The principle is to submerge deep cans in a tank of water, and an improvement upon the original "Cooley" has been made whereby a stream of water passes constantly through the centre of the can. The Swartz or Danish system was the first using the "deep" pan which was introduced into England, but it had previously been largely in use throughout the North of Europe. It differs from the American in that the cans of milk are placed in the water, but are not totally submerged.

Next to these two tanks are a couple of tables for weighing up and making up the butter, and next to them are two butter-workers. The most generally approved of these is the "Fimbree" butter-worker, an American invention, which was awarded a medal at the Philadelphia Centennial Exhibition, and has since held its own against all competition. It is now pretty well known, and consists of a circular revolving table rising in the centre, upon which the butter is placed. As the table revolves the butter passes under a fixed corrugated mould roller, which effectually expresses the buttermilk without in any way injuring the butter. The "M. M." butter-worker is a cheaper and very useful implement.

There are four churns fitted up in the dairy, viz., an "Eccentric," a "Midfeather," an "American Swing churn," and a large churn for factory use. The Aylesbury Dairy Company make the following remarks respecting the much-vexed question of rival churns: "We consider that for a small dairy of one or two cows the box-churn is the best, as it is easily taken to pieces and scalded. Where a large quantity of butter, say up to 18 lbs., is made at a time, the best churn is the "American Swing." In dairies where from 20 lbs to 200 lbs., of butter are made, either a "Midfeather," "Eccentric," or plain-barrel churn, with a simple arrangement of beaters, is recommended."

The Aylesbury Dairy company have introduced at this show a new patent butter-worker, or rather mixer, for merchants and factory use. It consists of a tub, in the centre of which a revolving upright is fixed, which is fitted with six curved arms or beaters. These work through a set of straight arms, which project from the side of the tub. The butter, after thorough mixing, issues from an aperture at the bottom of the side into a large tub, from whence it is taken to be made up. For mixing the butter of various dairies, and for salting or washing butter, this machine is an obvious desideratum. There is only one more machine in this section of the dairy, and this is a machine which was shown at Carlisle, for weighing milk. It consists of a weighing-table about 3 ft. 6 in. square, on this are two A-frames, between which is supported, on trunnions, a copper tank, holding thirty-five gallons, or about 3 cwt., of milk, in one-half of this is fitted a wire strainer, eighty-three meshes to the inch, through which the milk is poured. The tank being full, the contents are weighed, a catch is released, and the whole tipped up into a tank on the floor, whence it is used as required.

Between the two compartments of the dairy a 10-horse power steam engine is stationed to drive the shafts running throughout the shed from which the various machines are propelled. The smaller of the two compartments is devoted to separators. Of these there are three. The first brought out was the "Lefeldt," which however, never came into general use, and was, indeed, at first too clumsy and complicated to be practically available. In 1880, however, considerable improvements were made in it, and it is now more useful and worthy the attention of those who require such a machine In 1879, at Kilburn, a separator invented by Laval was first exhibited, and created considerable sensation. It has since been shown in operation at several shows, and never fails to attract attention. The work it does has always been satisfactory, bmt it has nevertheless been the general opinion that the expenditure of power was too great for the results obtained. Very recently, indeed only just in time for the present show, the Aylesbury Dairy Company have introduced a new separator, manufactured by Nielsen and Petersen, of Copenhagen. This has been tried for the first time in this country, and although the Aylesbury Dairy Company have scarcely yet got it into the proper working order required by its inventors, they are making experiments to test its capabilities, and already express confidence in its results. Two hundred of these machines are already in use in Denmark. This machine will separate from 100 to 120 gallons of milk per hour against 100 by the "Lefeldt," and 3 by the "Laval." Its chief point, however, is in the working, as it runs at only 1,500 revolutions per minute, whereas the "Laval" requires 5,000, and the "Lefeldt" 2,400. The respective prices of the three machines are—"Laval," £33; "Lefeldt," £90; "Danish," £80. It is said that the percentage of cream separated can be regulated with the greatest exactness. This is a point of great importance. When we saw the machine and inspected the skim milk, it appeared to us that a good deal more than the cream was being taken away; in fact, it was obvious that the proportion of cream removed was far too large, the volume issuing from the "cream" pipe being almost, if not quite, as great as that pouring from the "skim milk" aperture.

The principle of all these separators is centrifugal force. The new Danish machine might in fact be a modification of Laval's machine, although it differs from it in many important particulars. The whole milk is poured in a continuous stream into the centre of a large bowl, which revolves, as we have said, at the rate of 1,500 revolutions per minute. Here it rises all round in a wall against the sides of the bowl, the milk being outwards, and the cream forming the inner lining—so to speak. Into each of these "walls"—the wall of cream and the wall of milk—a pipe with an extremely small termination, about the size of a pin's head, is thrust, and each liquid forces itself into the pipe and flows away into separate receptacles.

Altogether it may be said that the working dairy at Derby is not only one of the most interesting features of the exhibition, but is certainly one of the most complete collections of the requisites for butter-making that has ever been made at any show. We cannot be far wrong in anticipating that this exhibition will give a most useful and desirable impetus to the proper management of dairies throughout the Midlands.

THE (London England) FARMER.

DR. VOELCKER'S LECTURE.

On Dairying, at the Derby meeting.

On Wednesday afternoon Dr. Voelcker, in pursuance of an arrangement, delivered the first of a series of short lectures on butter-making in the dairy on the show-ground. A large audience assembled to hear the lecturer, seats having been provided for many in a gallery covered with canvas. Dr. Voelcker said he was not going to aim at anything so pretentious as the delivery of a lecture every day of the show; he would rather give a few familiar hints on butter-making. They were aware that a large quantity of butter was annually imported into England from foreign countries. We obtained excellent butter from Denmark, and also from America. It had often struck him that there should be no necessity for importing a large quantity of butter from distant lands, when we had the means of obtaining good butter with comparatively little trouble in our own native country. The question would naturally be asked—How is it that so much butter is imported into England, when we can make it cheaper, without paying the expense of importation? The answer to that question was extremely simple, and it was this—The foreigners made better butter than we do, notwithstanding the natural advantages we had of turning out good butter, of selling it fresh, and obtaining a good price for it. He would have to speak of the