Gilbey. Commenting on the award, the Live-Stock Journal said .

Sir Walter Glibey's horse has Improved of late almost out of recognition, his head having fined down to the "beau ideal" of what a Hackney's happer should be like. His back and quarters are simply perfect, and his legs, supported on the best of feet, are like bars of steel. This stallion is also a superb mover, and at the walk there was probably no horse in the show that could surpass him. His victory, therefore, was particularly well received.

Notes by the Way.

NITROGEN FOR MANGELS.--We have often recommended the application of full dressing of nitrogen for the mangel, even when moderately large doses of farmyard dung have been used. As a general rule, it does not pay to give much nitrogen to any other root, though wherein the swede or the turnip differs In its needs from mangels neither chemist nor farmer can say. And, now, let Mr. Bernard Dyer, agricultural chemist of Great Tower Street, London,

MANURIAL EXPERIMENTS ON ROOTS.

Turnips-Mineral manures-Eung and artificials-Mangels and nitrate

In the interesting summary of Dr. Somerville's manurial experiments in the North of England by Mr. Solomon, now in course of appearance in the "Agricultural Gazette," an account is given of the effect of various methods of manuring on turnips. The turnips are, however, more than once referred to as "roots", without any other qualification, and in the article appearing in your issue of June 22nd the results of experiments on "roots" are given without any Indication that the roots were "turnips" (except in one sentence, where swedes are referred to 23 having been grown in 1894). The consequence is that several general conclusions are drawn which read as though they applied to roots generally, whereas they, of course, only apply to the peculiar root crop experimented with viz, turnips of one sort or another.

The figures indicate that in Dr. Somer viile's experiments on turnips the application of mineral manures, when no dung is used, has given very valuable results, and that the use of a small quantity of nitrate of soda-1/2 cwt. per acre-in addition has been more prostable than larger dressings; while when as much as sixteen loads of dung por acre were used, the use of nitrate of soda for airnips has not been remunerative. These results are confirmatory of the general experience, that where a liberal dressing of dung is app'led nitrogenous manures for turnips are unnecessary, and that on land in fairly good agricultural condition, even without dung, a moderate quantity of nitrate of soda or other readily available nitrogenous manure is often sufficient for the furnin crop.

What I am now asking the permission of the Editor to point out is that a different state of things prevalls when we consider the mangel crop. The mangel appears, on soil in good condition, or when dung is freely used, to be sometimes independent of artificial phosphates; but it is so hungry for readily available nitrogen that, even when dung is used with fair liberality -say 10 or 12 tons per acre-it will go nerally pay to use nitrate of soda in addition, up to the rate of 3 cwt, per acre. while in some seasons it pays under these circumstances to use even 4 cwt. per acre. When such a dressing of ultrate of soda is used without a good dressing of dung, however, phosphatic manures should be used as well.

While, therefore, nitrate of soda is a manure that should, as a rule, be used cautiously and with judgment for the turnip erop, it may and should be applied with a free hand to the mangel crop, which appears never to do so well as after a liberal expenditure in soluble nitrogenous manures. In a moist climate 1 cwt. per acre should be sown with the seed; in a dry climate-as in the East of England-2 cwt. per acre may be thus sown. A second or third cwt...as the case may be-should be top-dressed at the time of singling out, and one or two more cwt, ten-dressed a little later, or withheld, at discretion, according to season and the condition of the erop.

In the often-quoted experiments carried out during several seasons by Mr. Resling and myself for the Essex Agricultural Society, even 4 cwt. of nitrate of soda per acre, in addition to 4 cwt. of phosphatic Peruvian guano, were protitably applied to mangels, to which a dressing of 12 tons of dung per acre had also been given.

BERNARD DYER, D. Sc. 17, Great Tower Street, London, E. C.

THE ALBUMINOID RATIO.-The albuminoid ratio, the working out of which is still unapprehended by many people, is simply this: the proportion of the albuminous (protein) materials to the fat (or oil) and the carbohydrates istarch, sugar, gum, etc). The total number of units or percentages of fat or oil is taken, multiplied by 2.3 to bring it to the same value as the carbohydrates, and the result is divided by the units of albuminoids. The figure thus obtained is called the albuminoid ratio. Thus, in the case of wheat straw, containing, of digestible foods mutrients) 0.8 p. cent. of albuminoids, 35.6 p. cent of carbohydrates, and 0.4 p. cent of fat, we find that,

$$0.4 \times 2.3 = .92$$
and $.92 \times 35.6 = 45.6$
8

wherefore the albuminoid ratio: the fat and carbohydrates:: 1:45.6.

This ratio is supposed, in feeding tock of all kinds, to be best suited to their needs when it is in the neighbourbood of 1.5.5, less for growing and more for fattening stock, but about the same for milking animals. But there are a great many reasons why an analysis of a food or a ratio may be very first sown has become a valuable meamisleading, and on that account it must be used with caution or the use modified partion of lucern." by circumstances, v. p. 72.

DAIRY-SHORTHORNS.—A fortunate man is Mr. Merry, whose four cowsreal dairy-shorthorns-won six prizes at the great show of dairy-cows, held last month at Tring, England. An engraving of the four will be seen at page-of this unmber of the Journal, their performnaces were as follows.

