

corn 64 calories. So it will be readily seen that to put a definite valuation upon food products is quite impossible. Dr. Zuntz was quoted as making the statement that "The nutrients which are assimilated from coarse fodders yield the organism about 20 per cent. less available energy than the same amount assimilated from grain."

For the purpose of comparison on the basis of digestibility, Prof. Jordan divided feeding stuffs into five classes, comparing each among themselves: First, the coarse fodders from true grasses; second, hay from the legumes; third, the cereal grains and some of their by-products; fourth, peas, beans, middlings, gluten feeds, etc.; and fifth, gluten meals and oil meals.

The following table shows the digestible material in 100 lbs. of various feeding stuffs, as calculated from average composition and digestibility.

	Percentage of dry Matter Digestible.	Pounds dry Matter in 100 Lbs. Fodder.	Pounds Digestible dry Matter in 100 Lbs. of Feeding Stuff.
<b>CLASS 1—Fodders from true Grasses.</b>			
Corn, Flint.....	68	60	40.8
Corn, Dent.....	64	60	38.4
Corn Stover.....	57	60	34.2
Hungarian Grass.....	65	87.5	49.9
Oat Straw.....	50	90	45
Orchard Grass Hay.....	57	87.5	49.9
Red-top Hay.....	60	87.5	52.5
Timothy in bloom.....	61	87.5	53.4
<b>CLASS 2—Dried Legumes.</b>			
Alfalfa.....	59	87.5	51.6
Clover, Alsike.....	58	87.5	50.8
Clover, Crimson.....	58	87.5	50.8
Clover, Red.....	58	87.5	50.8
Clover, White.....	58	87.5	50.8
<b>CLASS 3—Cereal Grains.</b>			
Barley.....	86	89	76.5
Corn Meal.....	88	85	74.8
Oats.....	70	89	62.3
Rye Meal.....	87	88	76.5
<b>CLASS 4—Nitrogenous Grains, 16-30% protein.</b>			
Brewers' Grains.....	62	92	57
Gluten Feed.....	86	92	79.1
Malt Sprouts.....	67	90	60.3
Wheat Bran.....	62	88	54.5
Wheat Middlings.....	75	88	66
Pea Meal.....	87	90	78.3
<b>CLASS 5—Nitrogenous Feeds, 30 per cent. to 45 per cent. protein.</b>			
Gluten Meal.....	90	92	82.8
Linseed Meal, O. P.....	79	91	71.9
Linseed Meal, N. P.....	80	90	72
Cotton-seed Meal.....	74	92	68

After dealing with the findings of a number of careful scientific investigators, and from these drawing valuable deductions, it was advised to keep the standard rations in mind as the best-known rule for feeding and then work as near to it as commercial conditions will permit. In conclusion, Prof. Jordan claimed that the advance of sound knowledge among people has been retarded by reason of the unwarranted deductions of the uninformed.

**Buttermaking.**—Mr. Archibald Smith, Beachville, read a valuable paper covering the whole field of high-class buttermaking on the creamery plan. To summarize briefly, he pointed out that pure, good raw material from healthy cows getting good food was necessary, and cleanliness must characterize every branch of the work from the milking of the cow to the shipping of the butter. The cows should not get musty fodder or any food that will impart a flavor that the market objects to. Milk or cream for buttermaking should not become frozen or bitter flavor will result. A well-equipped creamery plant is essential, and the maker in charge should be well informed theoretically as well as practically. He should be able to readily detect imperfections in butter and understand how to cure them. Unfit milk should be refused. Use a tempering vat in heating the milk before separation, allowing the heating time enough to affect the fat globules, which are slower to respond. This will increase the capacity of the separator and cause more complete skimming. Test skim milk to determine excellence of work. Be careful to maintain an even speed of the separator. After washing the bowl, etc., everything the milk has touched should be steamed well.

In ripening cream, a good starter is almost indispensable. Buttermilk is not as good as skim milk diluted to twice its bulk with water and heated to 180 degrees. To this add starter from the former day, to be used the day following. Pasturizing cream was not recommended except to get rid of bad flavors. Cream ripened soon after separating with a good quality of starter can be easily controlled in flavor and acid. Cool the cream quickly after ripening and stir well during this process. Churn separated cream at 50 to 54 degrees, and other cream at a higher temperature. Wash the butter once in weak brine at the same temperature as the butter. Salt to suit the market— $\frac{1}{2}$  to  $\frac{3}{4}$  oz. for the pound for the British market and  $\frac{1}{4}$  to 1 oz. for the Canadian trade. Pack the butter firmly. Mr. Smith advised patrons of gathered-cream creameries to use hand separators. They can then take better care of the cream and can use the skim milk to better advantage.

