This method is certainly the more acceptable of the two mentioned in the bulletin under notice. While the surroundings of the cattle will be preserved in a sanitary condition, excellent and well-rotted manure (for both systems aim at bringing the manure into this state) will be obtained. We are afraid that the first system, if sanctioned, will merely mean a licence to the average native cattle owner to attain to the supreme degree of felicity which will be his if he be permitted to be at rest while filth accumulates around him and his animals.

RAINFALL AT THE SCHOOL OF AGRICULTURE DURING JULY.

1	..	Nil	13	..	Nil	25	.. Nil
2	..	Nil	14	..	Nil	26	.. Nil
3	..	Nil	15	..	·03	27	.. ·27
4	..	Nil	16	..	·16	28	.. ·01
5	..	Nil	17	..	·73	29	.. Nil
6	..	Nil	18	..	·27	30	.. Nil
7	..	Nil	19	..	·11	31	.. Nil
8	..	·04	20	..	·31		
9	..	·15	21	..	·03	Total	.. 2·39
10	..	·24	22	..	·01		
11	..	·01	23	..	·01	Mean	.. ·077
12	..	Nil	24	..	·01		

Greatest amount of rainfall in any 24 hours on the 17th ·73 inches.

Recorded by P. Van De Bona.

THE FIXATION OF NITROGEN.

Dr. Andrew Wilson contributes to the "Science Jottings" column in the *Illustrated London News* an interesting article on the fixation of nitrogen by the vegetable world. Where and how in the plant is this free breakfast table utilized? Where and how is the free nitrogen actually fixed and made useful for the purposes of the plant's life? Professor Marshall Ward tells us that the view that it was the leaves of the plants which absorbed it, and that the living protoplasm of the leaf cells was the agent which effected the operation, will not bear criticism. Then comes a second possibility. The bacteria, it was held, lived naturally on the soil, as many microbes do. They acted the part of underground cooks and caterers, and produced in the soil itself the nitrogenous food elements, who were duly absorbed by the plant's own roots. Even the bacteria in the root swellings, it was contended, might perform this work, which really enriched the soil, of course, and through it gave to the plant its nitrogen. This view of things remains for further elucidation. It may, therefore, be left for the present.

The third possibility maintains that the fixation and utilization of the air-nitrogen could be conceived to result from the action of the plant *per se*, regarded as stimulated to an excessive degree of energy by the bacterial swellings on its roots. Here the matter is viewed as if the bacteria on the roots acted the part of instigators of an action which, but for their encouragement and assistance, the leguminous plant would not be able to undertake. It is clear that the difficulties of the problem increase when this view is considered. Without the bacteria the plants can not avail themselves of the free nitrogen. What, then, is the exact relation of the microbes to the plant's work? Professor Marshall Ward, who inclines to this view of things, reminds us that there is an intimate connection between the root swellings and the roots themselves. These swellings are the seats of great activity. They are really chemical laboratories wherein business is always very brisk; so that it may well be that the living machinery of the plant is really stimulated in a direct degree by the efforts of the microbes on the roots, and that the plant is supplied from the root swellings with materials on which its own living cells can abundantly operate. My remarks that the plant gets its food materials cooked for it in this way, by the microbes, serves to explain the gist of this third view. It may be able to assimilate cooked food when it could not fix that which is raw.

Then comes the fourth and last suggestion. It is that the root swellings are merely so many accumulators of the nitrogen food, and that the plant simply absorbs what its microbe lodgers and boarders have prepared. This opinion regards the microbes as mere parasites, and unless the bacteria are capable of absorbing the free nitrogen from the air itself, as Prof. Marshall Ward observes, it is difficult to account for the gains by the plant on this theory. This, then, is the end of this story of plant feeding. That its real outcome—whenever shall be settled—is of immense importance to agriculture cannot be doubted. Once again we see how the so-called "unpractical" work of science in its laboratory and with its microscope, has bearings of the most intimate kind on commercial prosperity and human interests.—*Sugar Journal.*

TOMATO DISEASES.

Growers of tomatoes, especially in the low-country, must often have experienced much difficulty in raising the plants owing to disease affecting them; and to most growers the attack known as "drooping disease" must be the most familiar. It is particularly disheartening to see healthy plants all of a sudden begin to show signs of withering—often only in certain regions at first—and finally dying out altogether. This and other diseases of the tomato-plant have been the subject of enquiry in the pages of the *Journal of Horticulture*, and the information elicited through the agency of that excellent periodical is of a most useful character, and will we are sure be welcomed by our readers. As regards "drooping disease," which is so familiar, we first give the opinions of two correspondents who write as follows on the subject:—

"Your readers may, some of them, be glad to know that a prompt earthing-up round the stem of a drooping plant will usually save it. I use light soil and a few loose bricks or boards. Plants treated thus promptly will often equal in crop the best in a house. For black spot in the fruit I find the best thing is to sprinkle sulphur on very hot lime whilst slaking in a bucket, then walk up and down the house, shaking the bucket violently, and the sulphur and fresh lime will fly all over the house. This makes the fruit a little dusty, but that is better than losing it. Cladosporium also does not seem to make headway where the lime and sulphur bucket is used. I attribute a comparative freedom from both clubbing and drooping in my Tomatoes to the use of chemical