Gasoline Engine Queries.

1. Will a 2½ H. P. gasoline engine run a 22-inch circular saw?

Will a 2½ H. P. gasoline engine saw wood, the wood being from 3 to 8 inches in diameter if fed slowly?

3. Will a 2½ H. P. engine run satisfactorily without batteries but with the magneto alone?

4. Which is the better, batteries or magneto?

5. Is it needful to have both batteries and magneto?

6. If a 2½ H. P. gasoline engine will saw light poles for home use, what size of pulleys should I use to obtain the right amount of speed?

7. Will a 2½ H. P. gasoline engine saw wood such as light sawing, if so what size of pulleys should I use, the wood being from 3 to 8 inches in diameter? Our timber is mostly composed of small poles.

8. What is the difference between coal oil and kerosene?

U. C.

1. Yes.
2. Yes.
3. Yes.
4. The magneto gives a constant spark while the battery spark weakens as the cells become old. The magneto is probably the better.
5. No. Magnetos have been so improved during recent years that one can start as well off them as off the battery.
6. This question can't be answered definitely, because the enquirer hasn't given the speed of his engine. A 22-inch saw should run about 1,640 r. p. m. To get the proper proportion of the pulleys divide the engine speed into the saw speed. For example, suppose the engine runs at 410 r. p. m. 1,640 ÷ 410 = 4, hence the engine pulley should be four times as large as the saw pulley. If, however, the engine speed were 328 r. p.m. then 1,640 ÷ 328 = 5 and the engine pulley should be five times as large as that on the saw.
7. A 2 horse power engine is generally considered not large enough for 8-inch poles, but will handle 3 to 6 inch stuff at about 1 to 1½ cords per hour. The saw to use with it should be 20 inches in diameter, and the speed 1,800 r. p. m. The proportion of pulleys should be worked out as explained in No. 6.
8. None. They are the same thing.

W. H. D.

Piling on the Load.

Do you realise that a gasoline motor in an automobile does not start under a load, but that to get the machine in motion the load must be piled on the power plant after it commences operation? If you are unfamiliar with the fact it is well in future to bear it in mind because when constantly impressed upon a driver's intelligence it counts for a great deal in economical up-keep as well as the reduction of wear and tear. Because it is impossible to start your motor under a load the power plant is connected to the driving mechanism by an apparatus which is called the clutch. A pedal in the foot board which everyone knows by the name of the "clutch" or the "clutch pedal" controls the clutch and when pressed down takes the load off the motor and by lifting puts it on again. There are three types of clutches in general use, the dry multiple disc, the wet multiple disc and the cone. The dry type is composed of a set of steel plates having faces made of asbestos material. Connections are made alternately to the fly-wheel or to the clutch shaft of the transmission. A spring forces the plates together, when the clutch is engaged, and thus they are made to revolve with the fly-wheel of the motor. The load is taken off the engine when the clutch pedal is pressed down and the plates separated so that they cannot act as a unit. In a clutch of this type it is folly to ride the pedal, that is to keep your foot constantly upon it. If you persist in doing this the asbestos faces of the plates are bound to wear and very soon the clutch will begin to slip. While your machine is running keep your foot off the clutch pedal and so allow the plates to remain in maximum contact all the time. When a clutch slips you are wasting a lot of gasoline and energy because the power developed by the motor is not being transmitted fully to the rear axle. Perhaps you have experienced clutch difficulties and maybe you remember occasions when the motor has been racing its head off but the car has been moving sluggishly and on some occasions would have difficulty in ascending the smallest hills. The whole fault was due to the fact that the clutch was not in strong enough contact to deliver all the power from the engine through the driving mechanism to the wheels.

On the multiple dry disc type adjustment can be made by moving the lock nut or adjusting nut on the clutch release rod to allow more room between the clutch release bearing and the plates. There is a set screw in the rear end of the clutch release rod by means of which the clutch pedal itself can be adjusted. It is well to remember that no oil or grease should ever be put on the clutch discs. The clutch itself contains two grease cups which should be looked after every five hundred miles.

In the wet type of clutch the plates run in oil and should you find a slipping, clean out the case very thoroughly with kerosene and put in new oil. The mixture in which the plates work is called an oil bath and you should prepare it exactly in accordance with the manufacturers' instructions.

