

buildings, conveniences, and implements. If the Black cattle require to be tied up in Wales, they would not get what they required. I can't help saying that the sheds and buildings in Wales are a disgrace to any farming community; and I am right in saying that, if the Welsh farmer wants improvements either in buildings or on the land, he must do it himself. I consider there is no class of people so hardly done by, and that have their hands tied behind them, as the Welsh farmers. And on the other hand, I don't know a race of people that strive harder, get up earlier, go to bed later, than they. I have often remarked that the mountain sides which they plough, would have to go undone if it fell to the lot of an English ploughman to do it. The labouring class are far superior to the English labourer, and are harder worked, and get less pay. The rate of wages is from nine shillings to twelve shillings per week for good men.

One cannot pass by the women, who are nothing less than slaves. They turn out at eight o'clock in the morning, spread manure, plant and dig potatoes, hoe the crops, and do all kinds of work in harvest-time, at the rate of 1s. per day. The cows are fed, milked, cleaned out, and hay cut by the girls; and were it not for their strong constitutions, they never could do it. You often hear of Welsh girls coming to England, but you never hear of English girls going to Wales.

In conclusion, I should like to mention that it is astonishing to see the active but light-boned horses working the land. Everything in Wales seems to me to be of light construction, and got up at small expense; if it were not so, it would be a difficult matter to live.

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SWEET ENSILAGE.

EXTRACTS FROM MR. FRY'S BOOK.

THE SILO AND SILAGE STACKS.

A perfect silo must be air-tight, water-tight, and as nearly as possible, if I may be allowed the expression, heat-tight.

The silo may be of any form, provided the covering can closely follow the ensilage as it sinks. There should be no dram or other outlet for moisture at the bottom. If the silo be provided with a door for the convenience of emptying, special care should be taken to keep it absolutely air-tight. The size of this door should be reduced as much as circumstances will allow. In large silos the best plan is, undoubtedly, to build up this doorway with bricks and mortar; in small ones the door may be made of wood, with all the joints caulked and pitched; or double wooden doors may be made, the frame of the outer one being six or eight inches wider and higher than that of the inner one, so that when the intervening space between the two doors is filled up with sand or earth it may well cover any cracks between the inner frame and the masonry of the silo.

The different materials of which it is possible to construct a silo are none of them free from objection. Wood has the advantage of being a worse conductor of heat than masonry, but it has the serious objection of being perishable. It is also difficult to make the joints of a wooden silo absolutely air-tight. It seems to me that silos built of stone, bricks, concrete, or similar material are the best. When either of these materials is used the interior should be lined with Portland cement brought to a perfectly smooth surface.

The roof of the silo should be raised above the walls at least three feet on every side, for

the convenience of treading the ensilage evenly all round close to the walls.

The best covering which I have seen is wooden boards or planks from one to two inches in thickness laid closely together. But this covering is by no means a perfect one. There is room for improvement. A covering more impervious to heat and air might be devised, such as thick tarred paper, or some similar substance.

The weighting, which should not be less than 100 lb. to the square foot, may either be produced by the direct weight of sand or earth, or by one of the several convenient mechanical methods which have been devised, and which are now well known.

A silo should, if possible, not be less than fifteen feet deep, and it should be as much deeper as circumstances will allow. It will be generally most advantageous to construct it partly under and partly above ground; so deep underground that the labor in getting out the ensilage shall not be excessive, and so high above ground that the fodder may be conveniently thrown from waggons or carts into it. The most convenient site is on a hill side, the carts bringing the green fodder for filling to the upper side; a doorway being constructed on the lower side for the convenience of emptying.

For some years efforts have been made to produce ensilage without a silo, the green fodder being stacked in the open air and well compressed by suitable mechanical or other means. There is not the least doubt that sweet ensilage of first-rate quality has been in this way obtained, and there is certainly no great difficulty in fulfilling the necessary conditions for its production. What form of silo to use, or whether to dispense with a silo altogether, is not a scientific but an economical problem, which every farmer must decide for himself according to local and other circumstances. The stack is certainly far less convenient than the silo, in that it affords no protection from the weather during the in-gathering of the crop and cutting out of the ensilage for consumption. Should bad weather come on when the filling of a silo is half completed, the ensilor can temporise by adding a load or two of damp fodder every two or three days, but the farmer who is making a stack must choose between heavily weighting his half-finished stack and waiting for better weather, or finishing his stack as rapidly as possible, in spite of weather, and taking his chance of the result.

