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Auto.

Batteries for Lighting Purposes

1. Have many lights will a 1½ H.-P. gasoline engine make running them direct off the dynamo?
2. How many storage batteries would it take to run 6 lights 6 hours?
3. How long would it take the 1½ H.-P. engine to charge these batteries?
4. Would a storage battery connected with a motor and dynamo recharge itself?
5. Will a given current of electricity connected to a motor and dynamo make more than itself? If so how much?
6. Where can I procure some good books on electricity, and motors, and how much are they?

C. B.

Ans.—1. It depends on the lamps. If they are 25 watt lamps then with the engine running at full power you could run 45 lamps. At ¾ load 34 lamps. If 40 watt lamps, then the engine would run only ¾ of the above number, i. e. 38 at full load and 21 at ¾ load.

2. Here again the answer depends on the lamps. What voltage are they made for? If they are 6 volt lamps as used on many automobiles then three cells will run the lamps full brightness for a time, the length of which depends on the size of the cells. Each storage cell has a pressure of 2 volts no matter what size it is. But the larger the cell the longer it will run the lamps full brightness. If, however, the lamps are made for 32 volts, which is quite common in small domestic plants, then it will require 16 cells to run one lamp or six or any other number, and the length of time they will last depends as before on the size of the cells and the number of lamps.

3. From 24 to 48 hours depending on how completely they were discharged at starting.

4. and 5. No. You couldn't get as much current out of the dynamo as you put into the motor, consequently the battery would be losing slightly all the time and would finally become completely "run down".

6. Get "Electricity on the Farm" by Anderson, as a starter. It is published by Macmillan & Co., and may be had through any bookseller. Price possibly \$1.25.

W. H. D.

Over Loading the Magneto.

I have heard that placing too heavy a load (by connecting extra lights) on to a Ford magneto, will, in time, weaken the magneto. Is this so? Or will the only result be to interfere with the ignition when the engine is running slowly?

The two extra lamps would be connected in series and would each consume about .43 amp.

W. G.

Putting too heavy a load on the Ford magneto has been found by experience to weaken the magnets so that in some cases recharging has been necessary.

W. H. D.

THE DAIRY.

The Dairymen's Banquet at the Winter Fair.

The Annual Dairy Banquet, heretofore supplied by the breeder winning the championship in the dairy test, but this year conducted under the auspices of the Holstein-Friesian Association of Canada, was held on Wednesday evening after the conclusion of the dairy test. The occasion was marked as distinct from other similar occasions in past years by the presence of the Minister of Agriculture for Ontario, Hon. G. S. Henry, and the Chairman of the National Live Stock Records Committee and President of the National Live Stock Council, Wm. Smith, of Columbus. The chair was occupied by R. S. Stevenson, on behalf of the Association. The usual procedure of drinking to the future success of the winner, in this case Geo. Smith, Port Perry, was followed, after which speaking was introduced.

Prof. H. H. Dean, O. A. C., was the first speaker, and took occasion to emphasize the necessity for three-fold improvement in dairy cattle, namely, by standardization of size and weight of cows, standardization as to production and standardization as to form and, possibly, color. "We, as dairymen, should standardize our herds even as we should standardize our products," said the professor. "I believe the time has come when we cannot afford to keep cows that produce less than 8,000 to 10,000 pounds of milk in a year, or make less than 400 pounds of butter per year." Wm. Smith, the next speaker, emphasized the reconstruction problems that face us now, and said in substance as follows: "While we are on the eve of peace, new events must take place, and we must face these changes in a manner that will redound to our credit and our future prosperity. I do not think that we need have any fear whatever for Canada and what will happen in the immediate future. Live stock, meats and dairy products of all kinds will be needed in Europe in increasing ratio in the future. Governments can do much to assist in meeting these problems, but anything that is done should be done at once, as changes are coming rapidly. European markets must be examined, and Canadians must be sent there immediately to report back as soon as possible. Money

will be required, but Canadians can amply provide for this.