We only mentioned one cone clutch but to be absolutely accurate there are two, the leather face which runs dry and the fabric face which operates in an oil bath. The main thing to remember about the dry type is that the leather should always be soft and pliable. When it becomes dry it has a tendency to grab. Neatsfoot oil is a good dressing for the leather as it has proven itself very valuable under all occasions. Castor-oil is also recommended by some people and they have been known to prefer it to Neatsfoot oil. We may also add that Fuller's Earth is spoken of very highly. The fabric face cone clutch must be handled similarly to the wet multiple disc clutch. When it commences to grab remove the oil bath, clean out the receptacle and put in a new mixture that is, above everything else, clean.

Now you know in a general way practically everything about clutches. Furthermore you should not be afraid of them because as you can see there is nothing mysterious or complicated about their operation or maintenance. When your power plant is running nicely let out the clutch very smoothly remembering that as you let it out you are piling a load upon the motor and that the easier you put it on the quieter your moving off will take place. Engines are built of the finest material but if you jerk and jump your car these severe actions cannot fail to ultimately result in damage to your motor. It is also well to know that if for any reason you push down your clutch pedal while skimming along the road that it should be let back as evenly as possible not only for the comfort of the passengers but in order that the strain may be as uniform as possible. Men who are known as skilful drivers and mechanics are usually those who give the most attention and use the most care in the handling of their clutch.

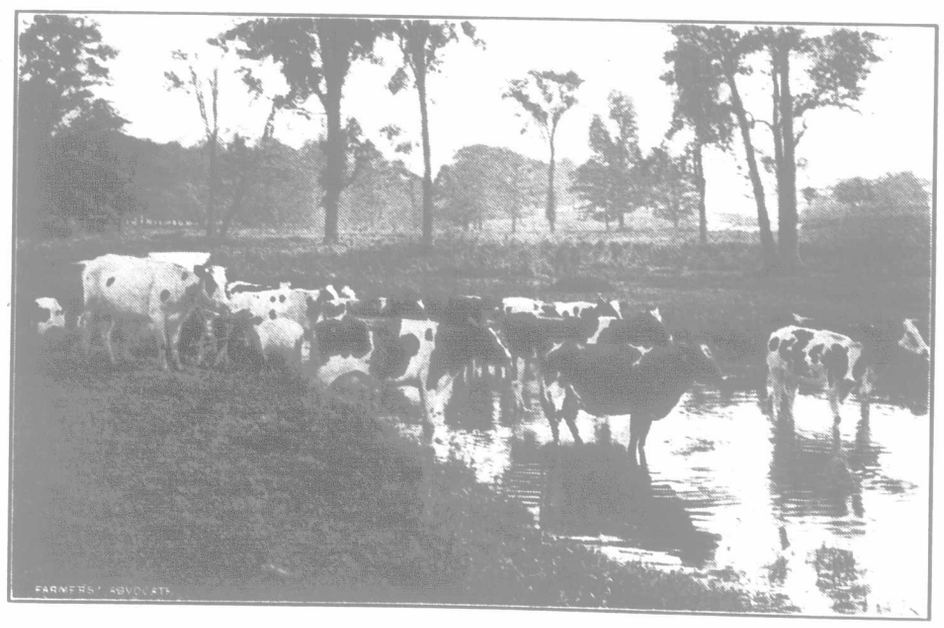
AUTO.

THE DAIRY.

Don't neglect the animals that are a little "off" their feed. A good deal of trouble can oftentimes be saved by giving treatment early. Both ends of the animal should be watched.

Every dairyman should have a number of good books in his home, and among them should be several on dairying. A dairyman and his family cannot learn too much about the business they are engaged in.

Have you purchased a spring balance and secured a few milk-record sheets yet? Some of your neighbors have and are already enthusiastic over the prospect of knowing their cows by milk and fat production as well as by name.



A Herd of Holsteins Near London, Ont.

Feeders and cattle alike are looking forward to the return of such summer scenes.

With the coming of warm days the cows become more "picky," and greater care must be taken in preparing the rations so as to make them appetizing to induce the animals to take a full feed so that production will not suffer.

Goldie's Nehalein Beauty, a four-year-old Jersey heifer of Oregon State, is not only a show animal but a heavy producer. In two years and two months she gave 27,691.2 pounds of milk and 2,068.15 pounds of butter. At 50 cents a pound for butter she returned her owner a good revenue.

