

be sharpened on the side of an emery wheel or grindstone, so that they will cut, rather than rub the grain to pieces.

As for my engine and grinder being better than others, I do not know, since I have never used any others, but am content with what I have, particularly since Mr. Clark's explanation that the privilege of having electric power costs him \$22.00 a year, with the cost of power used added to that; 2.33 cents a kilowatt hour does not mean much to most of us, but neither would 1.75 cents per horse-power hour, if there was no statement as to the amount of work done, or the number of horse-power hours or kilowatts used.

In my former letter I had no intention of boasting of what I was doing, for I have at least one neighbor who is getting as good results as I with a similar outfit. It was merely to state the service expected of a motor during the year, and the cost. I did not expect that another farmer with electric power would have exactly the same conditions, but that they might be near enough to serve as a comparison.

In conclusion, I wish to invite "The Farmer's Advocate," or any of your readers interested in power for the farm, to visit my place and see what I am doing. If my statements are not found true, I will cheerfully pay the expenses of the trip.

J. MORGAN.

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### Testing Galvanized Wire.

Editor "The Farmer's Advocate":

If there is any solution for testing wire to see if it is well galvanized, will you please publish it in "The Farmer's Advocate." H. W.

This question was referred to the Steel Company of Canada, Ltd., and A. C. Blashill, Manager of the fence department, replied as follows:

The most widely used test is the immersion of the article in a saturated solution of sulphate of copper, allowing same to remain one minute, and then cleanse it in clear water and wipe clean. This process is repeated, and as long as the wire does not indicate any signs of a copper deposit, it is demonstrated that the coating of zinc has not been removed. The process can be continued until a copper color is shown, the number of immersions of this kind indicating the comparative coating.

"Commercial" galvanized fence wire should stand two such immersions.

Those interested in cold or electro-galvanizing contend that the above, which is known as the "Preece" test, is not conclusive, but this test has been widely accepted by engineers, and is the usual method by which all galvanized material is tested by such large users as telephone, telegraph and railroad companies.

Prof R. Harcourt, of the O. A. C., in answer to the same question, sent this reply:

I may say that there is no simple method that is reliable for testing wire to see if it is well galvanized. The Preece test has been used for some time, but there are some objections to it. This consists in placing the piece of galvanized iron to be tested in a solution of copper sulphate under standard conditions, and observing the number of one-minute immersions which can be made before copper in a bright, adherent form will plate out on the article. In practice, this test has been found to be faulty, because, when the galvanized iron is placed in the solution, the rate at which zinc will pass into solution and an equal number of copper ions be precipitated as metallic copper, will depend upon the concentration of the copper ions in the solution in the immediate vicinity of the metallic zinc. If for any reason the solution becomes depleted in copper ion, the speed of this interaction will decrease. This is what takes place under ordinary conditions. For the first few seconds the reaction is very rapid, but, as the spongy copper forms on the surface of the zinc, it becomes more difficult for the zinc ions formed to get away and fresh copper ions to reach the metallic zinc, so that at the end of a minute the reaction has practically ceased. When the sponge of precipitated copper is removed and the test paper replaced in the solution, action again begins vigorously, but again falls off. It can easily happen, therefore, that the iron base will be practically exposed at, say, the end of the second minute, and yet no bright copper will be seen until the sponge is removed at the end of the third minute. The test will thus be classed as a three-minute test, while in reality it is but a trifle over two minutes, and an error of 33 per cent, is thus introduced. In fact, we have seen galvanized iron which showed areas of no coating whatever. The Preece test would indicate such wire as one-dip, while in reality it was zero-dip wire.

It has been proposed to provide against the above difficulty by using a number of ten-second immersions, instead of one-minute immersions. But there are some objections to the method.

A more recent method has been proposed, in which the iron to be tested is dipped in basic

lead acetate solution, and the original material weighed before and after drying, or the zinc collected and weighed. This method, however, demands the use of fine balances and the making of solutions, which can hardly be done in other than a chemist's laboratory.

