ordinary man to digest. However, both bulletins give, in fairly clear, comprehensible terms, the gist of the matter investigated. The results of the first experiment are based upon work done with one cow only. There are always objections to conclusions drawn from tests conducted with but one cow. These defects, to some extent, at least, have been remedied in the second series, where three cows were used. The individual cow factor is an important factor in all work of this nature. It is seldom safe to conclude that, because certain results were obtained with a certain cow, under certain conditions, similar results would be obtained with all cows under all conditions. Work of this nature is so laborious and expensive that it will require years of time and the expenditure of large sums of money before the question or questions raised can be satisfactorily answered. In fact, it may be doubted if there shall ever be a complete answer. It is one of the mysteries, hidden from the wise, but possibly revealed to babes.

In the first test, with one cow, she was fed on normal foods for about two weeks, which was followed by feeding for 95 days on foods from which the fats had been extracted by methods used in the extraction of oil from linseed. The conclusions are summarized as follows :

1. A cow fed during 95 days on a ration from which the fats had been nearly all extracted, continued to secrete milk similar to that produced when fed on the same kinds of hay and grain in their normal condition.

2. The yield of milk-fat during the 95 days was 62.9 pounds. The food fat eaten during this time was 11.6 pounds, 5.7 pounds only of which was digested; consequently, at least 57.2 pounds of the milk-fat must have had some source other than the food fat.

3. The milk-fat could not have come from previously-stored body-fat.

4. During 59 consecutive days, 38.8 pounds of milk fat was secreted, and the urine nitrogen was equivalent to 33.3 pounds of protein. According to any accepted method of interpretation, not over 17 pounds of fat could have been produced from this amount of metabolized protein.

5. The quality of milk solids secreted bore a definite relation neither to the digestible protein eaten nor to the extent of the protein metabolism.

In view of these facts, it is suggested that the well-known favorable effect upon milk secretion of a narrow nutritive ratio is due in part to a stimulative, and not wholly to a constructive function of the protein.

The second bulletin (No. 197), giving an account of further tests relating to the food source of milk-fats, opens with the statement : "The conclusion reached in that experiment (Bulletin 132), that part, at least, of the milk-fat comes from the carbohydrates, is confirmed." The authors say that cow 12 (a Shorthorn grade) produced 39 pounds fat in her milk during 74 days, unaccounted for except that the carbohydrates of the food were the source. Cow No. 2 (Jersey) produced 1¼ pounds fat in the milk during four days, which is unaccounted for unless we accept the theory that this milk-fat was made from the carbohydrates of the food. The foregoing conclusion is reached by the eliminating process of reasoning so familiar in Sherlock Holmes (we hope the scientific authors will forgive the comparison).

The question is asked, "May we not finally conclude, then, that carbohydrates may be a source of milk-fat ?" We wonder why the writer did not say, "Carbohydrates are a source of milk-fat." Is he doubtful in his own mind about the process of reasoning followed ? So far as we can see, from a perusal of the data given, there would seem to be little doubt on the question.

The subject is a very interesting one, both for the scientist and the practical feeder. If cheap carbohydrates may be substituted for expensive protein and fat in the ration of a cow, it means a great saving in feeding. These experiments and all practical experience indicate that there is a limit in doing this for economic results.

H. H. D.

A PRECOCIOUS HEIFER.

An enterprising correspondent from Leeds County, Ontario, who, judging by his letter, is not adverse to a little free advertising, but who missed his chance by forgetting to sign his letter, wrote us the other day, in part, as follows :

"I, the breeder of this remarkable Holstein heifer, wish to call the attention of the public to what may be called a strange occurrence. Name of heifer, Cleana Patroness, served Jan. 18th, 1907. On June 20th, five months after date of service, and on poor grass, with no grain allowance, formed a large udder, and on July 1st commenced milking twice a day, and gave an average of 27 pounds of milk per day, continuing until Oct. 19th, 1907, when she calved a fine, healthy, strong bull calf, and has continued since her calving, giving an average of 35 pounds per day."

THE DAIRY COW DOES PAY.