Between February 1 and 15, 46 Holstein cows and heifers were accepted for entry in the Record of Merit. There were 22 in the mature class, with Abbekerk Queen Countess, a New Brunswick cow, as the winner, with 30.38 lbs. of butter. In the senior four-year-old class, Daisy Mahone Wayne was first. In the seven days she gave 690.9 lbs. of milk, which made 30.03 lbs. of butter. Ladoga Idaline Mercena headed the junior four-year-old class. She gave 638.5 lbs. of milk, making 28.49 lbs. of butter. R. K. Augusta was the only senior three-year-old to qualify. Her butter record was 20.71 lbs. In the junior three-year-old class Barker Hengerveld May Echo was first. Her butter record was 20.68 lbs. Rose Teake Houwtje was the only senior two-year-old qualifying. She gave 468.1 lbs. of milk. There were seven junior two-year-olds, and the highest record was made by S. C. M. Leonora Hengerveld. Her milk record was 444.8 lbs.

Managing a Dairy Farm.

Success in dairying depends a good deal on how the farm and herd are managed. Some men appear to have little difficulty in getting ahead while others find it hard to make ends meet under their present system of handling the work. S. G. Carlyle, Superintendent Demonstration Farms of Alberta, gave many practical hints in an address delivered at a recent dairy convention. While Western conditions were discussed, to a certain extent many points were applicable to the Eastern dairymen. The following are excerpts from Mr. Carlyle's address.

In the unusual times in which we find ourselves just now, there is perhaps no line of production placed in such unfavorable condition as dairying. We find that the concentrated feeds, such as bran, oil cake and oat chop, and which are essential to heavy milk production, have doubled in price. The price of labor has not only doubled, but the high-class labor required for the care of a first-class dairy herd is practically impossible to get. To offset these drawbacks we find that the price of dairy products has increased about 30 per cent. against grain 150 per cent. and beef and pork more than 100 per cent.; and these products can be placed on the market at a much less labor cost than dairy products, so that the dairy industry has suffered and will continue to suffer until the prices of other commodities are normal again. Managing a dairy successfully at present is no easy task, and certainly the business is not as remunerative as other lines of farming. It may be taken as axiomatic, however, that a man can win in any farm enterprise only by persistent application to a chosen form of work. He can stand the losses of temporary adverse conditions better than he can stand the losses incident to throwing away his experience and learning a new game, and I assume that I am talking to a producing group of men who are determined to stick.

Conditions of Market and Feed.

The important initial consideration in establishing a special dairy enterprise is the market and the distance of the farm from railway station. As milk and cream are very perishable products, especially in warm weather, it is necessary that they should be delivered to the consumer or manufacturer in a fresh condition, and this necessitates frequent shipments. If the dairy farm is situated some distance from the city or railway station the time spent in delivery is too great and the cost too high in many cases to show a profit.

Another important general consideration is the character of the soil and climate. Dairy cattle require succulent feed and through the summer months this can be cheaply supplied by luxuriant pastures, either natural or tame. On this account a farm of moderately heavy soil, rich in organic matter, is perferable to light sandy soil. Liberal precipitation of moisture is likewise desirable.

Pure Water.

To carry on dairy farming successfully it is important to select a suitable farm. Perhaps the most important consideration next to good soil is a good water supply. Eighty-seven per cent. of milk consists of water, so it is absolutely necessary for a dairy cow to have a plentiful supply of good pure water. If we can select a farm with a spring of running water near a good building spot, the conditions in this respect are ideal. But if on the other hand a deep expensive well has to be drilled with expensive pump and gasoline engine for driving it, not only does it require a greater outlay at the beginning, but the cost of operating every day throughout the year adds considerably to the cost of producing one hundred pounds of milk. A young man engaged in the dairy industry in this province told me the other day that he had to drill nearly 400 feet for water, and that the well pump and small pumping engine cost him nearly $1,500, and that it took between three and four hours a day to pump water for his stock. If he could have had a sufficient supply of water from a spring he could have built a reasonably good dairy stable for the cost of the well.

Sunlight, Sanitation and Conveniennce.

After selecting a farm of good rich soil, well watered and lying reasonably close to market or railway station, comfortable and convenient stables should be erected. These buildings should be placed near the main road and as near the centre of the farm as it is possible to get, but always keeping in mind a good elevation, which is essential for dry yards and good drainage from buildings. In the dairy business a great deal of water is required for washing utensils, and unless good drainage is provided from the dairy buildings, impurities will soon develop which will contaminate the milk. The dairy building and the ice-house may be built together,