

When viewed in this manner the cotton cake ration shows up most decidedly as the most economical one, and the maize meal one as the most costly.

From the experiments of German chemists, which have been prominently brought before the public, Mr. Lloyd and other specialists have laid down that the best ration for feeding for dairy purposes was one where the albuminoids were in the proportion of 1 to 5.4 to the carbo-hydrates and fats. Thus:—

Dry foods.	Albumi- noids.	Carbo- hydrates and fats.	
24.00	2.5	13.5	or as 1 to 5.4

When we examine the rations used in these experiments we have—

	Dry food.	Albumi- noids	Carbo- hydrates and fats.	
1st period	21.84	1.66	13.04	1 to 7.8
2nd "	19.20	2.20	10.56	1 to 4.8
3rd "	21.18	1.50	13.30	1 to 8.8

With a slight alteration, the feeding used in the second period would be in the proportion named.

### SCIENTIFIC POINTS.

#### Here Is Wisdom For Both Milker and Butter Maker.

"If a cow shows indications of milk fever, use aconite and belladonna and sometimes arsenicum—homopathic preparations—with the addition of covering the animal from head to foot with heavy blankets and ironing with a hot laundry iron outside the blanket along the spine from head to tail. This will start a counter irritation. Don't use stimulating liniments along the spine.

"The hide of a beef animal should be soft and flexible and feel unctuous and oily to the hand. The hide of the dairy cow should be flexible, but not too thin. There should be indication of vitality and power but not extreme softness and flexibility.

"The dairy cow should be wide behind, not from having a thick ham, but because the pelvis is wide, giving room for the large udder between the thighs.

"Yellow skin indicates yellow butter, but is no indication of quality. A single yellow skinned cow in a herd will not make the butter streaked if the milk of all is well mixed.

"The length of tail is to be considered mainly as an indication of spinal development. When the tail is long, it indicates an excellent character of spinal development, and a strong spine is indicative of a high degree of nervous energy. A cow giving a pound of butter a day, with its concomitants of casein and other solids, is subjected to more nervous strain than a horse pulling a plow from morning until night. It is a more serious draft on the vital energy of the animal.

"There is no such disease as hollow horn. It is the individual characteristic with many cows to have hollow horns. Some man had a sick cow, and boring into the horns found them hollow and said that's what's the matter. Rather than use turpentine about a cow's head or spine I would put a cloth on its back and go over it with a hot iron, or take a piece of cotton cloth, wrap it about a hot laundry iron and lay it the point next the head and run it along the spine.

"The rule for the dairyman will be found in the teaching of St. Paul: 'Prove all things. Hold fast to that which is good.'

"For 15 years I have been studying the question of temperaments, and I believe today that the differences in cows, between the highest forms in the dairy down to the beef animal, are based upon temperament. The Arabians said 2,000 years ago, 'Form is everything to the purpose,' and no one who has studied the horse since has made a clearer statement. Form is indicative of a function, and form is based upon temperament.

"I and my friend Walker are of a bilious nervous temperament, and you might as well try to fatten a fanning mill by running oats through it as to make fleshy men of us. Why? Because we are of that temperament that is not given to laying on flesh. Now, as to cows, the beef animal has the lymphatic temperament, the Guernsey and Holstein, the nervous. The nervous system has wonderfully to do with the production of milk. And I base this nervous theory upon these three promises: 1. Butter is produced by and through nervous energy. Let me call your attention to the fact that the great mammary gland is enveloped by a wonderful net work of nerves and is united with the uterus by the same network of nerves that is called the sympathetic plexus. This combination of nerves enter the spine and pass to the brain, and from the brain to the mammary gland you have a marvellous combination of nervous action. Now, when you consider this function of maternity, this function of motherhood—when you study into the physiology of it—you find you are employing the nervous system in a wonderful way at every step I said that butter was produced by and through the nervous system of the body. It is the maternal function designed by nature for the support of the offspring. 2. Butter is produced from food largely composed of albuminoids or nerve supporting food. If you wish to produce fat in the body, you can do it by feeding carbonaceous food, but you cannot produce butter by feeding fat. (1) Butter is not produced from the oil in the feed.

"It is anomalous to all other fats in the animal kingdom, and to be produced properly requires a peculiar combination of albuminoids and carbo-hydrate food, the same as the lean meat or muscle, so we see that butter itself is produced largely from the nerve supporting foods. 3. Now, when butter is produced and taken into the human body and digested, it goes to the support of the brain and the nervous system. No other fat does that. Here lies the great indictment against bogus or substitute butters. Many men say oleomargarine is as wholesome as natural butter. No true physiologist will for a moment say this, because butter is composed of eight essential oils, with traces of others, and the body fat is mainly composed of stearine and palmitine.

"You have in butter fat a peculiar combination that isn't seen in any other in existence. Nature designed this for the support of the brain and the nervous system. Let me call your attention to the fact that to-day the most eminent physicians are asserting that sweet cream is one of the most valuable foods for patients low in nervous condition, taking the place of cod liver oil. Therefore you see in this natural butter fat we have something that no substitute butter will take the place of.

"There isn't a boy in Pennsylvania to-day who is fool enough to go out to hunt birds with a bulldog; not a boy in Pennsylvania but who knows better than to do so foolish a thing as that, yet

his father will go on a hunt for butter with a beef cow."—Address of ex-Governor Hoard at a Pennsylvania Farmers' Institute.

