

Dairy Progress in Denmark.

(Condensed from Farmers' Review Stenographic Report of Wisconsin Dairy-men's Convention.)

Prof. Woll of the Wisconsin Agricultural College read a paper on Danish butter exhibits, from which we make the following extracts:

Denmark is not more than one-fourth the size of the state of Wisconsin, and has but a slightly larger population, yet the agricultural exports of Denmark amount to \$57,000,000 annually, and England last year paid her a butter bill of \$36,000,000—more than three times the value of butter made in Wisconsin last year. There is no country in Europe that produces as much food as Denmark in proportion to population and area. Her total agricultural exports per inhabitant are worth over twice as much as this great agricultural country of ours.

In looking the matter up, we find that this showing is due to the growth during only a few decades. The net exports of butter thirty years ago was less than 10,000,000 pounds. The net exports are now more than double what they were only ten years ago, an increase of nearly 60,000,000 pounds. Up to the year 1870 Denmark was essentially a grain-growing country; but low prices drove the Danish farmer into dairying. The number of cattle kept at that time was only about 200,000 less than now, but methods have changed. Then the cows were underfed in winter, calved in spring, and made only a good quality of butter when on abundant grass. The butter was not handled properly, and brought a low price on the market. All has changed. Cows now largely calve in the fall, and give their largest butter products when the price is highest. The maximum products have not probably been reached. But Denmark exports other products. In 1875 her net bacon exports were 7,000,000 pounds, but in 1893 they were 115,000,000 pounds; the net export of eggs 3,500,000 dozen in 1875, and 20,000,000 in 1898.

The causes that have produced these results are primarily co-operation between the farmers and the government. One of the measures that has had the greatest influence is the permanent butter exhibits, under control of the government. The object aimed at was to secure co-operation between the dairies and creameries on one hand, and the state dairy instructors, the butter dealers and the experiment station on the other, so that problems connected with the making of high-grade products could be studied from different points of view, and the creameries thus be helped over difficulties met with, and the quality of the butter produced gradually raised to the highest possible standard. Then, also, it was desired to secure data concerning the water contents of Danish butter, the loss of weight of butter in storage, and other questions of importance. The last report issued, for the year 1898, gives 748 creameries that are sending their butter to the exhibits out of 1,145, the total number of co-operative creameries in Denmark.

The plan of the Danish system of butter exhibits is as follows: When notified by the experiment station, the creameries send a tub of their regular make to the station, where the butter is put up for this purpose. Here the tubs of butter are scored by expert butter judges a couple of days after they have been received, and again fourteen days later. The butter is scored independently by three different groups of judges of four judges each, three butter dealers and one of the state butter instructors. The butter represents the regular everyday make of the creameries, as the managers are unaware when they will be called upon to exhibit. The station pays the regular market price for each tub received, and when done with the butter sells for what it will bring. For this work the government now appropriates about \$10,000 annually.

The Danes have one difficulty to contend with that our butter-makers know nothing about, the danger of the water containing an excessive percentage of water. The average percentage of water in Danish butter is about 13.75 per cent, but occasionally the water contents will exceed 16 per cent, and sometimes even 20 per cent. Our American butter generally contains less than 12 per cent of water, and seldom goes over 15 per cent. As butter sold in England is considered adulterated if it contains over 16 per cent of water, it was necessary to remedy the defect in Danish butter. The butter of excessive water contents was always scored lowest by the judges. Butter containing a medium per cent of water was found of better quality and kept better than butter of either abnormally high or low water contents. As the quality of the butter has been gradually improved from year to year by the disappearance of poor grades in the exhibits, the average water contents has been slowly raised.

The longer the interval between the salting and the last working and the greater number of workings that are given the butter the less water will this contain. It has thus been shown that the water contents of the butter can be kept below 16 per cent by proper methods of manufacture.

The effect of shrinkage in weight due to leakage of brine has also been a subject of study. It was found that there is no connection between the per cent of water found in the butter and the leakage of brine. Very dry butter may leak brine on being left in storage, while a tub containing several per cent more water may not leak brine at all. The leakage is due to the water being present in a relatively small

number of very large drops, while a butter that does not leak brine may contain more water, but it is pressed in a relatively large number of very small drops.

The experiments on pasteurization of cream for butter-making were a direct outcome of the butter exhibits. The last report published, 1898, states that only 5 out of the 713 creameries then taking part in the exhibits did not make pasteurized butter, and the tubs exhibited by these creameries scored lowest, for the reason that the butter was scored according to the present demands of the export market, but if scored for the American market might have ranked better than many of the pasteurized samples.

Q.—Is there any attempt made in Denmark to teach the rudiments of agriculture in the public schools?

A.—Not in the general public schools; but they have rudimentary agricultural schools, where they build on what the pupils have learned in the general public schools. Those schools are supported in part by the government and in part by local effort or by matriculation fees.

Q.—In pasteurizing in Denmark, is the object to change the flavor of the butter, or is it done to protect the public from disease, or is it done to make the butter keep longer?

