

Professor Voelcker, in reply, said the question with regard to the proper depth of milk pans was answered by the experience of good dairymen. They found that shallow pans were the best: such pans threw up more cream than the others, and kept the quality of the milk better. The temperature was better regulated, which was very important, because when milk became heated it soon spoils. It was quite an erroneous supposition that the access of air was injurious. The freer current of air there was through a dairy the better. What was injurious to milk was damp air. He was glad to see in the room a gentleman from Sweden, Professor Muller, who could, if he pleased, give them some interesting information with respect to the mode of keeping milk in that country. In a little book, published by a gentleman in Sweden, there was a plan mentioned which consisted simply of keeping milk in shallow vessels of peculiar shape and handy construction, and admitting the air freely to it; at the same time you might make a fire in the dairy whenever one was required; and the author stated that whenever he saw a thunder storm approaching, instead of keeping his milk cool, he had a fire lighted to drive off the additional moisture.

Mr. Cantrell said the kind of pan which he had found best was a common earthenware pan, with a yellow glazed lining inside.

Professor Voelcker remarked that the great point was to have a shallow pan, with a perfectly smooth surface.

Mr. Blackburn said that he had always found that a small depth of pan threw up the largest quantity of cream, especially in warm weather. Milk would not keep so long in warm weather as in cold; and the sooner, therefore, the cream was thrown up, the better. In summer he invariably adhered to a pan of 1½ inches in depth and in winter to one of 4 inches. On that plan, the cream was thrown up much quicker, and the skimmed milk did not remain sufficiently long to acquire acidity. He had found that bean-meal produced a greater quantity of milk than any other kind of food. He had used it largely: and on comparing its effects with those of rape-cake and linseed-cake, he had found that it contained a larger amount of flesh-making principles than those substances, and not so much oil. He should like to learn why there was such milk-producing power in bean-meal.

Professor Voelcker said it contained a considerable quantity of starch. It was a fact borne out by experience, that bean-meal produced a large quantity of butter.

Mr. Blackburn said another substance which he had found to produce a large quantity of milk was grains, or draft. He supposed that it contained a large quantity of phosphoric acid.

Professor Voelcker: Yes, and lactic acid. It contained a large quantity of phosphate of lime, which was held in solution. A certain amount

of grains was exceedingly useful for dairy stock, and so also was bran.

Mr. Blackburn said he had fed largely with bran. There was great difference between linseed and rape-cake. Linseed gave a very unpleasant smell; whereas rape-cake was more like grass land in its effects. The explanation might perhaps be, that the oil in rape-cake more resembled the oil in butter than the oil of linseed-cake resembled it. As regarded lactometers, he had used them for several years, and had encountered the difficulties to which the Professor had alluded. He would ask him whether some plan had not been devised for ascertaining the specific gravity of milk, or rather, the resistance which a certain quantity of milk offered to the passage of a ray of light, and measuring it? Was not that a good test?

Professor Voelcker observed that there was such a lactometer; and it was altogether erroneous in principle.

Mr. Blackburn observed that milk was very much injured by travelling a long distance, the cream being so diffused in the milk, that it would not rise.

Professor Voelcker could easily understand that. The milk globules were quite broken in travelling; their contents were diffused through the whole mass, and consequently it was more difficult for the cream to rise.

Mr. Blackburn considered the keeping milk cool a very important point. He had to send a large quantity of milk twenty-five miles by railway, and if it arrived in a coagulated state it would be unfit for consumption. Formerly it was his practice to have the milk placed in the pans just as it came from the cows, at a temperature of about 60 degrees, and he had frequent complaints of the quality of the milk. He then made several experiments, with a view to improvement. Eventually he tried the plan of putting milk in refrigerators, and bringing down the temperature to that of water. The plan entirely succeeded; and since its adoption he had not had a single complaint. It was exceedingly important that milk should be kept as quiet as possible, and should be placed in pans, for transmission, before it was quite cool.

### On the Composition and Feeding Value of the Straws of the Cereals.

BY THOMAS ANDERSON, M.D., F.R.S.E.

Nothing is more striking than the increased importance which straw has acquired in the modern practice of agriculture as a food for fattening cattle. Under the old system it was employed almost entirely as fodder, and when it was occasionally added to turnips, it was given less with the idea of any advantage to be derived from the nutritive matters it contained than with the view of correcting the too watery