## THE FARMER'S ADVOCATE.

general policy aims at a connected system of state roads.

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### **Comparative Cost of Farm Power.** EDITOR "THE FARMER'S ADVOCATE":

The figures given on the comparative cost of farm power of different kinds are those obtained in some tests which I made in 1913. I ground 1½ tons of oats and 1½ tons of third grade Manitoba wheat, half of each with electricity and the other half by gasoline. At that time gasoline was costing twenty cents a gallon, and I found that the average cost of grinding 100 lbs. of grain with gasoline at that price was 1.98 cents, or practically two cents. With gasoline at thirty cents a gallon the cost would be 3 cents per 100 lbs., and at 35 cents a gallon 3½ cents.

#### **Electric Power for Grinding Grain.**

In grinding by electricity the cost was not so easy to obtain because the electricity is paid for on a flat rate in the country, and is used only a few hours occasionally. However, calculating what the meter rate ought to be to grind at 2 cents per 100 lbs. I found it should be 414 cents per kilowatt hour, which is equivalent to \$280 per horse power per year if used twenty-four hours a day every day in the year. If used twelve that would be equivalent to \$140 per horse power. If used eight hours a day \$93 33 per horse power per year, all of which are higher rates per horse power per year than I have seen mentioned by the Hydro-Electric Commission. However, farmers have not work enough to use electricity eight hours a day. Perhaps 1-horse power one hour a day each day in the year would be a fair estimate of the power requirements on the average farm for such operations as grinding, pumping, churning, etc. The Hydro-Electric Commission made an estimate for one township about that time, assuming that two-hundred-and-fifty persons in the township would take power. The permanent charge for each user would be \$20 per year, which covers the cost of constructing township the system, the power to be supplied at \$30 per horse power per year. Combining these 2 rates 1-horse power would cost \$50; 2, \$80 per year or \$40 per horse power; 3, \$110 or \$36.66 per horse power. For 4-horse power the rate would be \$35 per horse power; for 5, \$34, and for 6, \$33.33. It is possible they may have reduced estimates now, but our cost of grinding by elec-tricity was worked out from those figures and are given in the following table:

given in the left hand column opposite each two cents. For example, with the current costing \$50 per horse power the farmer had to use his electric current 3 hours and 31 minutes during the day to grind at 2 cents per 100 lbs. To grind at 3½ cents he will have to use the power twenty-thirtyfifths of 3 hours 31 minutes, which is 2 hours 1 minute. I presume the variation of cost per 100 lbs. as the current is used the longer or shorter time per day will not give the reader any difficulty. Similarly if the current is used at only half the strength contracted for, it would have to be used twice as long as indicated to grind at the prices given.

#### Power Developed by Windmill.

The horse power that is given by different sizes of windmills, may be of special value. For an average wind, that is sixteen miles an hour, the power of different mills is as follows:

| Diar      | neter | r | Horse  |  |  |
|-----------|-------|---|--------|--|--|
| of wheel. |       | L | power. |  |  |
| 8         | feet  | t | 1-25   |  |  |
| 10        | 4.4   |   | 2-17   |  |  |
| 12        | 6.6   |   | 1-5    |  |  |
| 14        | 6.6   |   | 2-7    |  |  |
| 16        | 4.4   |   | 2-5    |  |  |
| 18        | 6.6   |   | 2-3    |  |  |
| 20        | 4.5   |   |        |  |  |

Of course as the wind increases so does the power, only it varies as the cube of the velocity, that is, if we wanted to find from the table above what the power would be for those mills with a wind velocity of 32 miles an hour, multiply each figure by 8, which is the cube of 2. If the wind went up to 48 miles an hour, which is three times as fast as the standard, then we would have to multiply the power given in the table for the different mills by 9.

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# THE DAIRY.

#### Paying for Milk According to Quality.

EDITOR "THE FARMER'S ADVOCATE"

So far as comment from the men behind the plow is concerned regarding the new Dairy Standards Act, the dairymen seem to be reconciled to the new regulations.

