

lity, the bulk was not equal to the sample." Again, "All brewers who saw the Government farm samples at the brewers' exhibition were charmed with them, and millions of bushels could have been sold, but the general crop did not equal the samples."

Other evidence of the same kind comes from all sides. A buyer who visited England on this business says:

"It is a mistake to suppose that the English maltster does not require color; he does, and the bright sample will in every case take the market there, as in the United States. I desire to impress strongly on farmers the necessity of growing from pure seed, and in harvesting and threshing, to carefully avoid mixing."

As a rule, we may take it for granted that a fine sample of malting barley cannot be grown on *new* land.

The difference of price between first-rate malting barley and second and lower qualities, on the English market, is very striking. This last year, prices ranged from 80 cents a bushel to \$1.30; the former for distiller's purposes and perhaps porter-brewing; the latter for the Burton and other fine ales. In our best English barley-districts, the grain is always sown on a "stale-furrow." The Scotch, I believe, generally plough twice for barley, but even a Scot will not pretend that the barley of the North is to be compared with that of the South East. Scotch barley is heavy enough, but the true flavouring quality is wanting, or else why do the Scotch brewers import such a lot of Norfolk and Suffolk barley for their fine Edinburgh and Alloa ales? (1) A. R. J. F.

OUR ENGRAVINGS.

A Canadian Farmstead; v. p. 104.

Jersey cow, Snowflake; winner of first prize of the R. A. S. E. in 1891.

Middle-white English sow and pigs: first prize, 1891. v. p. 103.

DE OMNIBUS REBUS.

*Manure-heaps.*—*Mixens*, or *middens*, as we call manure-heaps in England, are made in this country without much care being bestowed upon them. Even in this Island of Montreal, it is no uncommon thing to see sleigh- and cart-loads of manure of good quality flung down in a scattered heap anyhow, without any consideration being paid to the fact that the larger the surface of dung exposed to the air and the rain, the larger must be the loss of its most valuable constituents. In November last, on the land opposite Montreal College, in Sherbrooke Street, I saw load after load of dung carted out in little heaps of perhaps, six to the load, and there they lie now, unspread, frozen hard (April 24th), and not worth more than a third of their original value, besides delaying the operation of ploughing until both the manure and the ground underneath it are thawed out. This, I need hardly say, is not the way to treat dung, which is a much more valuable commodity than most people seem to imagine.

As there is a tendency apparent among the theoretical class of *agronomes* to do away with the alternative system of farming, in which grain, roots, pulse, grass, and cattle all had their share, and to substitute for it a system of growing grain, without keeping any live-stock, by the cultivation of pulse-crops to be ploughed in, assisted by chemical manures, I shall show, by the test of certain experiments at Rothamsted,

that dung is, at any rate, a profitable application to the land.

A TEST CASE.

There has been during the last thirty-nine years a series of experiments proceeding at Rothamsted on wheat and barley, grown consecutively under very varied treatment, which it is not necessary to explain further, here. In the case of the barley, plot 7 was dressed annually for twenty years with fourteen tons of farmyard manure, with the result that 48½ bushels of grain and 28½ cwt. of straw were annually yielded and removed. Side by side, and in striking contrast to the farmyard manure plot, is one which has received no manure of any kind during this period, and here the average result has been 20 bushels per acre of grain and 11½ cwt. of straw. The difference in yield is clearly due to the action of the dung, and is represented, in these days, in money, as follows:—

	£	s.	d.
Average increase owing to farmyard manure:—			
28½ bushels of barley at 3s. 6d. per bushel...	4	18	10½
16½ cwt. of barley straw at 6d.....		8	3
		5	7 1½
Cost of dung.....	4	0	0
Profit per acre per annum from the use of dung..	1	2	1½

It therefore appears that the dung paid in this extraordinary case, but I ask especially attention to the following additional fact.

After dung had been applied for twenty years, the plot was divided into two parts, and half was left unmanured, while the remaining half still continued to receive its usual dressing of dung. During the next twenty years, the half of the plot which received no manure yielded upon an average 34½ bushels of barley, or an average increase of 15 bushels of barley, with a proportionate amount of straw, over the continuously unmanured plots. The effect of the dung is not yet exhausted, and the case is clear that, after leaving an immediate profit every year during the period of its application, it has continued without further expenditure to return 15 bushels of barley, or an annual revenue of £2 12s. 6d. per acre.

We all know that dung is slow in its action, but, in revenge, it is clearly lasting in its effects. Now, let us compare the cost of producing an acre of barley by dung with its cost by using artificial manures. Lawes, you will have observed, charges his farmyard manure at 5 shillings a ton:

	Average annual yield.
14 tons of dung gave.....	48 bushels an acre.
Mixed minerals and ammonia salts, 46½ "	" "
" and nitrate of soda, 49½ "	" "

The cost of the artificials being £2. 15 an acre and the cost of the dung £4. 0, it is clear enough that the barley grown by the aid of the former was got at far less cost than the dunged barley. But, whereas the effects of the artificials were evanescent, the effects of the dung were lasting, as may be clearly seen above. And how came it that the dung cost 5 shillings a ton? It can be only accounted for in one way: if Lawes sold his beasts for exactly what they cost to rear, feed, and look after, the dung cost him nothing. If, on the other hand, he lost money by them, it is clear that the sum lost divided by the number of tons of dung they left behind them, is the cost or value of that dung per ton.

And, now, let us set about making a manure-heap or *mixen*. First, calculate how many square feet your *mixen* is likely to occupy if raised to a height of, say, 4 feet. Over

(1) Mr Andrew Dawes, of Laclune, told me, on the 13th June, that his 2-rowed barley from Moosemin was already on the point of going down! Too much dung Mr Dawes is as bad as too little