

Denatured Alcohol in Germany.

Editor "The Farmer's Advocate":

"The Farmer's Advocate" of the 21st May last contained a very interesting article by Mr. Frank M. Lewis, on "Alcohol for Farm Use." This is an important subject, for, without a doubt, alcohol is a clean and efficient fuel, and well adapted for the production of light, heat and power on the farm. But, as pointed out by Mr. Lewis, the cost of alcohol in Canada prohibits its use for these purposes.

The reason for the high price of alcohol is that our Government, like the governments of many other countries, levies a high excise duty on this article. Recently some of the European countries and the United States of America have removed this duty, excepting when it is to go on the market as a beverage. To distinguish the duty-free alcohol, it is rendered undrinkable, or unfit for use as a beverage, by adding such materials as wood alcohol, turpentine, benzene, pyridene, etc., the material and the quantities employed depending upon the purposes for which the alcohol is to be used. It is then known as "denatured" alcohol.

In Germany the retail price of this denatured alcohol (95 per cent. by volume) is about 28 to 30 cents per gallon, the 90-per-cent. article being 27 cents. In the United States, where the law allowing the use of denatured alcohol came into force only last year, the price is 55 cents for a single and 50 cents per gallon in ten-gallon lots. In this country, denatured alcohol (free of excise duty) has been for many years supplied, under certain restrictions, by the Department of Inland Revenue, at Ottawa, for scientific and industrial purposes, 90 to 95 per cent. alcohol, in ten-gallon lots, being purchasable in this way at \$1.08 per imperial gallon (see "The Farmer's Advocate" of July 19th, 1906, pages 1142-1143). So far as Canada is concerned, therefore, the agitation merely looks to the cheapening of the product, by permitting its manufacture and denaturation by private enterprise, under Government supervision.

The petroleum oils are the chief competitors of the fuel alcohol. For power purposes, gasoline and alcohol are approximately equal, while for lighting purposes, it has been quite fully demonstrated that with two lamps of equal candle power and equal capacity, a gallon of alcohol possesses about twice the illuminating value of kerosene; and, in addition, the white light furnished by the alcohol lamp is preferable to the yellow light of the kerosene lamp. Furthermore, the alcohol is a safer and cleaner material to handle than either gasoline or kerosene, and does not produce offensive odors.

In Germany, where gasoline and alcohol cost the same per gallon, very large quantities of the latter are used for fuel purposes, but, so far as I am aware, it is not extensively used for power purposes on the farms of that country. In the country to the south of us, alcohol, even at fifty cents per gallon, will have difficulty in competing with the cheaper petroleum oils. It is, however, the hope of those interested in its use that the price may be further reduced.

In connection with the manufacture of the alcohol, there is a very common belief that if our excise duty were removed every farmer would be able to make alcohol for lighting and power purposes from the low-grade and waste material on his own farm. There are several reasons why this is not possible. In the first place, contrary to an apparently general idea, the cost of a still capable of producing a product with a high per cent. of alcohol, even though its daily capacity is not over twenty-five to thirty gallons, is considerable. This, together with the other machinery necessary, renders it too expensive a project for the individual farmer.

Further, it is stated by those who have had experience in the matter, that it is very doubtful whether a distillery with a capacity of less than 100 gallons per day can be worked profitably.

Mr. Lewis states that there are over 71,000 small stills, costing about thirty-five dollars each, in use in Germany for manufacturing alcohol. Upon inquiry I found that there were about 67,000 small pot stills of the type mentioned, which are used in distilling fermented fruit juices, practically making brandy, and about 14,000 large continuous stills, producing high-proof alcohol. With the small pot stills it is not possible to make a product with more than about 50 per cent. of alcohol, unless it is by redistilling several times, which would be expensive. For fuel purposes, alcohol must be about 180 proof, or of about 90 per cent. purity, after adding the denaturizing materials. To produce this grade of alcohol, it is necessary to use a continuous still. So far as I was able to learn, practically all the alcohol made in Germany for fuel purposes is made in these large continuous stills. Upon inquiry I also found that it is expected that the fuel alcohol of the United States will be made in this way.