Altogether, I do not think that it is possible for the ordinary layman, without equipment, to make satisfactory tests to determine whether iron is well galvanized, or not.

### Maple Syrup Standard.

"Sugar-making," or, more accurately, syrup-making, is the event of the season, when winter passes into spring, in those sections of the country fortunate enough to possess groves of maple trees. It is an industry of the farm to which increasing attention is being paid. The old charm of getting to the bush in the first real warm day to "tap" and start the camp still lingers, but more and more the business is taking on a commercial aspect, because of the value of the product for home use and sale. Its value is keenly realized by the housekeeper, with the frequent tendency of cane and beet sugars to soar in price. Owing to the peculiarly delightful flavor of well-made maple syrup, and the ease with which it can be kept for table use throughout the year, it enjoys an unique reputation, of which, unfortunately for its producers on the farm, greedy and unscrupulous manufacturers take advantage by the sale of imitation products bearing misleading labels. There are "maple compounds," understood to mean a little pure maple syrup or sugar, probably of low grade, and the remainder of commercial brown or white sugar, molasses or glucose. Then, there are maple-flavored syrups, made of ordinary sugars-and-water-molasses, flavored with some extract resembling maple, and labelled with a brand that deludes the grocery customer into thinking that he or she is purchasing the genuine article. The shelves of stores in Eastern Canada carry a lot of this stuff, but it is particularly rampant in the West, where an inquiry prosecuted by Dr. J. F. Snell, of Macdonald College, showed that even some syrups labelled pure were evidently adulterated, and others represented as "compounds" or "mixture," contained little, if any, genuine syrup. Very often, townspeople or settlers asking for maple syrup are handed out the "compound," without explanation. Dr. Snell writes: "There appears to be very little distinction made in regard to price between syrups sold as pure and those sold as compound or maple-flavor. The cans varied considerably in size, but, reducing them all to the price per gallon, six samples sold as pure averaged \$2.50; two sold as compounds, \$1.96, and two sold as maple-flavor, \$2.37. I think you will agree with me that this indicates a very unsatisfactory condition in the Western trade."

Canada has built up a reputation for honest butter and cheese, by shutting down absolutely on sordid articles, and pure-food legislation is being developed to protect the interests of the people. What seems to be needed is the enforcement of a regulation that will make illegal the use of the word "maple" in brands or labels on products that are not pure maple syrup or sugar. This cannot be too clearly pressed upon the attention of the authorities at Ottawa.

Readers of "The Farmer's Advocate" should also bear in mind that new standards for maple syrup and sugar were promulgated by the Department of Inland Revenue, Ottawa, during the past year. In substance, the regulation requires that maple sugar shall not contain more than 10 per cent. of water, or syrup more than 35 per cent. water. Under "An Act respecting the adulteration of food and other products," the penalties for violations are very severe upon the maker who adulterates or the person who sells or offers for sale. Where the adulteration is deemed injurious to health, the first offence entails upon the maker ranges from a fine of \$50 and costs to not exceeding \$500 and costs or six months' imprisonment, or both; and for subsequent offences the fine ranges from \$100 and costs to \$1,000 and costs, or one year's imprisonment, or both. If the adulteration is deemed not injurious to health, the first offence entails upon the adulterator is not to exceed \$200 fine and costs, or three months' imprisonment; subsequent offence, not exceeding \$500 fine and costs or six months' imprisonment, or both, and not less than \$100 fine and costs. In case of the sale of adulterated products injurious to health, the penalties prescribed are a first offence not exceeding \$200 and costs, or three months' imprisonment, or both; subsequent offences, \$500 and costs, or six months' imprisonment, or both, and not less than \$50 fine and costs. If not injurious to health, the penalty for each offence in selling or offering for sale ranges

from \$5 fine and costs to \$100 and costs. If the seller can prove want of knowledge, and produce a warranty, he will be liable only for the costs.

