

have a wonderful result. In both cases the book-keeping is perfect, the milk produced and milk accounted for being almost balanced in spite of its quantity; and yet Dr. Watney's herd is kept entirely for buttermaking. Twenty-three cows averaged 457½ lbs. of butter per head; no less than seven cows exceeded 507 lbs., the famous Sharab yielding this quantity, and being seventh on the list, the best producer being a cow that yielded 545 lbs. With one exception, every cow yielded more than 360 lbs. of butter, and it is considered that the quantity is even above the average of most herds in England.

### Influence of Food on Milk.

"It is well known that milk may be watered through the animal body"—this is the key to an article by Allan B. Graham, published in the Transactions of the Highland and Agricultural Society of Scotland for 1904. Incidentally he touches upon variations in food rations. A series of interesting experiments was carried on by Mr. Graham, for the purpose of testing particularly as to difference in water supply. Two of these were as follows: Two cows were given the following rations per day:

15 to 18 lbs. long hay.

Hot mash—

- 4 lbs. chaff (cut hay and straw, equal parts).
- 2 lbs. bean meal.
- 2 lbs. bruised oats.
- 2 lbs. bran.
- 3 gals. water, and 2 ounces salt.
- 4 lbs. decorticated cotton-cake.
- Treacle drink; 4 gals. water.

On the 4th of February, the mixed morning milk tested, butter-fat, 3.35; solids not fat, 9.7.

On 5th February, the water was increased to 10 gals. A sample of the mixed milk was tested on 11th February, the result being butter-fat, 3.2; solids not fat, 8.8.

On 3rd March 6 lbs. Indian meal was substituted for the cotton-cake, thus producing a ration less rich in albuminoids, and the cows were fed thus for five weeks. At the end of that time, a much richer ration was given, and continued for eight weeks. This time 6 lbs. decorticated cotton-cake and 6 lbs. bean meal made into a porridge were given instead of the 6 lbs. Indian meal, the hot mash in other respects remaining the same; but the water supply was reduced from 10 gallons to 6 gallons. The results of the experiment showed that during the five weeks, when 10 gals. of water were given, the percentage of butter-fat was quite low; immediately, however, after giving a ration richer in albuminoids, and decreasing the water to 6 gals., the butter-fat increased and continued much higher, till in the seventh and eighth weeks it was over 3½ per cent., the increase in the quantity in each case being in inverse ratio to the variations in the butter-fat content.

During the following summer a number of cows were put in a pasture, with an unlimited water supply, and as the summer was wet, it was supposed that the cattle took a great deal of water along with the grass. Under these conditions, even when fed 6 lbs. decorticated cotton-cake daily, the fat content of the milk was low. Indian meal was substituted for the cotton-cake, with the result of a very slight decrease in fat; hence Mr. Graham deduced that the quantity and quality of milk from cows fed on grass during a wet season cannot be influenced to any great extent by feeding, and that it is mainly by regulating the amount of water consumed by a cow that we can alter the per cent. fat in the milk. Mr. Graham also considers that overmuch water has a deleterious effect on the quality and texture of the butter made from the milk.

Regarding the question as to whether the quality of milk is increased by difference in quantity or quality of feeding rations, a summary of results attained through experiments conducted by Professors Farrington and Woll are given, which tend to show that an increase in feeding rations will not change the richness of milk, provided the cows have not been starved or underfed to begin with. The quantity will be increased, but not the quality. For the first few days after the change has been made, the milk will be richer, but as soon as the cows have got used to the new rations the milk returns to its normal quality, hence, the professors have concluded that the quality of milk a cow gives is natural to her, and that the only way of permanently improving the richness of milk is by disposing of cows that give poor milk, and keeping only those whose milk is rich in butter-fat. On the other hand, it must be remembered that, though one cow may give poorer milk than another, she may more than make up the percentage in the larger amount she yields. The persistency of a cow in keeping up the yield is also a point of importance. Hence, both cow and feeding require selection, those cows only being retained which give the highest total amount of butter-fat.

### Holsteins Healthy and Thrifty.

In the course of an address before the Holstein-Friesian Association of America, Prof. H. H. Dean, of the Ontario Agricultural College, is reported as having spoken as follows:

"First, we have found the Holstein-Friesians in our experience at the College, where we keep six or seven breeds for instructional purposes for our students, a healthy and a thrifty breed of cattle. We find that some breeds do not seem to have that strong constitution, that thrift, that inherent quality which always makes them ready for their meals, and ready for almost anything which may come up; and I consider that a very strong point, and I believe that the breeders of Holstein cattle would be making a serious mistake if they lost sight of that vigor and thrift and health and constitution which is now so important a point among this famous breed of cattle. Then we find in our experience that the calves are strong and good doers. I have never known in my experience with them a calf to come weak, or required nursing and coddling, or any extra attention. Without exception they come strong, and are good doers, and in two or three weeks we can put them on skim milk, and soon begin to feed them bran and oats, and they begin to thrive right from the start.

"Then another strong point of the Holsteins is their size. Some people say that size is a detriment in the dairy business; that if you can get a small cow to do a given amount of work, that she does not require so much feed, and that she will produce milk or butter or cheese more economically, because she is of smaller size. We have looked into this matter pretty carefully, and we find that the difference in the feed which is consumed by a large cow and a small one, for the production of a given quantity of milk or butter, is largely in the rough feed—the cheap food—and whether a cow be a large one or a small one, she will require just about a certain amount of concentrated feed, and that the difference in the food which is eaten by the large and small cows is in the cheap, rough, bulky food, and not in the concentrates. We find that a cow requires about eight pounds of meal for each pound of fat she produces in the milk.

