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The second conclusion would, I judge, be erroneous as far as assuming that there is nothing in our present knowledge adverse to the idea that plants may take up as large a pro portion of their nitrogen, as of their carbon by their leaves. Evidently many, if not all, plants take a proportion of their nitrogen, and, in many cases, a large one from the soil by their roots, which is not the case with carbon.

Again, as far as can be ascertained by experiment, it is not possible to grow plants fairly to perfection in an artificial soil devoid of available nitrogen, whilst if that is added the plants will obtain all their carbon from the air, none being supplied in the soil.

The absorption of carbonic acid and ammonia by the plant does not seem to be intimately connected as it is in varied proportions at different stages of growth; and with grasses, when potash is deficient, although less carbon is absorbed, there appears to be no falling off in the absorption of nitrogen (see p. 13 Plant Life, Handbook of the Farm). Clover is particularly referred to in the reply, and of course it is more especially in connection with the leguminosæ that the doubt as to the absorption of acrial combined nitrogen rests. Here then, come in two statements, one of the proportion of carbonic anhydride '04 per cent., and another of the proportion of ammonia '0005 per cent. The former appears to be a definite statement, the latter somewhat hypothetical.

Anyone naturally examines these figures and compares them in various ways. This is not very easy for a non-scientific reader, and I only put forward the following for correction and as a guide to the drift of the difficulties which occur to such a reader.

Allowing .0005 per cent, to be a reasonable estimate of the ammonia by volume in the air, this puts the proportion of anhydride and ammonia as 80 to 1 by volume, and about 200 to 1 by weight, and consequently carbon to nitrogen as about 32 to 1. If in a good erop of clover hay there are 2,400 lb. of carbon, in the same crop there will be not far off from 120 lb. of nitrogen—that is, 20 to 1 will be the relation of carbon to nitrogen. Supposing I am right in the above figures, I do not see the exact meaning and intention of Mr. Lloyd's statement.

That 0005 per cent of ammonia is present in the air as an average seems high, according to any authoritics I can come across. Ville reckons 1 part in 28,000,000, and Truchot, in some observations at 359 meters elevation, found the highest proportion by weight to be 600 carbon to 2.7 ammonia. Now, as this was the highest percentage of ammonia in a series of observations, and we know that carbonic acid diminishes as height increases and ammonia increases, it is difficult to see what chance we have of finding so large a proportion of ammonia near the earth, as estimated by Mr. Lloyd. Of course diffusion may in all cases bring about a supply when abstraction is taking place. Recognising as one must that plants or soil, or both together, absorb and receive nitrogen in some form from the air, yet it seems difficult to accept as a possibility that plants receive all their nitrogen directly from the air by their leaves. I may have been wrong in inferring that the passage in question would bear this construction.-W. G.

OUR LIVE STOCK.

PEDIGREE DAIRY CATTLE.

There was a breezy little discussion at the Cirencester Chamber of Agriculture lately, when Professor Long read a paper on duiry farming. In the course of his remarks, Pro fessor Long said he believed most sincerely that pedigree in their eatte had had much to do with diminishing the quantities of milk yielded—he meant that the more pedigree blood young.

(he referred especially to Shorthorns) was introduced into their herds, the more the supply of milk had diminished. He was speaking in the presence of Mr. CHABLES HOBBS, who, he thought, would support him in this remark, viz., that in too many cases they had only a pedigree of meat, and they ought to have a pedigree of milk as well. If they bred, as Mr. HOBBS had done, from eattle which had essentially been milking cattle, then they were in a position to produce more milk; but by buying pedigree bulls which were known only as members of the Gwynne family or of the Waterloo family, they got meat instead of milk.

Thus challenged, Mr. CHABLES HOBBS said he could not allow Professor Long's rather swceping condemnation of purebred Shorthorns to pass without saying a word. As regards his own herd, he believed them to be quite up to the average of cattle in that neighbourhood in milking qualities, for every year he bought some four, five, or six cows in the autumn to fill up the winter dairy, and they did not give more milk than the average animals of his own breeding, pure-bred Shorthorns. He should, however, add that he bought those cows with the two fold object of giving a certain quantity of milk in the winter and with a view of their being grazed and made into beef when done with. Two strains Professor LONG particularly condemned-viz., the Gwynne and the Waterloo. He had never used the former, but he once used a Waterloo bull with much success, so much so that in 1886 he sent a cow by a pure bred Waterloo bull to the Dairy Show, and she was awarded the first prize as a milk producer, taking both quantity and quality into consideration.

Other speakers expressed themselves to the same effect. Colonel CURTIS HAYWARD, however, said he thought the breeders of pedigree Shorthorns had a great deal to answer for in respect of the deterioration in many cases of the breed of dairy cows. (1)

This question of the alleged effects of the pedigree system in the milking properties of Shorthorns has frequently been discussed. It is evident, from Mr. HOBBS's effective retort, that it is not safe to mention any particular family as being defective in milking quality. Of course, in a breed that is characterised by high merit both for beef and milk, there are cases in which one of these properties has been cultivated at the expense of the other. But we think that in the majority of herds attention is devoted to both, and there is ample evidence that increased care is being taken in developing milking properties, and in keeping registers of milk yields.

EXPERIENCE WITH ENSILAGE.

EDS. COUNTRY GENTLEMAN - I want to ask Mr. Havemeyer, Mr. Moulton and Mrs. Jones if they are still using ensilage, and if they like it as well as when they commenced. I understand that Mr. Havemeyer has lost 60 per cent. of all the calves born this last winter. Mr. Moulton and Mrs. Jones, I understand, have given up feeding ensilage. S. New-York.

Mr. HAVEMEYEB'S STATEMENT.

Mr. Havemeyer requests me to reply by saying that we have fed ensilage to our cattle for the past seven years. The first year we fed it three times a day, without any hay, mixing with the 30 lbs. ensilage for the three daily rations, 6 lbs.

(1) Of course they have. If you dry off a heifer of any breed as soon as possible after her first calving, she will not be likely to turn out a good milker thereafter. Continue the process, and in a few generations the habit of giving milk will cease at a few months or even weeks after parturition. Why are the Galloways, the Polled Angus, and the Hetefords, such bad milkers? Because the calves suck their dams, and the latter give just enough milk to satisfy their young. A. R. J. F.