is a very general practice to-day when kerosene is used as fuel. It is believed that the water aids combustion by making the mixture more homogeneous so that it burns uniformly when ignited, it prevents pre-ignition which causes the "pounding" referred to in the question, and hence the engine runs more smoothly and quietly, generates more power, and it keeps the cylinders clean of carbon deposits, and it may assist some in cooling the engine. There are some designs of engines, high compression ones, that can burn the kerosene successfully without the water.

3. I would be strongly inclined to think that this particular tractor is not at all designed particularly to burn kerosene, and for that reason the salesmen discredit the use of kerosene. The matter of a superheated manifold in itself is not enough to warrant it as a kerosene engine. Since most tractors now use kerosene is certain proof that there is something to be gained in its use, but a special design of engine is necessary, and it is quite evident that these people haven't gotten the special designs as yet.

4. Kerosene is better adapted to low speed engines, such as tractors, for the reason that it is a slow evaporating fuel.

5. Yes. This type is quite common, and there are many designs of such a carburetor. A striking feature of most of the designs is that the operator can conveniently switch from one fuel, say gasoline to another, kerosene say. The engine may be started on gasoline and when well warmed up a change is made to kerosene. Space will not permit a full discussion of the various types here.

the Antipodes and the Argentine, and arrivals have practically ceased. Only limited supplies may be expected from Canada this year and certain purchases have been made in the United States, where stocks are large and prices high. Some relief may be forthcoming later in the autumn, when larger supplies of Colonial will probably become available. The authorities are buying butter wherever they can, but prices are at an awkward level. It would be interesting to know whether Siberian butter will be available next summer, but everything in Russia is extremely conjectural."

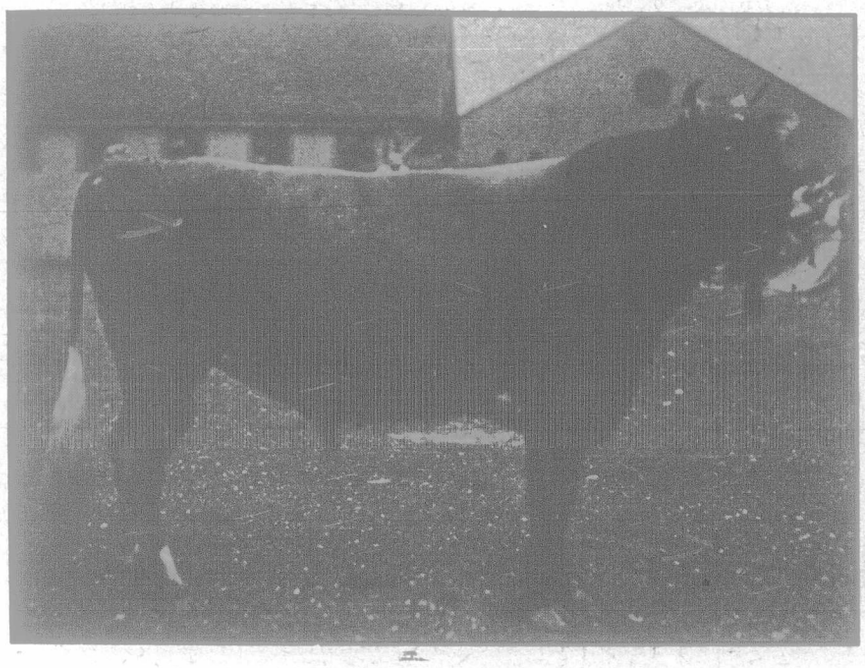
Improving the Grade Herd.

The percentage of pure-bred cattle in most countries is relatively small, and this is true also of Canada, where the most of the milk produced comes from grade or scrub cows. It is for this reason primarily that the average milk production per cow is so low, running not over 4,000 pounds per year, according to the most reliable figures. This amount is ridiculously low and is indicative of heavy losses from thousands of animals that annually produce less than the average quantity. Even this average is probably low because in the county of Oxford in Ontario, one of the very best dairy counties in all of Canada and where the cattle are undoubtedly superior in breeding and production to those of almost any other similar area, the production per cow for the year ending April 1, 1918, was shown to be less than 4,700 pounds per cow on 437 farms. This is shown by accurate farm survey figures which show the average price received for milk to be $2.19½ per hundred while the gross receipts per cow from milk sales was $103. It is a simple matter, therefore, to calculate the average production of milk per cow in Oxford county. We would expect the average for this county to be at least 1,000 pounds higher than the average for the province and higher still than the average from coast to coast. To go but one step further, the figures from this survey show clearly that if the average were only 3,500 pounds per year, the total receipts per cow would be required to pay for the cost of feed alone, leaving probably 25 per cent. of the total cost of milk production to be met from the sale of farm crops or other lines of live stock. In other words it is clearly evident that there must be thousands of cows throughout the country that are being kept at a loss and a loss too, that is directly proportionate to the amount of hard work that is thrown away on them.