Upon receipt of a copy of the Act and Departmental regulations, "The Farmer's Advocate" at once wrote the Deputy Minister, W. J. Gerald, at Ottawa, as to how farmers making maple syrup and sugar were to safeguard themselves in putting these products upon the market. This crucial question he referred to the Chief Analyst of the Department, Dr. A. McGill. Under date of February 14th, 1912, we have from the Deputy Minister, Mr. Gerald, the following reply:

"I am advised by the Chief Analyst that maple syrup should weigh 13 pounds 3 ounces per Imperial gallon, in which case it is sure to meet the legal requirements as to water content; and further, that an ordinary hard-maple sugar does not contain more than a legal amount of water."

The weight of syrup per gallon depends upon its density, secured by boiling, and, upon weighing one gallon of last year's syrup, we found it considerably over the weight, 13 pounds, 3 ounces, above suggested. In syrup-making, using the saccharimeter (syrup Baume, 60 F.), we have observed that, when placed in hot syrup, and rising to between 31 and 32 degrees, a sufficiently dense syrup has been made. Most customers prefer a thick or heavy syrup, but others like it lighter and more fluid. At 32 degrees, we have observed considerable trouble through the heavy syrup subsequently going into crystals in the jars, or causing breakage and loss.

A simpler method of testing is by the use of the syrup thermometer, graduated from 70 to 260 degrees, placed in the back section of the evaporator, where the syrup is finished boiling. When the mercury rises to 219, a standard of 13 pounds 2 ounces to the gallon is reached, but some makers find that too thick, as the syrup "candies," and the practice has been to let the less dense syrup flow in till the mercury falls to 215, showing an average temperature of probably 217. Speedy work from the time the sap leaves the tree is advisable, and the early "runs" of sap require less boiling to make a sufficiently heavy syrup than later in the season, and it has also a better appearance and flavor. By occasionally weighing a gallon and the use of one of the tests, makers can readily keep their product up to the standard proposed, but it will perhaps be found that 13 pounds 3 ounces will result in candied syrup, and is therefore needlessly high.

## THE DAIRY

### Spotting the Star Boarders.

"Every cow-keeper runs a boarding stable," writes Malcolm H. Gardner, Superintendent of Advanced Registry for the American Holstein-Friesian Association. As the first step towards profitable cow-keeping," he goes on to say, "it is up to the owner to 'size up' his herd—to learn which cows are paying fair to good prices for board and lodging, which are just paying for the food consumed, and which are beating him out of board.

"There is but one way to learn this, and that is by means of the scales and the Babcock test. All that is required in addition is some pint fruit jars, each with the name of a cow pasted on, is a 25 cubic centimeter tube or an ordinary glass tube called a milk-thief, and some corrosive sublimate tablets. The jar is to hold the composite sample, the tube to take that sample, and the tablet to preserve it. It is not absolutely necessary to weigh the milk all the time, although it would be better; for, if a man will weigh for but three days near the middle of each month, get the average for one day, and multiply by the number of days in the month, he will know very closely how much milk each cow has produced during the month. Then, if during these three days he will take a sample from each milking for each cow, and either test those samples himself, or take them to a creamery and hire the buttermaker to test them, he can learn the average per cent. fat in the milk of each cow, and so compute the fat for all of the cows.

"When he has tested for one lactation period, and made the acquaintance of the individual cows in the herd, he is likely to conclude that Spot and Brindle could give pointers on putting up a front to any confidence man, and to wonder whether he had better wait for the cow-buyer to come along or offer them to neighbor Smith, who buys on looks, never tests anything, and so would never know the difference, anyway. Having found that he has been a mark from the cow standpoint for years, he will have little confidence in himself, and none whatever in any cow till she has proved to him through test that she is making good. He will take an interest in test work of all kinds, and will begin to think about obtaining the use for his best cows of neighbor Jones' bull, whose dam he hears has a 30-day official record of 2,400 pounds of milk containing 84 pounds of butter-fat."