Another point upon which there appears to be some misunderstanding is with reference to the denaturation. It is commonly believed that after adding the starchy materials, it is only necessary

to add the required amount of ordinary yeast and hold the mass at the desired temperature to secure the proper fermentation. The truth is, that unless a specially-prepared practically-pure culture is used, a great variety of products will be formed, and a poor yield of alcohol result. For this and other reasons, it is almost imperative that the operation of an alcohol plant must be in charge of an experienced person, and that the process be continued day after day, until all available material is used up.

There is no doubt of the fact that much waste material around canneries, low-grade grains on the farm, etc., can be used in the manufacture of alcohol for fuel purposes; and, further, judging from the experience of others, at present it looks as if, should our Government give us tax-free alcohol for fuel purposes, it would have to be made co-operatively, as our cheese and butter is to-day.

There is also no doubt regarding the fact that alcohol is a good material for light, heat and power purposes, but we must not forget that gasoline is about its equal, gallon for gallon, except that alcohol is much safer to handle and is very much cleaner; also, that we will have to have the alcohol at a lower price than the denatured article is being sold in the United States before it can be used economically. R. HARCOURT.

THE DAIRY.**More Co-operation in Cheese-making.**

The principle of co-operation among groups of cheese factories in such matters as the purchase of supplies, is one deserving of attention during the present winter. Judging by some experience in this direction in the past, it would seem desirable not to project such movements on too large or cumbersome a scale. The Prince Edward County Cheesemakers' Association may be cited as a good example. It was organized in 1906, and has a couple of dozen members, who have found it a factor in promoting the progress of cheese dairying in that district. In the purchase of rennet, coloring, boxes, bandages, etc., by tender, in bulk, for all the factories, a leading maker advises us that he has effected a saving on his requirements ranging from \$50 to \$75 per season. By making suggestions in regard to the work of instruction and inspection, and otherwise, the members have been able to promote their interests. W. S. Blakely is president for the current year, and G. A. Sheriff, of Bloomfield, secretary. Following is a copy of the constitution under which the organization is working; it will be of interest in other counties where the formation of such organizations may be under consideration by factorymen and makers:

Article I.—The undersigned have associated, and do hereby associate themselves together for the purpose of forming a corporation under the statutes of the Province of Ontario, and the acts amendatory thereof and supplementary thereto, the business purpose and object of which corporation shall be the education of its members for better work in the art of cheesemaking, the care and management of factories, the sale of their products, and the weeding out of incompetency in the business of cheesemaking, together with any honorable schemes of interest and value that may come before this association.

Article II.—This corporation shall be known as the "Prince Edward County Cheesemakers' Association," and the membership fee, until further notice, shall be one dollar (\$1.00) a year.

Article III.—The Association shall be a corporation without capital stock. Any person who is a practical cheesemaker, and such other persons as are directly interested in the manufacture and sale of unadulterated cheese may become members of this Association by paying the membership fee, but his admittance shall be subject to the approval of at least the vote of two-thirds the number of qualified members.

Article IV.—The general officers of said Association shall consist of a President, Vice-President, Secretary, Treasurer, and an Honorary President, if the latter is available. There shall be a Board of Directors consisting of five members of the Association. The term of officers of the Association shall be one year, or until their successors are elected at the next annual meeting following their election, and until such successors qualify. The election of officers shall be by ballot, except in case of a single nominee, when election by acclamation may be substituted. A majority of all the votes cast shall decide an election. The annual meeting shall be held on the second Wednesday in March each year, and a regular meeting every three months during the year.

Article V.—Sec. 1. The principal duties of the President shall be to preside at all meetings of the Board of Directors and of the members of the Association during his term of office. He shall appoint special committees, and sign all orders drawn on the Treasurer.