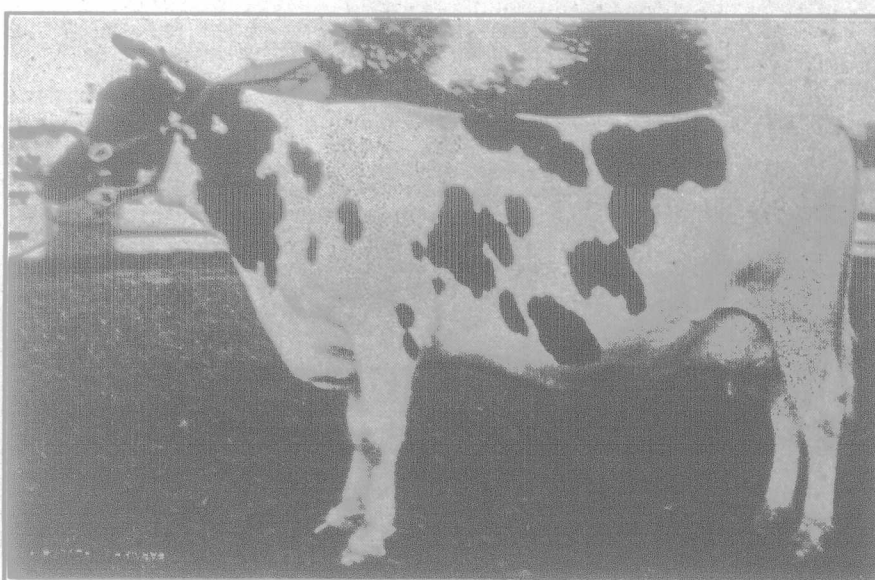
"In connection with the Ontario Provincial Winter Fair, I would like to say that Guelph has done well, and for years past has played her part. I will not say that the show has outgrown Guelph, but other places are making strenuous efforts to secure it, and 1920 may see it held elsewhere. If such is the case, no one place must stand in the way of enabling the show to continue to grow and remain worthy of the live-stock industry."

The Minister of Agriculture may also be quoted in substance as follows: "I know that, in the past, dairymen have not been getting a reasonable reward for their efforts in production. It seems to require a long and tedious process of education to convince the consumer that he must pay for a good article. I think we are making progress, and that we may safely say, also, that once we move back into normal times, this condition will be remedied. I want to congratulate progressive dairymen on their appreciation of the returns from investment in good stock and improved equipment."

"At the Winter Fair, accommodation was adequate some years ago, but our progress has been very great. I feel that it is about time to move forward, and I think this will appeal to the dairymen more than to anyone else. Under present conditions there is little incentive to the dairyman to come out and do the best work in the dairy test. As far as the Governments are concerned with reconstruction, I think I can say that they appreciate the necessity for prompt effort. There is a general consensus of opinion that now is the time to move, and if we move along sane lines it does not matter much what money we spend. All we ask of the stockmen is that they do their best to produce a first-class product." Other speakers were representatives of other breed associations, and the addresses were interspersed with music and other entertainment.

Composite Milk Supplies

The composite milk test is a fortunate possibility for the man with a herd of cows who wishes to do his own testing as a check upon that of the creamery or cheese factory, or who is progressive enough to main-



Jessie Grace Keyes.

First prize dry cow and champion Holstein female at the Central Canada Exhibition, Ottawa, 1918. Owned by Cummings & Gosselin, Cummings Bridge, Ont.

tain a record of what each cow in his herd is doing. It is a great labor-saver for creameries and cheese factories also, as well as for cow-testing association; since it is possible to sample the milk of each cow or each patron at different times without making the actual test more than once a month.

The great object of the composite sample is to obtain an average test of a number of smaller samples. In creameries and cheese factories it is the practice to take a small sample from each delivery made by a patron, putting them together in a small bottle, one for each herd represented. In this bottle there is also a representative, of which several kinds are used, the most common being made from five parts of potassium bichromate and one part corrosive sublimate, or mercury bichloride. If the samples are not to be kept longer than two weeks the bichromate of potassium may be used alone, providing enough is used to give the milk a lemon-yellow color. If the mixture named above is used, milk can be preserved for one month, if as much as will lie on a ten-cent piece is used for each pint of milk to be preserved. There is some danger in the use of corrosive sublimate alone, largely for the reason that it is very highly poisonous and does not give any distinctive color to the milk, to show that poison has been added. Occasionally, twenty drops of formalin are used per pint of milk, but its use is objectionable for the same reason as corrosive sublimate. Tablets can now be secured commercially and used with excellent results.