### FAT AND FOOD.

According to a writer in *Hoard's Dairyman* an experiment carried out by Messrs. VAN DRESSER, of Cobleskill, New-York State, some time ago effectually proved that the richness of a cow's milk can be materially affected by food. It was an unnatural kind of experiment, and is only mentioned because of its marked results. Four cows were first fed on a mixture of silage, wheat, bran, maize meal, cotton-seed oil, and their own skim milk, and a little over 23 lb. of their milk made 1 lb. of butter. Afterwards the diet was enriched by adding beef fat (or tallow, as it is called) to the mixture of meal and bran, beginning with  $\frac{1}{2}$  lb. per cow daily, and increasing up to 2 lb. At the end of five weeks the milk of the cows was again tested, and it was found that only 18 $\frac{1}{2}$  lb. of milk were required to make 1 lb. of butter. The quantity of butter made in a week when the cows were fed on the first ration was 48 lb. 9 oz., and it rose to 71 lb. 7 oz. when they were getting the second ration, the only difference being the addition of tallow. The plan of feeding cows on their own milk (after skimming it) and the fat of their own species is akin to cannibalism; but cows have no sentiment against the practice, and if it is permanently healthy to feed them in the manner described, no objection need be taken upon fanciful grounds. The beef tallow cost only three cents a pound, while the butter produced was worth twenty-five cents. Therefore, the increase of butter due to the use of the beef tallow was very profitable, supposing the account to be correct.

SOME experiments carried out at the Dairy Institute, Worleston, and fully reported in our columns a few weeks ago, also point to a marked difference in the quantity and quality of milk produced by cows fed on different rations. The first daily ration per cow consisted of 17 lb. of good hay, 3 lb. of oat straw, 2 lb. of oats, 2 lb. of maize meal and 2 lb. of bran. This was the usual winter diet of the cows, and under it, when tested in January, three animals gave in six days 418 $\frac{1}{2}$  lb. of milk, containing an average of 3.56 per cent. of butter-fat, and yielding 15 $\frac{1}{2}$  lb. of butter. Next they were fed on a diet richer in albuminoids,  $\frac{1}{4}$  lb. each of cotton cake being given instead of the oats, meal, and bran, the hay and straw remaining the same. After a fortnight on this diet, the yield of milk in six days was 479 $\frac{1}{2}$  lb., containing 3.74 per cent. of butter-fat, and yielding 16 lb. 11 oz. of butter. In the third period, after a fortnight on the hay and straw as before, but with 6 lb. of maize meal instead of the cotton cake, given as a food rich in carbo-hydrates, the cows gave in six days only 424 $\frac{1}{2}$  lb. of milk, containing 3.41 per cent. of butter-fat, and yielding 14 lb. 5 oz. of butter. Here we see differences quite as great as could be expected from the change of one good diet to another. But why will experimenters not try extremes in diet to test this question? (1) *If it be true that food does not affect the quality of milk, or, at any rate, its fatness, a cow should give as rich milk on a diet of straw and white turnips or*

(1) Precisely what we have been asking for four months. The italics are ours.—Ed.

even grains, as or one of sugar beets, clover hay, and a mixture of cake and meal. We understand that the Worleston experiments are to be repeated with different rations, and we suggest a trial of an extremely poor diet against an extremely rich one, the test to be taken at the end of a month on each ration.—*Eng. Ag. Gazette.*

### CANADIAN LETTER.

EDITOR MASS. FROUGHMAN:—I wish to talk a little with your thousands of readers in all classes of society about Canadian farming and gardening as it is carried on in the Province of Quebec.

The French Canadians are very slow in adopting new methods of agriculture, but usually retain the old system their forefathers followed in cultivating the soil. Those located in English settlements are more enterprising and willing to adopt English methods; but there is one thing in which the French surpass the English farmers: they all have a good garden and raise their own vegetables, and it is kept neat and clean, while but few of the English farmers pay any attention to gardening. If they have one it is generally neglected, as they say it don't pay—they have no time, though they may be good and successful farmers in every other respect. That is a mistaken idea, as gardening is one of the most profitable departments in farming. One can really support a family during summer on sales from a garden, and raise enough for home use besides; a vegetable garden should be the first department to receive attention on any farm, as the use of vegetables in a family is conducive to health by a frequent change of diet.

The English farmers in the Eastern Townships are turning their attention to dairying, and sending their milk to cheese factories, which is considered very profitable, as Canadian cheese brings the highest price in the English markets. This shows that they are of exceeding good quality, as is also shown by their being awarded the first prizes at the Chicago Fair; since which the price for Canadian cheese in England has advanced.

The townships are all adapted to dairying. They are well watered, and the soil produces luxuriant grasses, wheat, and the best of hay, as well as cut feed in summer; a large number of the farmers have silos, and raise large quantities of corn to fill them. R. H. Pope, M.P., raised over sixty acres of corn, sunflowers and beans for his silo.

The farmers of the Eastern Townships are very enterprising in making improvements in farming by adopting new methods, and are making their farms more productive every year, as they have found slipshod farming doesn't pay, and that they can raise more on ten acres well tilled than they could on thirty under the old system.

I have found this out by experience. In 1860 I carried on a large farm and did as others did, thinking I must sow about so many acres of grain. I had good crops when the land was in a good state of cultivation, but I tilled too much hungry, worn-out land that took off the profit, so that in the end there was but little left. Produce sold very low. Farmers, under present conditions should make money, as they have all the appliances to do so by labor-saving implements, which in 1860 were only of the rudest kind. In those days it was not considered necessary for a farmer to be educated in order to be successful. The bright, active members of a family were educated for