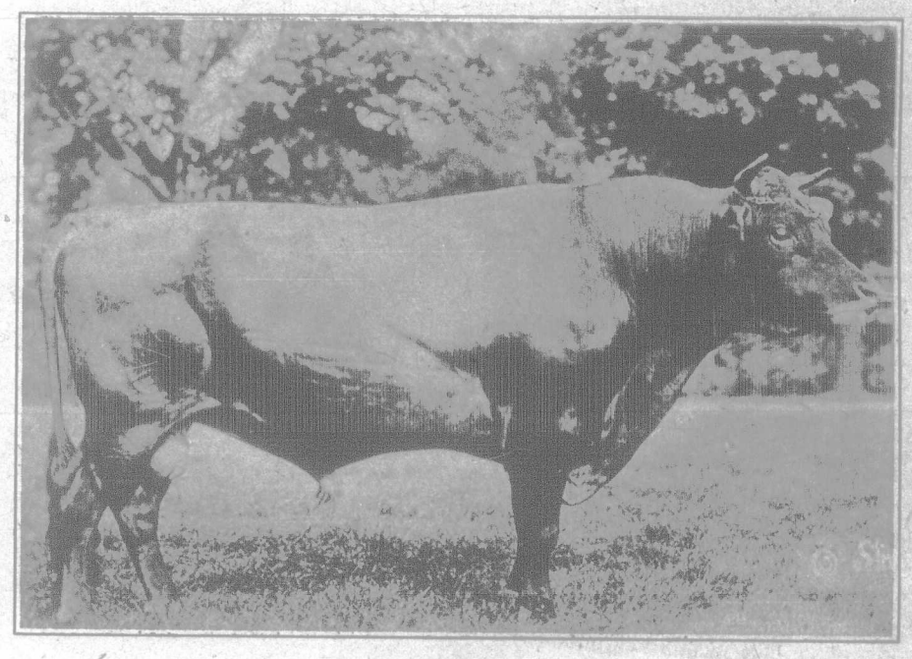
We can easily see that improvement in our dairy herds is imperative if the average production of milk per year is to be a profitable one. How is this improvement to be brought about? Pure-bred cattle are desirable purely because they are more economical, but dairymen rarely have the capital and for this reason seldom find it practicable to start out with a pure-bred herd. But everyone can select what he thinks to be the breed best fitted for his locality and the form in which he markets his dairy products and begin with fairly good grades of that breed, using a pure-bred bull. It is a poor commentary on the intelligence and business instinct of farmers that the scrub bull has been allowed to last so long, for it is indisputable that no greater menace to the dairy industry exists to-day than the scrub bull. He stands for retrogression rather than progress and the man who allows an animal to run with the cows just because he is a bull is saving pennies to lose dollars. There is far more truth than fiction in the saying that a good bull is half the herd while a scrub bull is 90 per cent. of it. There is absolutely no sense in trying to become a good feeder or to get together a herd of good cows if their value as breeders is altogether destroyed by a poor sire. Needless to say, the sire should be of the same breed as the cows. If the cows are grade Holsteins, it would be folly to expect to build up a high-grade herd by using an Ayrshire bull.

Here is another point worth some consideration. In a great many farm herds no two cows are of the same breeding. Grade Shorthorns, grade Ayrshires, pure Jerseys, and grade Holsteins will be mixed up together, and all may be bred to a Shorthorn bull if that bull happens to be the nearest one. How can a dairy herd that is worth the name ever be built up under such circumstances. It is far better to make up one's mind in favor of a certain breed and, if it is impossible to get pure breds, get good grade cows of that breed. Perhaps it will be possible to include one or perhaps two pure breds. Many men do this. They may have 30 grade cows to begin with but when they have to dispose of one they get a good type of pure-bred in her place. Perhaps with only this one or possibly by the addition of another pure-bred—and always of course, with the aid of a pure-bred bull—they gradually increase the proportion of pure-bred females in the herd, turning off other grade cows as each crop of pure-bred heifer calves grows to maturity. Other men have been signally successful in increasing the quality of their grades by merely breeding to a good pure-bred sire and keeping for the herd only the best heifers from the best producing cows. One man whom we have in mind has done this consistently now for 15 years, never buying a cow in all that time; but to-day he has practically a 10,000 pound herd. Breeding, feeding and weeding are what have counted with this man.