As indicated above, the amount of preservative required will depend upon the condition and size of the sample, the length of time the milk is to be retained, as well as the conditions under which it is kept. If the sampling has been done properly the test should show an average percentage of fat made up from a different lot from which the samples were taken. The following

notes and comments or composite sampling are made by the Dairy Department, O. A. C., Guelph.

"1. Pint or half-pint bottles stoppered with cork or rubber stoppers answer fairly well for composite sample containers, although bottles fitted with glass stoppers are preferable, as they are not so likely to carry mould spores into the milk.

"2. The bottles should be kept tightly stoppered to prevent evaporation of the moisture, which will cause the test to be too high.

"3. Better results can be got by keeping the bottles in a cool place and out of direct sunlight.

"4. It is absolutely necessary that each bottle should have a distinguishing mark—either name or number. Stovepipe, or bicycle enamel, answers very well for the purpose. Paint is not so lasting. Another method is to write the name or number on a gummed label, stick it on the bottle, and coat it over two or three times with shellac, or, the glass may be roughened with a whetstone or file, and the number written on with a lead pencil.

"5. Place the preservative in the bottle before any milk is put in. It may be necessary to add a little more later if the sample shows indication of spoiling. Avoid using too much preservative as it hardens the casein in the milk, making it difficult to test, and oftentimes causing a burnt or charred reading.

"6. The sample for the composite jar should be taken after the milk has been poured into the weigh can. An ounce or half-ounce dipper is often used for this purpose. A sampling tube, or milk "thief" is also very satisfactory. It is very difficult to accurately sample frozen milk, and patrons should be warned against sending milk in that condition.

"7. Each time a fresh sample is added, the jar should be given a gentle rotary motion to mix the cream and the fresh milk with the part containing the preservative. Avoid shaking the jar violently, as that has a tendency to churn the contents.

"8. To prepare composite samples for testing, heat the sample from 100 degrees to 105 degrees F. by placing in warm water, to loosen the fat adhering to the sides of the bottle, and then mix thoroughly by pouring. Take the sample quickly and place in the test bottle. Set the test bottle in water at 60 degrees to cool the milk before adding the acid. Strict attention paid to this point of cooling will usually prevent burnt readings.

Sulphuric acid appears to act more strongly on samples containing preservatives, therefore, it is advisable to use slightly less acid. If difficulty is experienced with burnt readings caused by an excessive amount of preservative, it is recommended to add the hot water at two different times, filling to the bottom of the neck of the bottle and whirling one minute and then filling to about the 8 per cent. mark, and whirling again for another minute.

"9. To find the correct average test of the milk from a herd of cows, find the total pounds of fat and total pounds of milk, multiply the pounds of fat by one hundred and divide by the pounds of milk. There is often considerable difference between the correct average test found in this way and the test obtained by adding

the different tests together and dividing by the number of cows tested.

Holsteins and Ayrshires Under Tests.

From October 1 to December 1 the Ayrshire cows qualifying in the Record of Performance test have made some creditable records. White Rose heads a mature class of eleven animals, with a record of 12,569 lbs. milk testing 4.19. There were only two qualifying in the four-year-old class, but Maple Leaf Jean gave 12,366 lbs. milk in 318 days. Six three-year-olds qualified. Primrose of Orkney 4th headed the class with 8,309 lbs. of 4.66 per cent. milk. In a class of eight two-year-olds, Scottish Victoria 2nd was first. She gave 9,016 lbs. of milk which tested 4.04 per cent. Her lactation period lasted for 312 days.

During the months of October and November, 20 cows and heifers qualified for enrolment in the yearly record of performance. Grebeega 2nd headed the mature class with 17,861 lbs. milk, producing 583 lbs. butter-fat. The four-year-old class was led by May Evergreen Woodland with a record of 17,683 lbs. milk. Colantha Tidy Johanna, a three-year-old, gave 14,523 lbs. milk. Maud Segis of Elderslie made the best showing of the two-year-olds. She gave 14,134 lbs. milk, which yielded 482 lbs. butter-fat.

From October 1 to the last of November, 55 Holstein cows and heifers were accepted for entry in the Record of Merit. The mature class is led by Victoria Posch De Kol with 592.2 lbs. milk in seven days. Bessie of Bellevue and Colony Minnie Newman were the leaders in the senior and junior four-year-olds. The two three-year-old classes were headed by Annie Calamity Vee-