Table Showing Cost of Grinding 100 Lbs. of Grain by Electricity, at Various Rates per Horse Power per Year, Flat Rate.

| If Full Power is Used.   | Cos<br>\$50<br>per h.p.        | t of Grinding<br>\$40<br>per h.p. | 36.66 per h.p.                | Grain with<br>\$35<br>per h.p. | Electricity,<br>\$34<br>per h.p. | at<br>\$33.33<br>per h.p. |
|--|--------------------------------|-----------------------------------|-------------------------------|--------------------------------|----------------------------------|---------------------------|
| lst — 24 hours per day   2nd—12 " " "   3rd—6 " " " "   4th—3 " 31 min. per day   5th—2 " 49 " " "   6th—2 " 41 " " " "   7th—2 " 28 " " " "   8th—2 " 24 " " " "   9th—2 " 20 ' " " " | .293<br>.586<br>1.172<br>2.000 | .234<br>.468<br>.936<br>2.000     | .223<br>.446<br>.892<br>2.000 | .205<br>.410<br>.820<br>2.000  | .199<br>.398<br>.796<br>         | .195<br>.390<br>.780      |
| 10th— 1 hour per day   | 7.032                          | 5.616                             | 5.352                         | 4.920                          | 4.776                            | 4.680                     |

You will note that for each rate I have determined the length of time that the farmer would have to use his hydro-electric full strength each day to grind at 2 cents per 100 lbs. To grind at 31/2 cents per 100 lbs. the same as with gasoline at 35 cents, the farmer need

Law has been defined as the expression of the will of the people; but whether the Dairy Standards Act is the will of the majority of Ontario dairymen is open to debate

There is no doubt in the minds of dairymen who not use his hydro-electric so long each day, and the time have given this question serious thought, but that it can be found by taking twenty-thirtyfiths of that should benefit Ontario Agriculture. The Dairy Stand-

The Ayrshire Breed in the Record of Performance Test.

ards Act, is of great importance at the present time to the producer of milk. It is now several years since Government commenced a campaign to interest our our dairy farmers in the individual weighing and testing of their cows. This work has been hampered all along by the lack of the present Act, which is to be put into force next year. Where factories paid for milk according to the pooling system, as the majority of them do there was no encouragement given to this much needed work, and, as a result we see in many districts one breed predominating, because as a rule, they give larger quantities of milk than do the other breeds. The pooling system therefore encourages quantity regardless of quality. It is also generally recognized that a large production of milk has a tendency to decrease the percentage of fat in the milk. This probably is the reason why the Holstein, as a breed, is lower in fat test than some other breeds.

Those dairymen who had the fore-sight to practice the individual weighing and testing of their cows milk years ago will now be in a position to reap their reward, if they have weeded out their low testers, and have been raising their calves from the best. The men in the offices of the Dairy Record Centers will likely have their labors increased next year, as there will probably be many more dairymen start testing their herds.

Other results of the new Act may be to give a boost to some breeds, and also to cause a more thorough sifting of other breeds. It may be that owing to the popularity of the Holsteins of late years, many heifers were raised and sold which should not have been. There is plenty of room in Ontario for the good individuals of all the breeds.

There is one point about the payment for milk according to quality that perhaps is not generally noticed viz., that in paying by the fat plus 2 system a man can be paid for water put into his milk. As an illustration, last month a patron in our factory sent 10,000 lbs. milk testing 3.3 per cent. fat thus yielding 530 lbs. of fat and case in. The price paid was 24.75 cents per lb. thus giving the patron \$131.17. If however, he had added during the month 500 lbs. water his milk would then test 3.18 per cent, and would have yielded 543.9 lbs. fat and casein. The factory would then have paid 24.73 cents per lb. and the patron would have received \$134.50 or \$2.33 for 500 lbs. water. For this reason would it not be better to have Government men do the testing for both fat and adulteration, as many of our cheesemakers would not care to get into trouble with their patrons. There is one reason, however, why the fat plus 2 system appeals to me. It is said that by the fat system the man selling very rich milk gets a little more per hundredweight than he should, while by the fat plus 2 system the man with low testing milk receives a little more per hundredweight than he should. In either case, it seems, a slight injustice must be done; let it be done to the one who is most fortunate. It is said by some that payment for milk according to quality puts a premium on starvation, as starved cows give little, but rich milk. Every good dairyman knows that it is poor policy to starve the dairy cow. Let us strive to increase the percentage of fat by weeding and breeding, as it cannot be done by feeding. The best cow I ever owned was bought at an auction sale, and another which is doing exceedingly well was bought when on her way to the shambles. The tester and scales reveal the good cows. Carleton Co.