Editor "The Farmer's Advocate" :

Kindly allow me a little space in your valuable columns for a short reply to Mr. J. Campbell's letter, "Is Dairying Unduly Fostered ?" in your issue of Feb. 27th. From the tone of Mr. Campbell's letter, it seems that he has never gone into a dairying section of the country to get his information, either as to profits on investment, the breeds which are in demand, or the prices realized at public sales.

Dairying, in its different branches, is beyond doubt the most important of all our agricultural pursuits, and, where conducted on business principles, and with the right class of cows, there is no doubt that it at the same time, is the most profitable of all our agricultural industries. When a man can realize a dollar per day from the product of only one cow, as Mr. Patten, of Brant Co., announces that he does from his pure-bred Holstein cow, then we should not criticise the Government for aiding that industry, but should rejoice, and encourage still further aid, as it will help to wealth and prosperity. Prosperity only can lessen our burdens. If Mr. Campbell would come to Oxford or Perth Counties and enquire, Does dairying pay ? the answer would always be in the affirmative. And why so ? Because the dairy cow—the cow bred for the purpose—predominates. There are the few who say they cannot afford to keep hired help on a 100-acre farm; they have the dual-purpose cow. Take our own section, the Township of East Zorra, where, in a space of about fifteen miles square, we have seven cheese factories, which annually distribute something over $200,000 among their patrons, outside of what is derived from the by-products, as whey and skim milk, which, after all, is the cheapest and most economical feed we have for hogs and calves. However, these results can only be attained by united action. To produce the largest amount of milk in the smallest district, must be the guide. We also have those here (in a limited number) who have changed from dairying to feeding the very best quality of export cattle, and consequently have experience in both lines, and I have time and again inquired of them which is the most profitable, and the answer invariably is, "The cow, to be sure." Mr. Campbell would also find here that the grade dairy cow (especially if she is a Black and White), at public sales, bring from $15 to $30 more per head than the dual-purpose cow ; and, for purebreds, only last week an average of $175 per head was realized for a lot of some 40 Holsteins; while, a year ago, when feed was much more plentiful, and money not so scare, a similar herd of imported and home-bred Shorthorns, of high average quality, did not average $100. This clearly shows in which direction the wind blows. The fact that in 1906 some 78 nurse cows were in the Toronto Industrial Fair stables, required to raise their show calves, speaks for itself. It seems that it requires the nurse's milk to produce that much-lauded pink skin, rather than the much-praised Shorthorn milk. The letter of Mr. A. I. Hickman, of Kent Co., Eng., published in your Feb. 20th issue, also points strongly in this direction, and fully bears out my contention that Shorthorn breeders have only imported the purely beef type, and have entirely ignored the milking qualities of their favorites, and that it will not only take a few years, but a generation, to redeem the lost ground; and never, if they pursue the same course as heretofore. The sooner dairymen get over the idea of the 3,000-pounds, or even the 4,500-pounds, dual-purpose cow, the better for them. Take, in comparison, the standard set by the Canadian Holstein Association, where, in order to be eligible for the yearly Record of Performance, a two-year-old heifer must produce 7,560 pounds milk, and the mature cow 10,500 pounds (and that is not their limit). I can assure Mr. Campbell that, where this class of cows are kept, neither cheese factories nor creameries are closed up, and all patrons will admit that dairying is the most profitable branch on the farm, and receives no undue fostering at the hands of our Government.

H. BOLLERT.

Oxford Co., Ont.

The National Dairy Show Association, at their annual meeting, held in Chicago, March 4th, decided that the next National Dairy Show should be held some time the coming fall, not later than December 15th, time and place to be selected by the Executive Committee. The following officers were elected : President, H. B. Gurler, DeKalb, Illinois ; Vice-President, H. E. VanNorman, State College, Pa.; Treasurer, Granger Farwell, Lake Forest, Ill.; Secretary, E. Sudendorf, Clinton, Ill. Board of Directors—J. A. Walker, Chicago, Ill.; W. B. Barney, Hampton, Iowa ; D. H. Jenkins, Indianapolis, Ind.; E. K. Slater, St. Paul, Minn ; J. D. Nichols, Cleveland, Ohio ; W. E. James, Hinsdale, Ill.; J. G. Hickcox, Whitefish Bay, Wis.