**Pasteurization and Use of Pure Cultures.**—By the aid of lantern slides Mr. F. C. Harrison presented the advantages of pasteurizing cream and ripening it by the use of pure cultures in order to arrive at constant and definite results in the butter produced. The Danish and French dairymen supply England with a large proportion of their best butter, and it is by the use of these controlling influences that they are able to maintain their high

position. The Danes are wise in watching the British market and in holding the supply only equal to the demand, so that no opportunity will be given their butter to become stale. Regarding the different species of bacteria, it was pointed out that some produce flavor and others keeping quality, and various other decided effects. Some of the characteristic sorts were shown by the use of the lantern. By pasteurizing milk 94 per cent. of the germs present are destroyed, and when a pure culture of the right sort is added to this cream it gives the buttermaker control of the ripening. Mr. Harrison advocated the use of pure culture in creamery work, and stated that various species will be prepared in the College laboratory.

**Butter Flavors and Starters.**—Prof. G. L. McKay, of Iowa, in dealing with this subject, stated from experimental knowledge that fermentation has more effect on flavor of butter than has feed. Pasteurizing does not rid cream of putrifying bacteria as readily as food flavors, as the latter are volatile. Pure acid bacteria are not as plentiful, especially about the stable, as decomposing sorts; therefore, milking should be done in a clean, well-ventilated stable or outdoors. When a starter of the right sort is given control it furnishes what is wanted. Ninety-five per cent. of the germs in good cheese are acid germs, and in good butter from 90 to 92 per cent. The temperature of ripening cream is not as important as the ferment it contains. Thin cream will ripen faster than that which is quite rich, for the reason that it is the milk rather than the cream upon which the ferment works. Prof. McKay prefers 25 to 30 per cent. cream for winter buttermaking. He advised the use of the alkaline test, so that the acidity of the cream may be known and controlled.

**The Farmer of the Future.**—Dr. W. M. Beardshear, President of the Ohio State College of Agriculture, delivered an inspiring and eloquent address upon the coming agriculturist, whose success he claimed would depend more upon the work of his head than his hands. The time is coming when the young farmer will have to face the same degree of preparation as does the doctor or the lawyer of the present day. Agriculture in the future will require to be followed with more intelligence and understanding than in the past. Such laws as that of heredity will have to be understood, that men will not allow the perpetuation of ringbones in horses, and other defects. The laws of plant life must be given thorough study, that crops of all sorts be made the most of. By a scientific knowledge of natural laws men will be able to co-operate with Providence in raising plant and animal life to higher degrees of perfection. In this field there is practically no limit to the advance that can be made. Men of one generation must take up the data of the preceding one, and go right on improving in knowledge and power to deal with fundamental truths. Intricate science must be brought into the handling of manures, curing cheese, ripening cream, etc. Man will then have greater confidence in himself and in others. Men in ignorance grumble away many dollars' worth of time and energy because of failures due to their own mismanagement. Men are heard to complain because the big ears of corn have taken the fertility from the soil.

In brilliant sentences and flowery paragraphs the coming farm home was set forth, which will have all the advantages of the city in its communication therewith by electric car, telephone, etc., which will bring the concert hall, the opera, the lecture platform, the library, and all the other mental luxuries to the very doors of the more enlightened, happier and brighter tillers of the soil. The citizen of the city and the country will know no difference, but they will be one people, with similar tastes, advantages and luxuries. Here a model home was described, with its sanitary arrangement, beautifully graceful lawn, and with all the love that sweetens every bitter experience. The address was a masterpiece of eloquence and oratory, evidently the product of an educated and refined mind.

**Presentation of Gold Medals.**—After Prof. J. W. Robertson had delivered practically the same address as he gave at the Eastern convention, reported in this issue, upon the stability of our cheese trade, Hon. Sydney Fisher presented the two gold medals donated by the Windsor Salt Co. to the makers of the highest-scoring cheese at the Toronto Industrial and London Western exhibitions. Mr. Jas. Morrison, of Murdock, won the Industrial award, and Mr. A. F. Clark, of Poole, the Western.

**Methods of Creaming Milk.**—Miss Laura Rose, instructor in the home dairy at the Agricultural College, held the rapt attention of a very large audience while she made clear the science and practice of separating cream from milk. It was shown that because the ingredients of milk are largely in suspension and of different specific gravities, gravity and centrifugal separation are possible. The fat of milk being lightest and in globules, it rises to the top of the pan or pail as fat will rise in water when allowed to stand for a certain length of time. It was remarked that the globules of Jersey and Guernsey milk are larger than those of Ayrshire milk, which stamps the former breeds as butter cows and the last as being better adapted for cheesemaking. The larger globules rise more readily than the smaller. Miss Rose exhibited to her audience samples of pure butter-fat, casein, milk-sugar, and ash, which are the chief dry ingredients of whole milk. The casein or curd is of much the same composition as the white of egg or lean meat, which gives skim milk a greater

value as a diet than is usually attributed to it. The milk-sugar is a white powder possessing somewhat less sweetening properties than cane sugar. The ash was shown as a gray powder which goes to build up the framework, etc., of the animal body.

