THE FARMER'S ADVOCATE.

content he can do best by buying concentrates that carry digestible protein and digestible carbohydrates and fats in about the same proportion as his rich protein roughage, but in more concentrated form. If, however, he has no good choice of roughages, as in a disappoint-ing crop season, it will be necessary to buy high protein concentrates so as to secure necessary relation between protein and other nutrients for maintenance and milk production. The Experimental Farms are very large buyers of feeding stuffs, and the system followed is to list once each month the feeds used, and the best digestible protein, carbohydrates and fat must also be shown so that the cost per pound of each constituent can be determined by merely dividing the market price per hundredweight by the number of pounds contained in 100 pounds of the feed. The accompanying table shows the relative cost as found in various feeds at present prices, of one hundred pounds of digestible protein, as actually prepared on October 8, 1919, for the Dominion Experimental Farms. The fact is recognized in the table that feeds such as cottonseed meal have a certain fertility value, and this value is deducted from the market price of the feed before determining the cost per pound of the nutrients. Thus at pre-war prices for commercial fertilizers, choice cottonseed meal has a fertilizing value of \$15.87 per ton, while gluten feed (23 per cent.) has a fertilizing value of only\$7.99 per ton. It does not take long to prepare this table, said the speaker, and it shows many things.

in discussing the elimination of inferior sires, "may be either a pure-bred, grade or mongrel. One man that I know of, has during the last four years used three different pure-bred sires on his herd, each one of a different breed. This is the type of man who cannot be reached by a campaign to eliminate the grade or mongrel. Not long ago a good average farmer whom I know bought for use on his herd a March calf weighing about 350 pounds that was being sent to market as a canner. He took it out of the loading yard for \$26 because it looked like a Holstein. Upon investigation I found that the size of this calf was 50 per cent. Holstein, and that the dam was a mixture of Shorthorn, Jersey and Ayrshire. I also found out that two of this man's neighbors intended using this bull." The worst offender against improvement in cattle breeding is the man who breeds his cows to anything that will cause them to freshen; the second worst man is the one who mixes breeds, while a man who contributes but little improvement to the live-stock industry is the one who keeps pure-breds but does not develop them.

There are several methods of eliminating the scrub bull, and the first and most direct is by legislation, but at present this is not workable. It would also be possible to withhold all grants from fair or exhibition associations allowing a scrub or grade animal to be exhibited. Community bulls in all parts of the Province might also be bonused, but the only really successful way, said the speaker, would be a policy of education.

DIGESTIBLE NUTRIENTS IN FEEDS FOR CATTLE, OCT. 8TH, 1919.

Kind of Feed	Price per ton car lots Oct. 8th, 1919 \$	Digest- ible nutrients per ton lbs.	Manure value per ton	Net cost per ton	Net cost per 100 lbs. digest- ible nutri- ents	Total crude protein per 100 lbs. as guaran- teed when sold lbs.	Digest- ible pro- tein per 100 lbs, as deter- mined by analysis lbs.	Cost digestible protein per 100 lbs.
 Corn. Gluten Feed (23%). Dried Distillers' Grains (D). Dried Brewers' Grains (D). Wheat Shorts. Wheat Shorts. Wheat Bran. Oats. Barley. Linseed Oil Meal. Cottonseed Meal, Choice. Ground Elevator Screening: Alfalfa Hay. Clover Hay. Timothy Hay. Corn Ensilage. Mangels or Turnips. 	$\begin{array}{c} & 70.00 \\ & 72.00 \\ & 62.00 \\ & 48.00 \\ & 46.00 \\ & 46.00 \\ & 62.00 \\ & 85.00 \\ & 90.00 \\ & 85.00 \\ & 90.00 \\ & 28.00 \\ & 28.00 \\ & 24.00 \\ & 27.00 \\ & 3.00 \\ & 4.00 \end{array}$	$\begin{array}{c} 1676\\ 1614\\ 1778\\ 1272\\ 1386\\ 1218\\ 1408\\ 1588\\ 1558\\ 1558\\ 1564\\ 1410\\ 1032\\ 1018\\ 970\\ 354\\ 148\\ \end{array}$	$\begin{array}{c} 3.78 \\ 7.99 \\ 9.43 \\ 7.50 \\ 7.20 \\ 7.81 \\ 4.53 \\ 4.56 \\ 12.10 \\ 15.87 \\ 4.10 \\ 6.40 \\ 5.23 \\ 3.05 \\ 1.07 \\ .59 \end{array}$	$\begin{array}{c} 66.22\\ 64.01\\ 52.57\\ 40.50\\ 48.80\\ 38.19\\ 57.47\\ 68.44\\ 72.90\\ 74.13\\ 37.90\\ 21.60\\ 18.77\\ 23.95\\ 1.93\\ 3.41\\ \end{array}$	$\begin{array}{c} 3.95\\ 3.96\\ 2.95\\ 3.18\\ 3.52\\ 3.13\\ 4.08\\ 4.31\\ 4.68\\ 4.74\\ 2.68\\ 2.09\\ 1.84\\ 2.47\\ .54\\ 2.30\\ \end{array}$	$\begin{array}{c} 10.1\\ 25.4\\ 30.7\\ 23.1\\ 17.4\\ 16.0\\ 12.4\\ 11.5\\ 33.9\\ 44.1\\ 14.0\\ 14.9\\ 12.8\\ 6.2\\ 2.1\\ 1.4\\ \end{array}$	$\begin{array}{c} 7.5\\ 21.6\\ 22.4\\ 18.7\\ 13.4\\ 12.5\\ 9.7\\ 9.0\\ 30.2\\ 37.0\\ 10.5\\ 10.6\\ 7.6\\ 3.0\\ 1.1\\ .8\end{array}$	$\begin{array}{c} 46.67\\ 16.67\\ 13.84\\ 12.83\\ 20.82\\ 18.40\\ 31.95\\ 40.56\\ 14.07\\ 12.16\\ 20.00\\ 13.21\\ 15.78\\ 45.00\\ 8.77\\ 21.31\\ \end{array}$