We have heard it said that it costs no more to feed a good cow than a poor one. Farmers know better than this. It does cost more by as much perhaps as 25 per cent., but if it costs $60 to feed a 3,500 pound cow and $75 to feed a 7,000 pound cow, it is easy to see that even though it costs more to feed the 7,000 pound cow, she is infinitely more profitable than the other one. Increased production per cow is a good means of increasing the profit in dairying.



King Lear.
Junior champion Jersey bull at London for J. Pringle, London, Ont.



Sybil's Gamboge.
Jersey bull which sold for $65,000 at E. Butler's sale at Mt. Kisco, N. Y.

THE DAIRY.

The cows in milk might advisedly be kept in the stable on cold, wet nights of early fall.

Consider individuality and breed character as well as milk and fat records of the ancestors of the next bull you buy. Remember that the herd will be no better than the sire used.

Sixty-five pure-bred Friesian cows and heifers, sold recently by auction at the semi-annual dispersal of the Inwood herd, owned by Miss Guest of Dorset County, England, brought an average of $865 per head. Top price of the sale was $2,200 for a 2-year-old heifer. "Inwood" is the home of the late Montague Guest, for many years master of the Blackmore Vale Foxhounds and a horseman of national fame.

Two August sales of Friesian cattle in England show that the big prices for the Black-and Whites are not abating in that country. Forty-six head from the herd of Lieut.-Col. W. E. Harrison, Burton-on-Trent, sold for just over $1,100 per head; two bulls selling for $5,000 each; one aged cow for $2,100 and seven cows and heifers bringing from $1,200 to $1,750 each. The day following this sale 33 head of Friesians owned by Percy G. Smith, Coventry, were sold by auction and brought an average of $940 per head, top price being $1,550 for a 4-year-old cow.

A review of the butter situation in Great Britain as given in a report of the Dairy and Cold Storage Branch is contained in the following paragraph: Dealing with the butter situation in Great Britain, the London Grocer of Sept. 6th says:—"There is no prospect of the butter situation being relieved for some time to come. There is a shortage of supplies in Europe. Export from France and Holland is prohibited, except that from the latter country it can be done to some extent under license. As usual at this period of the year, there is decreasing production in Denmark, and while other countries are receiving certain quantities from this source, next to nothing is going to Germany owing to the very severe depreciation of the currency in that country. Scarcity of freight delayed shipments from

Considerations in Feeding Dairy Cows.

Undoubtedly the primary consideration in the feeding of dairy cows is that of the cow herself. By this we mean that to feed most successfully and economically, the first duty of the feeder is to study the individuality of the cow. The best herdsmen are those who are able to tell when she is satisfied with her feed, when she is enjoying her meals and when she would respond to a change of diet. Close study at feeding time is necessary in order that one may gauge the capacity of the cow to make use of feed economically. Profits from feeding operations depend on one's ability to select the proper feeds and to use them wisely. To do either one of these things well, one must first know the cow well.

To feed well, it is necessary to appreciate as fully as possible why feed is necessary, or, in other words, what use we expect the animal to make of her feed. Of course, the cow must be fed to keep her alive, but this use of feed is relatively unimportant from the standpoint of profit. No one but the Humane Society would knowingly feed a herd of cows merely to keep them from starving; there are other reasons for feeding, and ones that encourage the dairyman to feed a great deal more than merely a maintenance ration. The young and immature animal must be fed so that it will develop plenty of bone and muscle; in short, the frame work of the future mature animal must be provided for and this requires much more than merely enough feed to keep it alive. The cow that is carrying a calf must be able to provide for the development of that calf, and hence requires much more than enough for her own existence. Similarly, the cow that is giving milk regularly and in fairly large quantities gives off from her body each day very considerable quantities of solids as well as much larger quantities of water; and both water and solids must be returned to the cow in the form of feed and drink, over and above the quantity required merely to keep her alive. For instance, some cows when milking freely give as much as 100 pounds of milk per day. Of this about 87 pounds are water, and the remainder is made up of about 3 pounds