Sec. 2. The Vice-President shall assume the duties of the President in the latter's absence.

Sec. 3.—The principal duties of the Secretary of this Association shall be to keep a complete and accurate record of the proceedings of the Board of Directors and of the Association, and to attend all meetings, and keep a correct account of the finances received, pay all moneys in to the hands of the Treasurer, and receive his receipt therefor, and to countersign all orders for money drawn upon the Treasurer. He shall keep a record book and suitable blanks for his office. He shall make a full and complete report at each annual meeting of the correct state of the finances and standing of the Association. He shall also procure certificates of membership, and every person joining the Association shall receive one signed by the President, and countersigned by the Secretary.

Sec. 4. The principal duties of the Treasurer shall be to faithfully care for all moneys entrusted to his keeping, paying out the same only on receipt of an order signed by the President and countersigned by the Secretary. He shall make at the annual meeting a detailed statement of the finances of the Association. He must keep a regular book account, and his books shall be open for inspection at any time by any member of the association.

Sec. 5. The said officers shall perform such additional or different duties as shall from time to time be imposed or required by the members of the corporation in annual meeting, or by the Board of Directors, or as may be prescribed from time to time by the by-laws, and any of the duties and powers of the officers may be performed or exercised by such officer or officers, or such person or committee, as the corporation or Board of Directors may authorize.

Article VI.—Any business transacted or resolutions passed by a majority of the members of this Association at any annual, regular or special meeting shall be lawful and binding upon all the members of this Association.

Article VII.—These articles may be altered or amended at any regular session of an annual meeting of the members, provided the proposed alterations or amendments shall have been read before the Association, and provided, also, that such alterations or amendments shall receive a two-thirds vote of the members present.

Inferior Cows Sold.

Editor "The Farmer's Advocate":

I feel certain, from experience, that the co-operative testing of cows is a good thing. I have a dairy, and sell milk in the city from house to house, and I endeavor to give the people milk such as I would like to use myself, and, therefore, I adopt every means of obtaining good, clean, rich milk. I made a great effort to have an association formed in this neighborhood. At last I was successful in having an association formed in April, 1907, with some eighteen members. All are well pleased with the results, and are anxious to continue.

I have received good from it, as it was the means of pointing out to me the cows that were not giving milk rich in butter-fat, as well as small yield, during the year. Some cows give a great flow of milk for a few weeks, but, by these cow-testing associations one can find out definitely how much his cow gives during the year, both as to quantity of milk and to pounds of butter-fat. Thus, it has become, and is becoming, very popular in our district. The people are desirous of continuing it. It has created quite an interest in the minds of the farmers concerning the matter. Many are culling their herds, and are disposing of their inferior cows. From the results of our association, other associations have been formed, and thus the good work goes on. Oxford Co., Ont. J. M. POWELL.

A Good Average for Shorthorn Grades.

Editor "The Farmer's Advocate":

In reply to your inquiry, would say that I belong to the Milton Cow-testing Association, formed April 13th, 1907, composed of 26 members, although testing on the part of some of them has been very spasmodic.

I must say that the Association has been very beneficial to me, as it has shown clearly in black and white each cow's value. My herd, which is composed of eight cows, ranged from 9,170 lbs. milk and 343 lbs. fat, to 5,200 lbs. milk and 172 lbs. fat. The average cow was about 7,000 lbs. milk and 275 lbs. fat. These cows are all Shorthorn grades, of fair breeding, with one exception. Record, from April 12th, 1907, to April 12th, 1908, although some cows were dry longer than others.

The movement is not yet popular, but I would like to have it continued, and will do all in my power to help it along. To a certain extent, it has awakened interest in the cow question. Although I have not sold any of the cows as yet, I shall turn off two of the tail-enders as soon as they are fit for sale. FRANCIS HADLEY. Hadley Co., Ont.