A pretty fair yield of milk from all four, varying from 61 lbs. to 67 lbs. a day. And the butter daily produced was, in round number, 2 lbs., 2 lbs., 4 oz., 2 lbs. 9% oz., and 2 lbs. 14% oz.

has seen the crop of Lucerne growing Thérèse, he will understand our satisfaction at the sight of this flourishing niece of folder when we visited 'Bleury" on the 7th September. There are two acres of it and it was being cut for "the fourth time!" The land on which it was doing so well is about as poor a piece of sand as one would wish te see, but there is no subjacent water present till a depth of 14 feet is reached, so the roots have a good scope to work ia, and they avail themselves of the freedom: we dug out one plant as far as it went, and found the tap-root to be exactly "four feet long!" No wonder that all through the drought of last spring the crop grew and flourished, for it got its moisture from the subsoil and laughed at the absence of rain.

The piece was seeded down in the summer of '93, and there is not a weed to be seen in the lot, though underneath the plants there is probably some couchgrass. Two acres more will be laid down next spring, after potatoes, as Mr. Bouthillier thinks this is the most valumble crop he ever grew and will never be without it again.

"One wonders why "lucerne" has never made its way as a forage crop in the north of England. It makes hay of very high quality, or it may be grazed; but it is best adapted for soiling, and horses, cows, sheep and pigs alike thrive upon it. By beginning early and cutting about one-fortleth of the field every day, so as to go over it every six weeks, a lucern field will afford a constant out from May to October, since by the end of each six weeks the portion first mown will be ready with another crop. Until recently it was thought that lucern should be drilled in rows and kept clean by hoeing, but this is now generally admitted to be a mistake, as liveling is ant to prove injurious to the vots. Mr. Corbett (a good authority) considers it better to sow the seed broadcast, and trust to the frequent mowings of the crop to keep down weeds, but in his own experience he has found it a still better plan to sow with the lucern a mixture of strong and quick-growing grasses, which, by rapidly covering the surface, help to exclude weeds, and have the further advantage that, if manured, they form an excellent permanent pasture by the time that the lucern, having become partially worn out, would otherwise have needed plowing up. He further says that he has grown lucern for about fifteen years, and that the land dow, and still shows a considerable

T. BOWICK in Count. Gent.

BARLEY.- Such a grop of barley, too, on this farm. I'vo arpents yielded 112 bushels, equal to 66 bushels the imperial acre, a crop hardly ever grown even in the best farmed districts of East-Anglia. Some of the upper part of the Bleury farm is a very useful clay-loam that, fairly treated, would grow very large crops of all kinds. Were it ours we should be tempted to try a piece of fall-wheat on it, ploughed in about 4 inches deep.

FRUIT-PIRATES. - The hay-drop LUCERNE.-If any one of our readers here this year was not very good at any rate, and what there was of it was on Mr. C. F. Bouthillier's farm, at Ste. trampled all to pieces by the village people strawberry-picking. What a shame it is that such injury should be done to the property of men who are trying to set a good example to their neighbours!

NITRAGIN:

What it is - "Colonies" - Cost per acre-How to use it.

Certain experiments have lately been made, at Woburn, by the well known chemist, Dr Voelcker, on the newly discovered agent "nitragin." It was only six or eight months ago that the success of Dr Nobbe, of Tharand, Saxony, succeeded in the preparation of this manurial matter, on so to speak, a commercial scale. The discovery is due to HELLRIEGEL, the German analyst, and its name is intended to indicate something that makes the free mitrogen of the air fit for the food of plants. Our readers will remember that it was Hellriegel who discovered that the organisms in the nobules on the roots of leguminous plants were the agents by which the atmospheric nitrogen is converted into a form assimilable by plants. Dr. Nobbe's morit consits in the application of the discovery to practical farming by the cultivation of these organisms and the sale of what he calls "colonies" of them in bottles!

These organisms are, it seems mighty particular in their tastes. The bacteris from pea nodules act well on the nea crop, do not answer so well on the vetches, and have no influence at all on clover, though all three of these plants are leguminous plants. Conversely, the clover bacteria will have nothing to do with the pea crop.

When first these application were tried, soll was taken from a field known to be rich in the organisms required for a particular crop, and spread over a field on which that crop was to be sown. But, though this plan succeeded well enough. Dr. Nobbe found it to be not only costly and inconvenient, but he found out the possibility of transferring, along with the beneficial organisms, others that might be injurious. So, he went to work and obtained by "pure cultivation" a preparation in which all organisms except the desired ones are alsent. The types are now produced on an extensive scale in Germany, and can be bought of the firm of Meister, Lucius, and Bruning, Hochot-on-the-Main, at the rate of about 60 cents a

Age. Calved Milk. Butter.

	W. Merry	1332 1130	6 7	0	o July	10	26 29	67 64	112	153 34. 06 93 24. 55	Fair.	Good Good.	2nd Tenant-farmers'	2nd prize, £15. 3rd prize, £10.
	W. Merry W. Merry	1395 1255 j.	5 5	0	() July () July	17 20	17 16	61 67 1	0 2 0 5	03 29. 22 14 23. 14	Good. Fair.	Very good Good.	Prize, £2. 2nd Prize, £15.	4th prize, £5. 1st prize, £20.