"The next strong point of the Holsteins is that they are regular breeders. We have found in our experience very much less trouble in getting cows of this breed to breed regularly than cows belonging to other breeds, and we very seldom have any difficulty in that respect with Holsteins, a trouble which sometimes gives the dairymen a great deal of annoyance."

## POULTRY.

### Care of Laying Hens.

It is very necessary that fowls should have some place where they can dust in dry ashes or a mixture of ashes and road sweepings, with a small quantity of black sulphur in it. The birds require this to keep themselves clean and free from insects, which are fatal to their welfare. If by any chance birds have insects on them, they should be got rid of as soon as possible. There is no doubt that many more deaths are indirectly caused by insects than people are aware of; but where care and extreme cleanliness are practiced, there should be no trouble from this source.

We must not forget the birds' digestion. The gizzard is the organ mainly responsible for the preparation of the food for the nourishment of the body, but something is required to aid it in its work, and birds at liberty naturally pick up (if they can get it), by instinct, whatever is necessary to their perfect health; and if a gizzard is opened, we shall find small bits of sharp stone or other hard material. Where the land over which the birds run abounds in flint or hard bits of stone, it will not be necessary to supply material of this kind, but if there is not sufficient on the land, or if there is danger of its being exhausted after a season or two, a supply of sharp flint grit should be given, and it must always be supplied to birds in a run. Material of this kind must be hard to be of any use. Cinder or broken lime is of no use whatever. Many people confuse the use of lime or broken oyster shell with that of grit. The former is extremely good for the birds, as they need material of this kind to form the shell of the egg, but grit is necessary to the digestion. If there is any doubt about it, give birds which have been without grit for a week some hard material. They will eat it more greedily than their food. Green bones are very good for birds if they can in any way be ground up and given, and any flesh may be boiled and given with advantage in small quantities in the winter. Broody hens should never be allowed to remain in the nest, but should be removed to a coop and properly fed until they recover.—[Agricultural Gazette.

### Canker in Turkey.

A reader has an ailing turkey, and gives the following symptoms: She does not seem well, but I cannot see anything wrong with her, except that she sneezes, or coughs, and opens her bill when she breathes; or, at least, quite often. Her head does not seem to have anything the matter with it. I have sprayed her throat and nostrils with coal oil, but she does not seem to get better; does not seem very thirsty; will eat a little; is quite heavy and fat. Last fall our 27 turkeys had what we thought was roup; two died. The breasts of six of them were quite bent over to one side, and they would walk lame; some did not eat very well, and would mope about. Some had discharge from eyes. If it was roup they had last fall, will they be likely to have it again this year, and is there anything that would prevent it?

Replying to this inquiry, W. R. Graham, of the Poultry Dept., Guelph, says: "I would say that I think in all probability the trouble with the turkey is canker, possibly in the mouth, but in all likelihood in the windpipe. Canker is a form of roup; some poultrymen consider that distemper—that is, the discharge from the nostrils that is not offensive—and the canker or growth of white cheesy matter on the throat and in the windpipe, and the common roup—that is, where the head swells up and there is an offensive discharge from the nostril—are different diseases, but according to scientists they appear to be one and the same disease. I would say that I think canker is quite common in the spring and winter; roup in the fall; from October to the first of January, and earlier in the year, we see more of the distemper.

"The only thing that I know of that you could try on the turkey in this case would be to get some potassium permanganate, or some of the roup cures, such as Morgan's, of London. You would then need to dampen the blunt end of a stick, that is, about the size of a match, and dip it in the permanganate, and then get as much as possible of the permanganate off the stick onto the canker, as seen in the throat or upper part of the windpipe. Of course if the seat of the trouble is half way down, or on the lower part of the windpipe, there is practically no chance whatever of touching it.

"The disease is contagious; the trouble with the turkeys last fall was in all probability roup. The treatment of roup is not very satisfactory, and I would suggest that your subscriber get the bulletins from the Department of Agriculture at Toronto on this disease.

"As a prevention, try and keep the turkeys away from the house; that is, let them roam as much as they will, and do not house them up at night. There is nothing that will give chickens or turkeys roup quicker than to house and roost in close, stuffy, or drafty houses. Fresh air is an excellent preventive, and in some cases a cure for the disease. For instance, I have seen chickens that were slightly affected with the disease, and by changing their roosting quarters and getting them to roost in the trees, say in the months of September or the early part of October, have got them practically over the trouble.

"There is danger of the turkeys contracting the disease by travelling over the same ground as last year, but if the subscriber will disinfect the coops that he used, say with a 5% solution of carbolic acid, and where the turkeys roost sprinkle freely air-slacked lime, or what is better, take a bushel of air-slacked lime and add a pint of crude carbolic acid and stir well together, and then sprinkle the ground with this, he will remove the danger."

### "Breed Out" Broody Hens.

A subscriber asks "how to keep hens from getting broody."

I would ask, how many farmers try to "breed out" the sitting qualities? A hen wants to sit, and the farmer goes to the barn, gathers a hatful of eggs, places them under the broody hen, and that is all he knows about it. The probabilities, however, are that when he set that hen he set her with eggs laid by hens that are broody half the summer, if he only knew it, and he is breeding into the very thing he should try to breed out. The three important factors in building up a flock of hens are type, strain and selection.

A half dozen of the best-typed hens, mated with a male of good type, will give the average farmer all the eggs required for hatching purposes.

This fall, from the chicks hatched from this flock, select for breeding purposes those that develop quickly, and are of good market type. In this selection, you are building up a meat-producing fowl, such as the market demands. Then, of this selection, select eggs for next year's hatching, eggs only from hens that lay the earliest and show the least inclination to get broody. In this selection you are building up the laying qualities of the flock, and in following this selection process for two or three years you will build up a breed of the general-utility type. A. W. FOLEY.

Government Poultry Breeding Station, Manager, Durham Co., Ont.