

effects produced on it by the application to the preceding crop of 3 to 4 cwt. of superphosphate made entirely from mineral phosphates, and containing no ammonia whatever. Although the superphosphate was applied to the preceding root-crop, and no other manure with it, and the turnips were carried off by the land, it nevertheless produced on the succeeding barley an effect as plainly visible as is the case when barley is sown dressed with nitrate of soda, or sulphate of ammonia."

I have on several previous occasions advocated the employment of the water drill for roots, and it is highly satisfactory to find its employment steadily increasing. It certainly economizes the use of superphosphate: it accelerates its action upon the young plant. Again let us hear the Professor on this branch of our important inquiry (and the reader will do well to read over and over the paper from which I have here taken so much). It is when applying himself to the scientific explanation of the action of superphosphate as a manure that he remarks that "the whole secret of the energetic action of superphosphate thus depends upon the production of most minutely subdivided or precipitated insoluble phosphates within the soil itself, not, as is erroneously supposed, on the direct absorption of soluble phosphates by plants; and it is not desirable to effect the precipitation before the manure is put on the land, for by so doing we should lose all the advantages resulting from equal distribution of the phosphates and their incorporation with the soil."

"The more rapidly the soluble phosphates in superphosphates are precipitated or rendered insoluble in the soil, and the more uniformly these highly-divided insoluble phosphates are distributed in that portion of the surface soil which is just under the young turnip plant, the more energetic their effects. Superphosphate acts a great deal more energetically when applied with the liquid than with the dry drill; to practical men, 2 cwt. of superphosphate applied with water, frequently produce as good an effect as 3 or 4 cwt. in a dry state."

"A little consideration will explain this difference. In the first place, superphosphate, in the shape of powder, cannot be so uniformly distributed on the land as it can in a liquid condition. In the next place, the acid or soluble phosphate may, and often does, remain unchanged in the soil for a long time, when superphosphate is applied in a dry state, and no rain falls for some time, or the manure is badly prepared. In dry weather the soluble phosphate remains as such where it has been deposited; when rain falls, as is frequently the case, in insufficient quantity to dissolve the soluble phosphate and to produce at once a dilute solution, a proper distribution in the soil is not effected. In other words there will be too much phosphate in one place, and none in another; and, besides this, more or less acid phosphate will be left that cannot exert any beneficial

effect on the young turnips. I have frequently picked up on fields bits of superphosphate, a month or six weeks after its application, and found in them still a considerable portion of acid or soluble phosphate of lime, notwithstanding that some rain had fallen during that time. There cannot, therefore, be much doubt that is superphosphate applied in a dry state, frequently a large proportion of the phosphates remain inactive in the soil, just at the period when phosphates are most needed by the young plants."

It will be well if the young farmer studies again and again facts like these. The different results produced by the use of fresh and fermented bones, is by no means an exhausted question, and the comparative value of dissolved bones, and the dissolved coprolite, or the mineral phosphate of lime, has been as little investigated, from the preference shown by the farmers of many districts to the dissolved bones (a fact which I learn from the London Manure Company). I am inclined to think that we might with advantage examine the question far more closely than has hitherto been done. And am not disposed to regard the present chemical explanation of the action of superphosphate of lime, as one that appears satisfactory. We see then, that there are still to be examined very important practical questions—inquiries that will long employ the chemical philosopher in his laboratory, and the enlightened agriculturist in his more difficult explorations on our hill-side amid many and ever varying disturbing influences.

BY-LAWS OF THE AGRICULTURAL ASSOCIATION.

In accordance with a resolution of the Agricultural Association, passed at the Annual Meeting at Toronto, in September last, we publish for the consideration of the Directors of the County Agricultural Societies, the following draft of a code of Rules and Regulations for the government of the Association, submitted to the Board of Agriculture for the consideration of the Delegates at the last Annual Meeting and by them referred to the Annual Meeting of 1863:

RULES AND REGULATIONS

Of the Agricultural Association of Upper Canada, under authority of the Statute Vic., cap. 32, sec. 33.

Whereas by the Act of the Legislature of Canada, 20 Vic., cap 32, sec. 33, it is enacted that "The Directors of the Agricultural Association shall hold a meeting during the week of the Exhibition, and may make Rules and Regulations for the management of said Exhibition;" and whereas, by section 34 of the Act, a Corporation is established, entitled, "Council of the Association," with full power