

feeding on a fairly large scale, say from 100 to 150 lambs, with crops grown expressly for them, a long experience convinces me that their example would very soon be followed by the majority of their neighbours.

You will ask perhaps: how is it that land is so wonderfully improved, as you say it is, by the feeding off of crops by sheep? And I may just as well say at once that I do not know: that is, I am not sure that I know. It is quite true that in sowing a few pounds of rape-seed to the acre we add nothing to the soil to signify, for the principal part of the seed is only a hydro-carbon—oil—and the plant to be grown can easily obtain both its water and its carbon from the air. My idea is that the conversion of the rape or other fodder plant by the sheep into dung and urine fits certain matters, already existing in the soil in an unprepared state, for their proper office of affording food to the subsequent crops. We who have grown lots of crops of rape, tares, rye, &c, for sheep, have often been obliged to plough in some few rods of the crop when the season was too far advanced to admit of the sowing of the fall-wheat being any longer postponed; and never once have we found that the grain grown after the ploughed-in green-crop has anything like equalled in yield the grain grown after the fed-off green-crop.

I have seen, in Essex and Cambridgeshire—England, of course—hundreds of acres of white turnips and rape given away to large flock-masters on condition of their being fed off by sheep, in plentiful years; but I never saw a single acre ploughed in (1). And the Essex and Cambridgeshire men know their business as well as the most highly educated scientists.

Again; in feeding off a crop of green-meats, we always add at least a pound of cake or of pease to each sheep *per diem*. Now, a fair crop of rape, for instance, will weigh about 15 tons; a lamb, or teg as we call the beast when weaned, will eat, say, 15 pounds a day; so, an acre will last one 150 days, during which time he will have consumed 150 pounds of cake, by means of which not only will the lamb have added at least 3 stone = 24 lbs. to his dead-weight, but the land will have been improved by the addition of, say, 6 pounds of nitrogen, 4 pounds of phosphoric acid, and 3 pounds of potash!

Moreover, the mere treading of the sheep in feeding off the green-crop will have no slight effect on the succeeding crop of grain. I observe, with pain, every year just before harvest, how very little *root-hold* the plants of wheat and other grain have on the soil: a very trifling twitch pulls the whole stool out. A little attention in planting the seed deeper in the ground, and a little *firming* of the land with the roller would partly cure this defect; but sheep-treading is the greatest and most perfect remedy. I mentioned, I think, some time ago, that my dear old friend and farm-tutor, William Rigden, never followed a mown green-crop of tares with wheat, unless he had interposed a sheep-fed crop of turnips or rape between the two. After tares, on his highly farmed soil, the wheat always became *root-fallen*; but with the intervening crop of roots, the little pointed hoofs of the sheep so solidified the soil, that the wheat stood bravely upright till harvest. The heaviest roller on this farm of Mr. Rigden's weighed 36 gross cwt. = 4032 lbs., but in his opinion, the sheep's feet beat it hollow!

It is not, I suppose, worth while now to go over again the method of preparing land for this useful crop, rape. If your land is decently clean, sow the seed—6 lbs. or so—broadcast; if foul and out of order generally, drill it in rows from 21 to 22 inches apart. Heavy land, in good heart, will grow a fair crop without manure, but a couple of cwt. of superphosphate, with from 80 lbs. to 100 lbs. of sulphate of ammonia, will help rape on any soil. I do not advise dunging land for this plant, as the artificials mentioned will do as well, and the

dung, always scarce enough everywhere, can be saved for another field.

Should you feel inclined to try ashes, you can either use 30 bushels of hardwood ashes to the acre, harrowed in before sowing, or taking an old tough turf, break it up in any fashion you find convenient, and burn forty or fifty loads to the acre. Still, effective as this process is unless you have seen it carried out, or have some Gloucestershire or Pen-man on your farm, you will have a little trouble in learning how to do it. Sands and gravels should never be burned; 1. because the heaps are very difficult to keep going when once alight; 2. because the soil is already sufficiently pulverulent, and the quantity of organic matter is too small to bear dissipating. But a good tough clay sod may be burnt as much as you please, and so may a peaty surface. With us, this *stifle-burning* is an annual job, and in September you may see the air, in Gloucestershire, full of smoke from the arable lands that are being burned after the wheat-crop, the last of the rotation.

I, more than once, begged Mr. Brown, the late Professor of Agriculture at Guelph, to try this system of sheep-feeding rape, but he never seemed to be so inclined. They do not practise it in Scotland, except here and there. Now Mr. Shaw has taken it up, I trust the sight of a flock of sheep in the hurdles will not be so rare as it has been.

*Winter Dairying.*—From what I hear, it is very probable that a good many butter-factories will continue their operations all next winter. In this case, it must be remembered that milk from cows that have long calved will not make good flavoured, well coloured butter. The Danish farmers, who work all through the winter, take care to have a large proportion of their cows calve during the later months of autumn, and we, if we wish to succeed in our new enterprise, must take a little precaution. What it is owing to I know not, but at all events there is an enormous improvement perceptible in the butter to be found at the grocers' shops in Montreal this winter. I do not eat it myself, but my family all say that bad butter here is the exception, and not the rule, as heretofore.

A little pease-meal added to the cows' daily-ration, at the rate of, say, 2 lb. a head *per diem*, will be of great service in keeping them in good condition under the demands made on their constitution, and those who have roots of any kind may safely give them to their cows provided they feed them *immediately after milking*. This I have mentioned several times before in the Journal, and I see in the English Agricultural Gazette the following confirmation of my views.

Lieut.-Colonel Alexander, of Acton, Poyntzpass, has of late years made a speciality of dairying, and has had a very successful record in the show-yards both of Ireland and England. At the London Dairy Show a few years ago, with three exhibits he won first and second prizes, a highly commended card, and the silver medal. This year he had an enviable record of successes at local shows in the north. A few words as to his system cannot, therefore, fail to be of interest. His dairy stock is composed chiefly of cross-bred country cows, the only pure-breds being a few Devons. During the summer they are managed in the usual way on grass. In winter they also have a run out for a short time every day, when the weather permits. Inside they are fed on turnips, hay, and a liberal allowance of artificial foods. The quantity of turnips given is limited to from 2 to 3 stone per head per day. (1) Of hay there is an *ad lib.* allowance, while the artificial food mixture is made up of 2 lb. to 3 lb. oats, 2 lb. cotton cake, and 1 lb. of bean meal. Questioned as to his experience with turnips as tainting the milk or but-

(1) Except, as mentioned above, from necessity.

(1) From 28 lbs. to 42 lbs.