such a branch of agriculture as dairy farming-an admission that would have greatly astonished the late Wm. Torr.

Dairy appliances and machinery of which we had no idea four years ago, are now in common use. At that time I possessed the only " butter worker " in the country; now there are many hundreds in daily work.

At Bristol, in 1878, we first heard that efforts were being made in Germany to devise a machine by the aid of which the cream should be rapidly removed from milk by centrifugal force. Now we have mechanical separators of at least five different forms; and so with other contrivances.

In Cream separators, certainly the most ingenious of all dairy machines, we have already reached the second generation. The original Lefeldts, Lavals, or Neilson-Petersens (none of them more than five years old) have been immensely improved, and several additional patents taken out. We have also the "Petersen-Moltrecht" and the "Fesca" machines; and others are coming into use in the United States.

To such perfection have these machines now been brought, that the separated milk frequently contains as little as 15 per cent. of fat, and the cream can be so perfectly freed from milk, that it will make as much as 18 oz. of butter to thequart of cream, whereas cream obtained by other methods seldom yields more than 16 oz. (1 lb.), and very frequently much less. Now that we understand how essential it is to obtain our butter perfectly free from casein, and indeed from milk, the advantage of this highly concentrated cream is obvious. I have had samples from the separator which have contained 38 per cent. of pure butter fat, and which have yielded 44 per cent. of butter.

To talk, however, of the appliances by the aid of which we can convert the raw material-milk-into its various products, is beginning in the middle of our story. We must remember the saying of the worthy Mrs. Glass with regard to her hare—"first catch it;" and so it is in dairying. Before considering what we shall do with the milk, let us inquire whether we produce the raw material either in proper quantity, or of proper quality.

I do not think we do either the one or the other. I believe that the milk yielded by the number of cows now kept might be increased by at least one-third if more attention were paid to selection. I am not aware whether the late Mr. Carrington left any record of the milk yield of his cows; I find, however, that I mentioned in my former paper that Mr. Carrington agreed with the late Mr. Harrison, of Gloucester, that 550 gallons might be taken as the average yield of a good ordinary con between calving and calving; and that Mr. Jenkins quoted a yield of 700 gallons per cow, proved by carefully kept records ata farm in Denmark; and I further expressed my own belief that a well-selected herd of cows, dairy shorthorns, well housed and well fed, would average 900 gallons per cow in the milking year (say, forty to forty-five weeks). That the latter figure is within the mark is now proved by the very valuable record kept by Mr. Tisdall. I believe the returns which Mr. Tisdall has been able to furnish are the most complete hitherto kept in this country, and very many thanks are due to him for this most valuable information. I find that twenty-five cows, in milk ten to eleven months-say, therefore, about forty-three weeks-gave an average of SS5 gallons each, and that in several cases the actual yield of milk from indiridual cows reached 1,000 and 1,100 gallons in the ten months, many of them continuing to yield milk in good quantities for a further period of two months. Mr. Tisdall mentions that ten animals gave an average of 12.88 quarts per cow per diem, for 12.3 months, or over 1,200 gallons each. Now our justly celebrated families of Shorthorns, the Booths and Bates; our great flocks, the Leicesters, the Lincolns, the Oxfordshires,

shires,-how have these renowned breeds been brought to their present state of perfection ? Simply by the care and attention bestowed by intelligent, observant men to the selection of "the fittest." If these be admitted facts, why should not similar means be applied to improve the milk-producing power of our cows? I see no reason why the same law should not apply; and if this be so, imagine the herd that might be looked for in three or four generations, carefully bred from such dams as these ten cows of Mr. Tisdall's! To quote from a recent article in the Live Stock Journal : "The main lesson to be derived from the inquiry is, that there certainly exists in the varied combinations of old famous herd elements a mine of wealth for the skilled and patient explorer who will devote due study to the subject."

Now, gentlemen, however you may feel inclined to cavil at, or criticise anything I may say to day, no one will, I think, dispute the fact that just now the very bare possibility of the existence of a mine of wealth anywhere, or connected in any way, with farming, is a thing not to be despised, no matter if the mine be " only a little one."

Before quitting the subject of these valuable animals of Mr. Tisdall's, we may learn another lesson, and that is, how much more profitable, both to the farmer and to the nation, is a good cow than a fatting beast. Take one of these cows, producing in one year 1,200 gallons of milk. The milk in its natural state would weigh 12,000 lbs.-5 tons 7 cwt; as such milk would contain at least 121 per cent. of total dry solids, this would give 1,500 lbs. Take the dead weight of such cow at 1,000 lbs., in the natural state of the carcase, the actual weight of dry solids would not exceed 500 lbs.; so that each of these animals would in the course of the year produce three times her own weight of dry solid matter, and during her life more than twelve times, besides, the value of her own carcase at last; or, supposing her 1,200 gallons of milk had been made into cheese, we should have looked for about 1,200 lbs. or 20 per cent. more than her own dead weight.

Reference to the wonderful milk yield of these cows leads one into a few more calculations. I am a great believer in figures, whether in the form of statistics or of accounts. I have had it said to me by farmers to whom I have suggested the keeping of careful and efficient records of various results, that such work would necessitate the service of a clerk. Certairly, if a farmer be too indolent or not sufficiently intelligent to undertake such a comparatively easy task or if his farm and herd be of sufficient size to warrant the necessary outlay. How was Mr. Tisdall in a position to supply these valuable statistics ? Because for years it had been his practice to carefully note the yield of each cow at each milking.

I say, a farmer who keeps cows, whether it be two or two hundred, and who does not ascertain, and carefully note, the quantity of milk each of his cows gives every time she is milked, makes a great mistake. What would be said, let me ask, of a manufacturer who did not keep a record of the produce of his works? I look upon this as the pivot upon which turns success or failure. That which is worth doing at all is worth doing well. Any one who has once experienced the immense advantage that statistics and carefully kept records are in business, will never be without them, as he will well know their value, and the power the information so obtained bestows upon the possessor. Once put in practice, the habit is one that grows rapidly. What can be more easy than to note the quantity of milk given by each cow, morning and night? A board, painted black, hung up in the cowhouse, or a piece of slate fustened to the wall, and a bit of chalk. Upon such board or slate the quantity to be marked as each cow is milk-ed, and the whole copied at leisure on to a properly ruled and the Hampshires; our pigs, the Berkshires and the York- | sheet. Any one who will take the trouble to do this for the