X—Cost of raising and storing an average crop at present.

O-Manure value based on pre-war prices of commercial fertilizers.

(D)-Difficult to obtain, but occasionally available.

Regarding the selection of feeds, much depends on the purpose for which they are to be used, whether for maintenance, growth, fattening or milk production. If for growing young cattle, oats and bran in equal parts is a reliable mixture. For fattening corn and barley are both strong heating feeds, while for milk production, oil cake, cottonseed and gluten are all rich in digestible protein, and all are necessary. It should be remembered, however, that several other considerations must be kept in mind aside from the mere nutrient of a ration if it is to be safe and economical. These are bulk, palatability, cheapness, variety, suitability and digestibility in addition to the fact that any changes that are made should be made gradually. As a seller of pure-bred stock, the speaker found that after a brief campaign of advertising by the Dominion Government many men purchased pure-bred sires for double the money they had previously been willing to pay. He thought that by the use of production figures from the books of cheese factories, the utilization of school fairs, placards and posters, much good could be done. As to what a man could afford to pay for a bull Mr. Mallory said that it was easily possible, with a herd of ten ordinary cows, to raise the average production for the year ten pounds daily, an increase which, valued at \$2 per hundred pounds, would make it profitable to invest as much as \$1,000 in a bull. A bull that would do this, however, could be purchased for much FOUNDED 1866

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know that the number of cases of adulteration more than doubled over last season, there being 20 in 1918 and 46 this year, yielding in fines \$1,675.

"It seems to me that every year we have more convincing evidence of the advisability of having all milk paid for on a fat basis, for in spite of heavy fines imposed for skimming and watering, the practice still goes on unchecked. Then, too, as the average price of goes on unchecked. cheese has increased, the difference in the actual value of milks of different compositions is most marked, and I cannot understand how, year after year, patrons will submit to such an unfair, unequal distribution of their earnings as the pooling system provides, when it all could be accurately remedied by the use of the Babcock test. For our own information and in case of discussion pertaining to the paying for milk on a fat basis, I had a census made of the qualifications of cheese-makers, and conditions of the factory equipments, and a summary of these is as follows: 311 cheese-makers have attended a dairy school; 110 hold diplomas; 435 have permanent certificates; 119 have one-year permits, and 123 have been working on approbation. The total estimated value of the cheese factories in Eastern Ontario is \$2,367,000, and 166 have suitable apparatus for the testing of milk. It is my opinion that every factory should be provided with a Lactometer and Babcock test, and every maker should qualify in the use of them. If this were done we no doubt would find less tendency to adulteration, and the question of paying by test would be greatly simplified.

The report of cheese factories in Northern Ontario, as given by Mr. Publow, was as follows: 24 factories, 578 patrons, 3,475 cows producing cheese-milk, 8,545,663 lbs. milk delivered to cheese factories and yielding 837,414 lbs. cheese or 10.20 lbs. milk to one pound of cheese. Average production per cow 2,454 pounds. It is interesting to note that among cheese factory patrons in Eastern Ontario there are 1,014 milking machines used, and that 264 new silos were built in 1919.

In the absence of E. H. Stonehouse, President of the National Dairy Council, D'Arcy Scott, Ottawa, Secretary and General Counsel for the Council, spoke on the work of that organization, and in the course of his speaking characterized the action of the British Ministry of Food in setting a final price of 25 cents for their cheese purchases in Canada without consultation with Canadian producers as "a most iniquitous proceeding." This subject brought out much discussion, and considerable dissatisfaction was evidenced. The next morning J. A. Ruddick, Dairy Commissioner, Ottawa, reviewed at length the circumstances surrounding the cheese situation during 1919, and we quote quite fully from his address as follows:

REVIEW OF THE DAIRY INDUSTRY.

"When this association met in convention a year ago you had every reason to believe that the trade in dairy products would revert to the pre-war status during the season of 1919. Perhaps the wish was father to the thought, but in any case your hopes, if you had any in that respect, have not been fully realized.