PRODUCTION OF MILK FOR CITY CONSUMPTION

The production of milk for city trade is no longer a side-issue in the dairy business, but is now a line of itself, requiring care in its production and skill in its management. The consumption of milk in our cities has trebled during the past ten years, and we now find our cities reaching out farther and farther into the country for their milk supply. There are three reasons for this : First, the increase of the urban population ; second, the realization of the milk consumers of the food value of milk, it being now regarded as a necessity instead of a luxury ; third, the low price of milk, as compared with other food products. We are told that a quart of milk, twelve ounces of beef, and six ounces of bread all represent about the same amount of nutriment, and yet only that can be considered as true nutriment to the body which is digested and assimilated, and, under different circumstances, these three substances may have entirely different food values. So says Dr. J. Allen Gilbert, and he farther says : "Being a liquid, we are prone to look upon milk as a mere matter of drink, rather than a food, whereas, in it are contained all the elements necessary to the maintenance of the human body, and evidence is to be had in abundance showing that milk is in no sense a luxury, but is an economical article of diet. Meats and milk are both rich in protein, and are, in a sense, interchangeable as regards food value. Consequently, the amount of solids in milk becomes of great importance."

As the population of our cities increases, so will the demand for milk, cream, and milk products correspondingly increase, and each season will find more dairymen within easy reach of our cities turning their attention to the producing of milk for city trade.

In order to make this phase of dairying return a reasonable profit each year, it may mean some changes from former methods pursued on the farm, such as remodelling stables and fitting them for winter dairying; the erecting of a milk-room and ice-house (a supply of ice is indispensable). Then, it may mean the selecting of a breed of cows better suited for the production of large quantities of wholesome milk. By wholesome milk, I mean milk not lower than 3.25 per cent. of butter fat, nor 8 per cent. total solids not fat. Milk below that standard, while it may be wholesome, is not desired by the consumer. It is now recognized by the medical fraternity that a milk with a fair amount of butter-fat, say from 3.25 to 4 per cent., and with a proportionate amount of total solids, is the best-balanced milk for city consumption. The best of authorities claim that, when we get over 4 per cent. of fat in milk, the total solids do not proportionately increase, and, as the food value of milk is largely in its total solids, therefore it loses its food value to a certain extent when it gets beyond that standard. Again, it has been demonstrated that, in milk ranging from 3.25 to 4 per cent. of fat, the fat globules are smaller than milk richer in fat contents, and it is therefore more easily digested and assimilated than milk rich in fat contents.

Such being the case, we come to the conclusion that the best breeds to produce milk for city trade are the Ayrshire and Holstein, or their crosses, leaving the Channel Island breeds to produce the cream. The Ayrshire and Holstein are milk breeds, and, as such, give large amounts of milk when liberally fed. In days gone by, around the cities of Toronto and Montreal, Ayrshire-Shorthorn crosses supplied the largest bulk of the milk consumed. These cows were very popular, they being good producers at the pail, and also giving a good carcass for the butcher when milked out. We find fewer of these to-day, their place being taken by Ayrshires and Holsteins and their crosses.

One problem the city-milk producer has to face is the keeping up a constant supply of milk at all seasons of the year. If he is fortunate enough, or skillful enough to control his cows so that they will freshen at all seasons of the year, he has the problem solved, but few dairymen can control this to a nicety ; it is the exception, rather than the rule, to do so. If the dairyman depends on his cows that have freshened in the spring and early summer to give him his winter supply, he will "get left" every time, but must have fresh cows each fall. The milk producer who makes a success, holds his trade, and gets the top price, is the one who puts in a good supply when milk is short.

There are two classes of milk producers : those who have small farms, where the number of animals kept is limited, and those who have large areas, especially of cheap land, which may be used for the pasturage of young stock as well as the cows giving milk. The former, with his limited area, has not room to grow his young stock; therefore, he must purchase, from time to time, animals to keep up the milk supply, selling them when milked out, usually accepting a lower price than when purchased, but the loss may be more than made up by the extra milk flow and deducting the cost of keeping her several months when