

The proper time of the day to apply this poisoned substance is in the early morning, between 5.00 and about 6.30. The reason for this is that at this time the mixture takes a longer time to dry out than when the sun is higher. Once it is dry it loses nearly all its attractiveness to the grasshoppers. Moreover, these insects in the early morning are hungry and feed more greedily upon it than at most other times of the day.

The amount mentioned in the above formula is sufficient for four acres; so that one acre requires only 5 lbs. of bran with the proper proportions of syrup, lemons, water and Paris green. It is clear therefore, that it must be scattered by hand very thinly over the land. By this broadcasting so little falls in a place that neither poultry nor wild birds are said to be injured. A single small particle is, however, plenty to kill any grasshopper.

NUMBER OF APPLICATIONS AND COST.

A single application will, according to the work of Professors Dean and Hunter, of Kansas, kill in two days from 40 to about 80 per cent. A second application about two or three days later almost annihilates the pest.

The cost of one application for an acre will not usually exceed about 25 cents for the material. So that this is certainly a very cheap remedy.

RESULTS IN KANSAS IN 1913.

The grasshoppers last year in many parts of Kansas became so numerous that the county councils of twelve different counties, at the suggestion of the State Entomologists proclaimed a day in July, known as "Grasshopper Day" in which every farmer should join in using this remedy in the early morning on his infested fields. Printed directions were sent to everyone and the county councils or commissioners supplied the materials for this occasion free of charge. A splendid response was given by almost every farmer and at the end of two days it was seen that the great majority of the grasshoppers had been killed. Wherever necessary a second application was made. As a result of these measures the crops that would otherwise have been ruined were saved.

After reading of this work in Kansas, the writer who is acquainted with both Prof. Hunter and Prof. Dean of that State and who considers them both able and reliable men, deemed it advisable to send this article to "The Farmer's Advocate" in order that the farmers of Ontario might be able, whenever they felt it necessary, to use this remedy. It should give as good results here as in Kansas. It is so cheap that no risk is run in testing it. Those who find it satisfactory should state the fact through "The Advocate" and thereby encourage others. The writer intends testing it himself as soon as opportunity permits.

O.A.C., Guelph.

L. CAESAR.

Ensiling Sorghum.

A correspondent of "The Farmer's Advocate," W. H. Walper, of Huron Co., Ont., reports very good success in growing sorghum. The crop requires a rich soil and yields best on black loamy soil. It also does fairly well on sandy loam. Where the land is rather cold-bottomed, corn will yield better than sorghum. Mr. Walper ensiled his sorghum and found that it sours a good deal more than corn in the silo, but the cattle seemed to relish it and thrived very well on it, but the feeder must be careful not to feed too heavily on it. He advises those who wish to try it to cut a little and put it in the top of the silo. It should also be allowed to ripen well before ensiling.

THE DAIRY.

The Highest-Priced Calf.

Illustrated on this page is the calf King Segis Pontiac Chicago, the highest-priced calf ever sold. He may be dear veal at the \$114.28 per pound which he brought, but at the total \$20,000 purchase price he may be cheap for breeding purposes. He is out of the champion cow Johanna De Kol Van Beers, with a record of 10,498 pounds of milk and 541 pounds of butter in 120 days, and was sired by the noted King Segis Pontiac. He was three and one-half months old when purchased by Spencer Otis Sr., Spencer Otis Jr., Geo. E. Van Hagen, and H. Stillson Hart, Barrington, Ill.

Application of Milk Tests,

Editor "The Farmer's Advocate":

A special characteristic of modern scientific achievements is their practicality. Scientists are vying with each other in their endeavors to turn their scientific knowledge to the use of mankind. The telephone, wireless telegraphy, and long-distance transmission of electric power are examples of this tendency. A modern writer on farm economics says: "There is a philosophy, to which the student of economics ought easily to incline, which regards this task of subduing the earth and making it a better and more comfortable home for himself as the first and greatest duty of man on earth. This philosophy would test the soundness of all conduct, of all social institutions, and even of all moral codes by this question: Do they help in the great task which the human race has, before it, or do they hinder? If they help, they are good and sound. If they hinder, they are unsound and bad."