"I do not wish to revive dead issues, or to direct your minds to things which are past and gone when we should all be looking forward, but as there was more or less dissatisfaction over the policy of the British Ministry of Food in connection with the purchase of Canadian cheese last summer, it seems to be desirable that a brief statement of the facts in connection with this matter should be made at this time.

'The removal of the restrictions on the imports into the United Kingdom in the early part of the season opened the way for private trading, and for a time there was considerable business done at advancing prices, in spite of the fact that the retail selling price of 36 cents was still in force. The business came from the large multiple shop companies and others who were determined to secure full supplies of cheese, free importation being permitted, even if they had, to be handled at a loss. This competition, together with inquiries and some actual hu Europe which induced speculative buying, forced prices up to a point above that which could be paid for cheese to be retailed in the United Kingdom at a profit under the fixed price of 36 cents. The regular British importers and wholesalers, who had been receiving a good commission on all controlled imports, now found that in many cases they were getting neither commission nor the business. Whether this fact had anything to do with the decision of the Ministry of Food to again negotiate for Canadian cheese, I am unable to state positively, but I think very likely it had. At any rate an announcement was made in London one day that after a certain date all imports of cheese would be subject to the importers' maximum selling price of 28 cents, and that representatives would be sent to Canada to arrange for the purchase of our surplus cheese. The result of this action, together with the fact that the continental demand had suddenly collapsed, was to stop buying in Canada over night. When the respresentatives arrived in this country and offered 25 cents delivered at Montreal for 20,000 tons of cheese, it is unnecessary for me to say there was considerable dissatisfaction, because it was felt that 25 cents was a big drop from the prices which had been ruling, and so it was. The prices which had been paid, however, were very largely fictitious and speculative, involving some very heavy losses on the part of the dealers. Had it not been for the offer of the committee there seems no doubt that the price of cheese would have fallen, temporarily at least, to about 23 cents in Canada, for that was as much as could have been paid for cheese to be sold retail in England at 36 cents and leave a profit for those who handled it, after bearing the loss on the prevailing rate of exchange.

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FEEDING OF MILCH COWS.

Mr. Archibald expressed the opinion that at no time in the life of a cow can you do more to increase capacity and production than during the last three months previous to the first freshening. At Ottawa, heifers about to freshen are fed fairly heavily up to four days before freshening. For three days after calving a slop feed is given, rather laxative in nature, but after three days when the cows are milked out dry for the first time, they are gradually changed back to heavier feed. The meal mixture fed during the fall, winter and spring should contain about 60 per cent. of the lighter concentrates, such as oats and bran, and 40 per cent. of the heavier concentrates, such as cottonseed, gluten feed, etc. The standard ration used at Ottawa during this period is clover, 10 lbs.; oat straw, 4 lbs.; 50 lbs roots (if silage not available); 30 lbs. silage (if roots not available). The meal ration is made up of bran, oats, oil cake and cottonseed, made up as suggested above, and fed at the rate of one pound to every 4 pounds of milk produced. The speaker thought it more practicable to vary the quantity than to change the character or quality of the mixture to suit the varying quality of milk yielded by individual cows.

"What we need in feeding", said the speaker, in closing "is more faith in our cows. Faith in the ability of our cows to use more feed fed more wisely. Faith in the dairy industry when the world demands dairy products in quantities we cannot supply. If we as dairy farmers have this faith, let us study our feeds as we do our breed and breeding."

ELIMINATING THE SCRUB BULL. "The scrub bull," said F. R. Mallory, Frankford, iess money.

40,000,000 Pounds Less Milk in 1919.

G. G. Publow, Chief Dairy Instructor for Eastern Ontario, presented his seventeenth annual report, from which the following is quoted:

There were 789 cheese factories in operation this year, some 28 less than in 1918. Nine new factories were built, and additional improvements on repairs and equipment were made to 408 of the others, the total xpenditure being approximately \$210,000. This includes 32 new plants which were equipped to manufacture whey butter, and 137 for the skimming of the whey. 209 factories made whey butter and 183 skimmed the whey and shipped the cream, as compared with 177 making whey butter and 46 shipping whey cream last season; 650,977 lbs. of whey butter was manufactured valued at \$292,822, while the value of the whey cream shipped was \$212,487, making a total of \$505,309 from this industry alone, or an increase of \$189,639 over last season. The number of patrons of cheese factories this year decreased from 30,088 to 28,908, and the number of cows from 279,849 to 267,411. From these there was obtained 883,175,685 lbs. of milk, a decrease of over 40 million lbs. The total make of cheese during the six months ending October 31 was 79,787,605 lbs., or nearly four million lbs. less than in 1918. The average yield was 11 lbs, milk per lb, of cheese as compared with 10.99 last season. One feature, however, that was greater was the average price which was fully 27 cents per lb, compared with 221% cents last year, making an increase in the total revenue of nearly 3 million dollars. The Instructors made 27,790 tests of milk for composition and 6,680 sediment tests, and it is disappointing to

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