

What an amount of good cheese-factories are doing in England! One of Lord Vernon's tenants—farm, 200 acres, of which 40 acres are arable—received at the factory for his milk, last year, £1,100—\$5,500—equal to \$27.00 an acre over the whole farm! Now putting the price as the same at which our own tenants in Gloucestershire sold theirs, viz. 60s. a cwt., this would give the yield as 2 cwt. per acre. An enormous production indeed. I should like to know how many cows were kept. Our rule at Hill Court is that a cow requires three acres for winter and summer food. If Lord Vernon's tenant, then, kept 66 cows (exclusive of other stock), their yield would be worth \$83.00 each, or \$27.00 an acre, which brings the account out pretty square. Our cows, I regret to say, only give 4 cwt. of cheese each, which amounts to \$16.00 an acre, or \$48.00 a cow! Something must be wrong. However we shall see what our new tenants will do.

I observe that the Irish still prefer churning the whole milk to skimming off the cream! Their butter seems to keep well, at any rate, and no salt butter can be better than "mild cured Corks." Still, I prefer the Devonshire plan, particularly where a good price can be had for a first-rate fresh butter. In the Irish way, the milk is allowed to stand in shallow pans to cool for 12 hours, and is then transferred to wooden tubs to sour. When thick, or *clabbered* as I believe it is called, it is put into the churn and allowed to remain from evening to morning, when it is churned by horse power. The very way, I should have thought, to make the nitrogenous matter mix irremediably with the butter, and, as every one knows, it is the nitrogen that decays first and superinduces decay on the other parts.

I forget to mention, in my article on tares, that on all but heavy clay soils turnips or rape may be grown after the crop is severed with only one ploughing. As thus: pass the grubber over the tare-stubble cross-ways; plough the land in narrow furrows; and drill in the seed at 26 inches apart, if turnips are chosen, but if rape, then broadcast 5 pounds to the acre after harrowing the land fine. The roller will cover the rape-seed sufficiently and complete the job neatly. Both turnips and rape would be benefited by an application of superphosphate, say 2 cwt. an acre.

Ensilage.—This process is exciting great interest in England. Sir John Lawes has entered into the discussion in earnest, and is experimenting on the effect of *silage*, as it is called, with his usual assiduity. Woburn, too, under the direction of young Voelcker, is not behindhand. The question there is evidently this: Does ensilage as a food surpass roots? It will take another season at least to settle it, but when Voelcker and Lawes have given in their verdicts it will be a bold man who disputes their conclusions. At present it seems as if the Woburn manager had started with inferior grass.

Mr. Jamieson, the Scotch agricultural chemist, is at daggers drawn with his brethren as usual. The truths laid bare at Rothamsted hold good at Woburn, at Guelph, and at Vincennes. It is only when Mr. Jamieson makes inquiries of the soil that confused replies are forthcoming. My readers may remember that in answer to my question as to the benefits to be expected from the application of *ground apatite* to the

land—apatite being a *crystalline* form of phosphate of lime,—Sir John Lawes, Mr. Aitken, chemist to the Highland Society of Scotland, and the late lamented Mr. Voelcker, chemist to the Royal Agricultural Society of England, all expressed the same opinion on the subject. Mr. Voelcker says "I go so far as to maintain that a hard crystalline material, such as apatite, ought never to be applied to the soil merely in a finely ground state. If such a thing has been recommended, the following of the recommendation must inevitably do harm to the best interests of the farmer." "All my experiments" says Dr Aitken, "with ground *Canadian apatite* have been such as to prove that phosphate to be unsuited for a manure until dissolved. Where I have applied it to roots, the result has been usually equal to "no phosphate," and I have never seen any effect produced by it on succeeding cereal crops." Sir John Lawes, if he used phosphate of lime for cereal crops and not for turnips, "would be quite content to use a certain portion of phosphate in the ground state, provided; 1st, that the phosphate was derived from some *non-crystalline* source, such as *coprolites*, or *Carolina rock*." For turnips, "as the manure is required to push the young plant out of the reach of the fly, and as soluble phosphates act far more rapidly than insoluble phosphates, however finely ground, soluble phosphates will continue to be used." You see that we have here the three best known chemists holding but one opinion. Mr. Jamieson protested against the doctrine most strenuously, he alone, *Athanasius contra mundum!* And, now, he is raving about the injury done to the soil by sulphuric acid. He states that "widespread disease in the turnip crop is due to the extensive use of dissolved phosphates," page 19, 1883 report of the Sussex experimental farm. Again, page 17, he says "two spare plants taken from plot 3 displayed unmistakable club-roots... I mention this to show that the disease was actually there, as far as the leaves showed, the disease existed chiefly where sulphates had been given in excess." Would any one acquainted with the *club*, or as it is commonly called in England "finger and toe," be justified, after reading this, in doubting whether Mr. Jamieson's club-root existed, especially when, on the same page, it is said that "it had previously been stated to me that the club-root disease was unknown in Sussex." Surely the disease cannot be widespread and unknown! If, however, the use of *sulphate* produces widespread disease in the turnip crop, the fact ought to be known to every farmer. If the statement be but an imaginary figment, all who have been misled thereby had better examine the matter carefully for themselves. It would be a difficult matter for the Sussex experimenters to show a difference between the sulphate of lime which is natural to the cultivated soil and that portion which has been added in the application of gypsum (land plaster) or by any ordinary phosphate of lime. I see by Appendix 1, 1882, the soil of the experimental ground at Preston is said to contain .194 per cent of sulphuric anhydride, which would indicate the presence in the two top feet of 7½ tons per acre. As this sulphuric anhydride exists in the form of sulphates of lime and of magnesia, the presence of some 20 tons of these bodies is indicated. A dissolved bone manure would contain 25 0/10 of gypsum. Hence, in applying 5 cwt. of dissolved bones per acre to this soil, we should increase the 20 tons of sulphates by 1½ cwt., and Mr. Jamieson gravely asks us to believe that this trifling addition "poisons" the soil and disseminates finger-and-toe disease.

Again, Mr. Jamieson applies large quantities of farmyard dung to the experimental land—as much as 25 tons to the acre, sometimes. Let us see how about the sulphates in this dressing. In appendix 1881, table 5, we see that the percentage of sulphuric acid in the dung is .11. Hence, the quantity of this "poison" added to the soil in the 25 tons of dung is