Judged by the foregoing standard, we may say of nearly all milk tests that they are sound in principle, because their primary object is the betterment of man's position upon the earth, although in some cases, unscrupulous persons have used them to the disadvantage of the ignorant members of society. We may well say with the poet,

"Let knowledge grow from more to more," until all dairy farmers shall have a thorough knowledge of the various tests now offered to them, in order that they may select those cows which will most nearly meet the requirements on individual farms. After all, testing problems, as related to cows, resolve themselves into a

breeds, as a whole, approach the maximum percentage, or highest fat limit, the more difficult to obtain further improvement. This is why breeds like the Jersey and Guernsey, which have reached the maximum upward limit, or nearly so, have not responded so readily, if at all, to man's efforts to "breed fat into milk"—it was already there, and hence efforts for improvement in these breeds have been chiefly along the line of increased quantity of milk. On the other hand, breeds like the Holstein and Ayrshire have responded best to efforts for increasing the percentage of fat in milk, hence we are safe in concluding that the average milk from cows belonging to these breeds has increased in fat percentage at least one-half of one per cent. during the past twenty years.

A very interesting question has arisen since the advent of casein and casein-fat tests. Can the percentage of casein in cow's milk be also increased? The average percentage of casein in cheese-factory milks as determined from about 15,000 tests made at representative factories throughout the Province of Ontario in the years 1911 and 1912, indicate that the milks from which cheese was being made in those years averaged about 2.2 per cent. casein, as compared with 3.5 per cent. fat. Tests made at the O. A. C. Dairy Department of milks delivered by patrons living near the college, and also of milks from representatives of three breeds of dairy cattle (Ayrshire, Holstein and Jersey) indicate that milk from these sources seldom tests over 2.5 per cent. casein, and averages from 2.2 to 2.3 per cent. This seems low. Can it be raised to correspond more closely with that of the fat percentage? This is a most interesting scientific, and also a very important practical question. If the percentage of casein in cow's

milk can be increased to say three per cent., it means a great increase in the yield of cheese made at cheeseries, and also an increased food value, because the casein is representative of that group of valuable food compounds known as "protein" or "muscle-formers,"—the most expensive and the most valuable of all classes of foods required for sustaining the human body. Some very recent investigations on "protein-free milk" fed to rats indicated that they "sooner or later ceased to grow," but that they "recovered and resumed their natural rate of growth" when fed "unsalted butter." The authors of these experiments seem to argue that the "butter-fat which represents the product of



King Segis Pontiac Chicago.

The highest-priced calf ever sold, \$20,000 being the sale price.

study of individual animals on one's own farm.

If it is the owner's wish to obtain a herd of cows which produce "high-testing" milk in fat, then he should select those animals which by the Babcock, or some other reliable milk-fat test, yield milk containing a high percentage of fat, though it is well to bear in mind that two factors enter into the question of total milk-fat produced in one year or during a series of years. These factors are, weight of milk and "test," or percentage of fat. An example will make this plain. One cow gives 4,000 lbs. milk testing five per cent. fat. The total lbs. fat are, $4,000 \times 5 \div 100 = 200$. The pounds of milk serum (skim milk) are, $4,000 - 200 = 3,800$. Another cow gives 8,000 lbs. milk testing 3.5 per cent. fat. The total lbs. milk-fat are, $8,000 \times 3.5 \div 100 = 280$. $8,000 - 280 = 7,720$ lbs. milk-serum. We see that the second cow is a more profitable cow than the first. Assuming that feed costs and labor are similar in each case.

Experience has shown during the past twenty-four years that it is possible to increase the percentage of fat in cow's milk by a system of selection, particularly among those animals where the percentage of fat in the milk was comparatively low. Among the "high-testing" breeds we may say that there has been little or no increase, showing that there is a natural limit in the percentage of fat in milk, lying, as a rule, somewhere between 3 and 4 per cent. fat. It was natural to expect greatest response in this upward fat direction from the "low-testing" animals or breeds. The nearer that individual or

metabolic activity and synthesis on the part of the cells of the mammary gland," may be able to take the place of protein or nitrogen-carrying substances as animal food. Others explain this and similar phenomena by assuming the presence of substances to which the term "vitamins" has been applied. We may be on the eve of important discoveries in animal and human nutrition, but in the meantime it would be well to cling to the scientific and practical belief that animals of all kinds must have protein substances in order to thrive, and that these are cheaply supplied in milk and cheese. If by a system of breeding and selection of cows we can increase the percentage of casein in milk from 2.2 to 3.2, the time and effort spent on the evolution of casein, and casein-fat tests will have been time and money well spent.

In co-operative dairies the Babcock and Gerber tests have already proved themselves extremely useful in apportioning dividends on a milk-fat basis which is a sound one for creameries and for the purchase of cream. At cheeseries all are not agreed as to the value of milk-fat tests. In fact, a very sharp division has manifested itself on this question, both among scientific and practical men. Until these divisions become reconciled, the "man-on-the-street" and the "man-on-the-farm" are inclined to stand aloof and wait until these two parties come to an understanding in their beliefs and teachings. This is an example of practice waiting on science to make a move. The former has virtually said to the