To produce an equally good result the weighting of a stack should be far greater than that of a well-constructed silo, say three times as much. The stack will always have a tendency (like the contents of the silo) to settle unequally, a circumstance which will make compression more or less troublesome, but this difficulty is by no means insuperable. The waste at the outsides of the stack will be always greater than that near the walls of the silo, the proportion of this waste to the bulk of good ensilage will of course diminish as the size of the stack is increased, but so does also the relative cost of the silo diminish in proportion to the increase of its cubical contents.

Under ordinary circumstances it appears to me that the balance of advantages is in favor of the silo and against the stack; but, under peculiar circumstances, the latter may be found a most useful addition to the resources of the farmer. On one point I have a strong opinion:—If I had a field of half made hay and bad weather set in, I should not hesitate to collect it into a stack as rapidly as possible, cover in as closely as possible with boards, thick tarred paper, or other impervious material, and weight it as

much as circumstances would allow (not less than about 300 lb. to the square foot), feeling assured that I should thereby obtain a better result than could be gained by allowing my fodder to be exposed to the weather, or by any process of stack cooling or artificial drying. If the covering were virtually air-tight and the compression sufficient to prevent the air from penetrating more than a few inches at the sides, I should have no fear of overheating. It seems to me that the sides of the stack should be quite vertical, and should not overhang in the way that is general with hay stacks in some districts. The production of ensilage of first-rate quality is not dependent on the form of the silo, the material of which it is made, or its covering. Whether to construct a silo of masonry, or to make a hole in dry ground, or dispense with a silo altogether, is a question which every individual must decide for himself.

TIME OF CUTTING ENSILAGE CROPS.

Sweet ensilage bears about the same relationship to the green crop from which it is produced as ripe fruit does to green. It is, therefore, essential that the crop should be cut at such a stage of maturity as will favor this ripening process. It is the same stage as that chosen by practical farmers when cutting fodder for hay. It seems to me that the proper state of maturity in all cases is soon after the plant has bloomed. At this stage most plants will contain a suitable amount of moisture, viz., not exceeding 75 per cent.

The only practical test of moisture which I can suggest is that a wisp of the fodder crop should be taken in the hands and twisted; if moisture can be wrung out of it, even although the amount may be very small, the fodder is too wet. On the other hand, when the crop has sufficiently matured to be mown, bad weather may prevail. In this case the crop may be allowed to stand longer, so that deficiency of moisture in the plants themselves will be compensated by a little moisture which may cling to their surfaces should the cutting and carting be carried on in showery weather.

In my opinion the best ensilage is that obtained from plants which have been cut soon after efflorescence, and have been exposed after cutting in the silo to just sufficient air to perfect ripening; such ensilage has a distinctly fruity odor, reminding one of dried fruit. If the plant has stood too long, or if the exposure to the air (either in the field or in the silo) has been too great, the ensilage is more aromatic and more nearly resembles hay, this type is very useful, but appears to me to contain less of the feeding properties of the original crop than the more fruity kind. If the plants have been cut too young, or the exposure to air (either in the silo or in the field) has been too short, the result is sour ensilage, which, in my opinion, is distinctly inferior to the other kinds above mentioned.

The ensilage crops, of which I have had some experience, are:—Green rye, trifolium incarnatum (red-top clover), with and without oats; tares or vetches with oats; trifolium pratense (broad clover) with rye grass; and meadow grass.

Green rye is cut with us early in May, when in ear, but before it blooms. Although carted in fine, sunny weather, it always contains more than 75 per cent. of moisture, and it is necessary to mow it and allow it to lie on the ground for one or two days previous to carting and ensiling, or it will not heat sufficiently.

Trifolium incarnatum with us is cut in May or early in June, and is a very heavy, succulent crop. I have always found it necessary, even in sunny weather, to cut this crop in the morning, and cart it to the silo in the evening.