime withheld............55 "
Everything withheld......$\frac{1}{10}$ "

Mr. Jamieson concludes from these and other experiments that Calcium is not essential to the plant. If that be the case, the addition of Lime to the soil can only be beneficial in bringing about changes in compounds already existing in it.

MAGNESIUM.

Nothing withheld.........42 lbs. Turnips.
Magnesia withheld ......49 "
Everything withheld......$\frac{1}{10}$ "

Also that the withholding of Magnesia did not lessen the crop; consequently Magnesia is not essential.

SULPHUR.

Nothing withheld.........42 lbs. Turnips.
Sulphur withheld, 1 year.51 "
Sulphur " 2 years
(on same plot).........39 "
Do. do. ... .37 "

Mr. Jamieson concludes, from many experiments, of which we have quoted only enough to show actual results, that "the general result seems to foreshadow the exclusion of Sulphur, Magnesium and Calcium from the list of plant essentials."

As regards Sulphur, the conclusion may be correct in reference to the special crop—Turnips—experimented with; but it is to be borne in mind that Leguminous plants contain notable quantities of Sulphur in organic combination as Legumin; that Lawes and Gilbert have recently shown that Clover is rich in Sulphur, although it escaped previous analysts who did not find it in the ash, as, being uncombined with lime or other bases, it went off in burning; and that the application of Calcium Sulphate is well-known to have a beneficial effect upon Leguminous and certain other families of plants.

Chlorine and Iron are not regarded by Jamieson as essentials. On the contrary, a glance at the experiments given above with Potassium Chloride indicate that Chlorine is injurious to plants. He states that the plants were actually killed by the salt, the symptoms pointing to the action of free chlorine; but there are not satisfactory experiments sufficient to support this theory. The alleged action of Sulphur in promoting fungoid disease is not in accordance with the experience of other experimenters.

We are glad to see that Mr. Jamieson is again at work going over other experiments on the same plan, and we shall look with interest for the results.

CURING CLOVER HAY.

We used to put hay up in cocks; also used to haul in quite green, and use straw and salt to aid in the curing. But gradually, by a sort of natural selection of plans, we have discarded all this, and seldom cock our hay except to avoid damage from an approaching shower. We cure in the field by sun and air until it is safe to pack as solid as possible in the mow, in which state—approximating the principle of a silo—it will best retain the juiciness and fragrance with which it came from the field. We recognize that seasons, climates, and state of the crop differ so much that no set system can be followed, and only general principles kept in view. These principles, with us, are about as follow:

First, we hold that exposure to the sun and air is, in our climate, the surest and best mode of curing hay, and is also attended with least cost of labor and time. If caught by three or four days, or a week, of dull weather, we would try to have our hay in cock, so as to be less exposed, and to gain some aid by fermentation. But such "spells" seldom come in our hay time, and we try to avoid them by commencing immediately after a storm, and by pushing the work rapidly in fair weather, and slowly or not at all in bad weather.

Second, we believe that there is a certain rapidity in curing clover hay which is best for the product—too slow tending to sourness, and too rapid to waste of the best portions. If the grass is very immature and rank, or the weather not very drying, we cut when it suits, and leave it spread on the ground until it can be readily raked, hastening the process sometimes by shaking or tedding. The dew does not injure hay much when too green for the horse-rake to manage. If the grass is older, or the weather very drying, we sometimes time the cutting to suit the convenience of raking and hauling, but mostly cut when it suits, or if possible, keep one team cutting and raking while another is hauling. The main point is to rake into windrows as soon as the steel-tooth rake can do it properly—in small windrows if drying slow, and larger if drying rapidly. These we do not spread out again, but may turn them once or twice to get in better shape, and expose new surfaces to the sun and air. By regulating these processes to suit the widely different circumstances of the crop and weather, we can generally control the curing as we wish, both in rapidity and extent. Under average circumstances, we can cut all of one day and haul in the next—that cut in the forenoon being raked up in the evening, the other during the next forenoon. But sometimes the whole process can be accomplished in one day, while at other times it may possibly require three or four days.

Third, the extent of curing necessary depends much on the kind of mow in which it is placed, and the quantity of hay to be stored. If the mow is as air-tight as a silo should be, and if a great depth of hay is stored in it, but little curing will be necessary for any except the top loads, which must be dry straw or extra well cured hay. But I think that in our climate more would be lost by the increased labor of hauling and storing green hay than could be gained by the quality of the product. For common mows, the clover requires drying until it approximates the weight, feel and look of hay. Closer instruction can only be gained from experience.

Clover, sowed thin enough, or mixed sufficiently with timothy to avoid coarseness of stem, cut when the heads com-