The speaker illustrated the various systems of creaming milk that have been in vogue in ordinary dairy practice, by presenting before them the shallow tin pan, the deep pail, and the bowl of a modern separator. In skimming from the shallow pan the perforated tin skimmer should not be used, as it allows more or less of the fat to run through into the skim milk. Neither should the finger be used to separate the edge of the cream from the side of the pan, but a knife, which will do better work. The pan should then be tipped up sufficiently to allow the layer of cream to be floated off into the cream pail. When the deep pail is used the temperature of the milk should be held down to about 45 degrees for 12 hours in summer and 24 in winter. The pail should have a tap at the bottom, to which the bottom of the can slopes so that all sediment will run off with the milk. A graduated strip of glass in the side is also a necessity. With the deep pails milk should be set as soon as possible after straining, to insure good work. With the centrifugal separator practically no cream is lost and both milk and cream are used to better advantage. Miss Rose invited farmers present to send their daughters to the dairy school, that they may be better fitted to assist in conducting the business of the farm.

**Resolutions.**—"That this Association, having since its last convention lost by death one of its oldest members, Mr. John Robertson, of Ingersoll, desires to place on record the high esteem in which Mr. Robertson has always been held by them; and further, that as a cheese and butter maker, and as a cheese and butter instructor, and as a cheese and butter exporter, he has largely aided in bringing the butter and cheese trade of Canada into its present high position."

"That this Association be requested to lay before the authorities of the railway companies of Canada the difficulties of their present methods and charges of transportation of parties attending the annual conventions of the Cheese and Butter Associations of Western Ontario, with a view to securing cheaper rates and more simple methods for the future, and that the directors of the Cheese and Butter Association of Eastern Ontario be requested to take similar action, either independently of or in conjunction with the directors of this Association."

**Officers Elected.**—Honorary President, Hon. Thos. Ballantyne, Stratford; President, Harold Eagle, Attercliffe Station; 1st Vice-President, R. M. Ballantyne, Stratford; 2nd Vice-President, Aaron Wenger, Ayton; 3rd Vice-President, Jas. Connolly, Porter Hill. Directors: Jas. Prain, Harriston; J. N. Paget, Canboro; Robt. Johnston, Bright; G. H. Barr, Sebringville; A. F. McLaren, M. P., Stratford; J. A. James, Nilestown; Geo. E. Goodhand, Milverton. Auditors: J. C. Hegler, Ingersoll; J. A. Nelles, London. Representatives: To Toronto Industrial, H. Eagle and A. F. McLaren; to London Western, T. B. Millar, Kincardine, and S. G. Kitchen, St. George. The Secretary, Geo. Hatley, of Brantford, read the financial statement, which showed that \$5,113.73 had been received during the year, and \$4,518.68 had been paid out, leaving \$595.05 in the treasury.

### Likes the Hand Separators.

To the Editor FARMER'S ADVOCATE:

SIR,—In the ADVOCATE of January 2nd, page 10, you invite those who have had experience with cream separators to write their experience with same. I have been using a hand separator with a herd of eight cows for the past eighteen months, and must say I am highly pleased with it, as I believe it does all that is claimed for them. It saves labor, improves the quality of cream or butter, and the milk can be fed to calves or young pigs while fresh and warm, which, to my mind, makes it more valuable for young stock; while the extra amount of butter-fat obtained with a separator over the old way will repay a high interest on money invested for a machine. I have a No. 11½ Alexandra separator, with a capacity of 250 lbs. per hour, which is easily turned by hand. A boy can work it with ease. The Melotte separator is also so easily turned by hand as to make other power unnecessary. My neighbor has one for a herd of 18 cows, which has a capacity of 700 lbs. per hour, which is easily turned by a boy.

A SUBSCRIBER,  
York County, Ont.

In the course of a business letter to this office, Mr. W. C. Shearer writes:—"Mr. John I. Hobson, of Guelph, and I are now here in Prince Edward Co., Ont., as delegates of the Farmers' Institute staff, and are having very successful and interesting meetings. There seems to be a spirit of enquiry for more knowledge, and for finding out any more successful and cheap methods of doing their work, or of running their farms. We have been very much in a dairy district since coming here, and we find the meetings where 'Corn Growing and the Silo,' 'Breeding and Feeding Hogs for Profit,' 'How to Improve a Dairy Herd,' 'The Value of Supplementary Foods in the Management of Stock,' also 'How to Build Up and Maintain a Beefing Herd,' are discussed to be the ones where the greatest interest is shown."