JAS. F. FERGUSON.

A new record for gasolene marketing in the United States was made during the first six months of 1916, viz., 140,000,000 barrels.

Trailers are making their appearance behind autos on Western Ontario roads. Rural store keepers use them in hauling empty boxes. egg crates, etc., to town and returning loaded with goods.

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There are several distinct breeds of cattle that have been bred and selected especially for dairy purposes. It is clearly shown that the more intense breeding along a definite line for special points, the greater the exclusion of certain other qualities. The type and conformation looked for in a milk and butterfat producer is different from the qualities desired in a beef animal. Likewise the breed giving the highest testing milk as a whole is not large, while the breeds noted for milk production possess great scale. Animals of ideal beef type do not, as a rule, make records at the pail, nor is the championship for milk production and high testing held by the same cow. Each breed has its place and when an endeavor is made to make a sudden change difficulties arise. In generations past breeders had an ideal. They laid the foundation and breeders to-day are reaping the results of their No herd rises to the pinnacle of fame in a day. efforts. Back behind the present success with any breed were years of patient toiling, careful breeding and good feeding. The end is not yet. Perfection has not been reached. There is plenty of opportunity for young breeders to exert their skill and make their chosen breed more famous.

Breeders of beef cattle stake the reputation of their herds on the outward appearance and quality, together with the ability of the sires and dams to produce offspring equal to or better than themselves. Up to a few years ago dairymen estimated the values

This is the first of a series of articles in which an endeavor is made to acquaint the readers with the origin of the present recognized dairy breeds, and to show how selection and breeding with a definite aim in view has fixed a certain type and in-tensified milk and butter-fat production. The official Record of Performance test has played no small part in increasing the interest among breeders in the testing work and in bringing many individuals of the breeds into prominence. The value of dairy animals is largely estimated by their ability to produce at the pail. What the R. O. P. test has done for the Holstein breeders will be discussed in an early issue.-Editor.

of their herds by this standard, but it slowly dawned upon them that a very important point was being The appearance of the cow, size and overlooked. shape of udder, length of milk veins and number of milk wells are not ar accurate indication of the number of pounds of milk and butter-fat the animal is capable of producing in one lactation period. Looks are sometimes deceiving and of recent years the value of females of the dairy breeds is determined not by appearance alone but by their ability and the ability of their

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ancestors to produce and transmit that important quality to their offspring. With young animals of both sexes their value is largely estimated by the records of their ancestors. Breeders were slow to take up the testing work, but once its value was realized rapid progress has been made in every dairy breed.

Like many of the other important breeds the foundation of the Ayrshire was laid on the other side of the Atlantic. The native home of this dairy breed is in the county of Ayr, Southwestern Scotland. From there, representatives of the breed have been taken to all parts of the world, and wherever they have gone they have proven to be capable of adapting themselves to new environment and changed climatic conditions.

The origin of this particular breed has been rather a complex one. Early authorities claim it to be the native breed of Ayr improved by certain other stock. It is believed that Shorthorn, West Highland, Devon and Hereford blood have all been used with the native stock, and from this variety of blood has evolved the breed known as Ayrshires. Early breeders selected and bred for milk production. For over a century the breed has been kept pure, and in all that time breeders have been working towards a certain ideal. Breeding to eliminate weak points and selecting to internsify the strong has given a strain of cattle medium in size but with splendid dairy conformation, great vitality and prepotency. Combined with these

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