A.—Principally to make the butter keep longer. Butter from pasteurized milk has a peculiar flavor that has now come to be in demand in the English market. It was by an accident that the Danes started to pasteurize their milk in 1888. The butter of one creamery was so bad, due to bad flavor in the milk, that the creamery owners called on the experiment station for help. The station officials advised them to try pasteurizing the milk, which they did, with the result of a wonderful improvement in the quality of the butter, which also kept better than the butter made in the ordinary way. Since that time the process has come to be almost universally adopted.

Q.—Does the salt in Danish butter exist in the form of brine or in the form of grains?

A.—It should be present only in brine.

Q.—Which butter, salted or unsalted, contains the most water?

A.—Unsalted butter.

Q.—Does salting the butter add weight to it?

A.—I think that it does some.

Mr. Goodrich—It has been found that Danish butter contains more water than American butter, but it does not look that way. The English claimed that our butter shipped over there contained too much moisture, but when they came to analyze it they found that it was not so.

Prof. Wall—That is so; you can't tell anything about the water contents by appearances.

Q.—Does not pasteurization have some influence on the amount of water in the butter?

Prof. Wall—I can't say.

Mr. Amend—My butter is made from pasteurized cream, and it looks very dry; but analysis shows that it has a good lot of water.

Q. (of Mr. Amend)—Do you work the butter you make from pasteurized milk as long as you do the butter made from unpasteurized milk?

Mr. Amend—Only half as long.

Q.—Has the fear of tuberculosis anything to do with pasteurization by the Danes?

Prof. Wall—Something. There is a scare there over tuberculosis; but it is not the primary reason for pasteurizing. All the buttermilk and skim-milk must be heated to 185 degrees before being returned to the patrons for feeding purposes.

Q.—Will salted or unsalted butter from the same cream weigh the most?

Prof. Wall—If the butter is merely well drained and not thoroughly worked, adding and working in the salt will make the butter lighter in weight. That, too, will depend to some extent on the size of the grains of the butter, but it varies.

Mr. Thorpe—A number of years ago we were making butter in a small way—fourteen pounds twice a week. We got to selling our fourteen pounds of butter to a creamery without working it; we simply left it in the grain after draining out all water possible. After while we came to the conclusion that we would salt and work the butter ourselves. We did so, and could never get more than twelve pounds out of it. We found that we lost two pounds more water than we put in salt.

Q. (of Mr. Amend)—Where do you sell your unsalted butter?

Mr. Amend—In New York, to Jews; it is made without color and without salt.

Q.—Do you get more or less for it?

A.—A little more.

Prof. Wall—In all the cities there is a call for fresh butter, and I think that in the future there will be a demand for lighter salted butter.

Mr. Ward—I saw a sixty-pound tub of butter salted, and the weight was increased one and one-half pounds.

Mr. Thorpe—The butter to which Mr. Ward refers had been worked and packed, and mine had not, and that makes the difference.

Mr. Jacobs—We always weigh the butter before salting, and I find that adding four pounds of salt to sixty pounds of butter takes away about four or five pounds from the total weight.

Mr. Gale—We have found that when we add six pounds of salt to 100 pounds of butter it will give us a result of only 95 pounds of salted butter.

Mr. Trowbridge—I think that salting brings out the flavor.

Though corn is a surface feeder, some of the corn roots get down to a depth of four feet below the surface.

Tuberculosis Instruction.

Consul Covert of Lyons, France, under date of September 13, 1899, transmitted to the department of state the following translation of instructions published by the League for the prevention of tuberculosis, which disease is, if anything, more common in France than it is in the United States. According to the statistics collected by the League, one person out of every six in that country dies of consumption:

"Tuberculosis, of all diseases, is that which has most victims. In large cities they make up from one-fourth to one-seventh of the mortality.

"To explain this high figure, it must be understood that pulmonary phthisis is not the only manifestation of tuberculosis, as is erroneously believed. In fact, many cases of bronchial troubles, of pleurisy, of meningitis, of peritonitis, enteritis, of osseous and joint lesions, cold abscesses, etc., are of the same nature.

"Tuberculosis is an infectious, parasitic disease, caused by microbes; but it can be caught by a healthy person from a patient only under special conditions, which we will state.

"Besides hereditary transmission, the tuberculosis microbe enters the human organism by the air in breathing, through the digestive organs in eating, through the skin by stings, scratches, sores, wounds, ulcers, etc.

"The most frequent and the most dreadful source of contagion lies in the expectoration of consumptive patients. Almost harmless while in a liquid condition, it becomes dangerous when reduced to powder. It assumes that form often when spat upon the ground, the floor, or upon a wall; when it falls on clothing, bedclothes or sheets, curtains, handkerchiefs, napkins, etc.

"When dried and in powder, it is stirred by the dust cloth, the broom, brush, or carpet beater. This dust, suspended in the air, enters the respiratory organs, falls upon portions of the body, upon objects used in cooking, plates, and dishes, and thus becomes a permanent danger to persons sojourning in the contaminated atmosphere. The germs of contagion also exist in the evacuations of the patients, produced either by saliva swallowed, or by intestinal lesions so common in such diseases.

"It is indispensable therefore—

To take the most careful precautions regarding the expectoration of consumptives. It should always be ejected into porcelain or glass spittoons, containing a certain quantity of liquid; and not in such matter as sawdust, bran, sand, or ashes. The handkerchief, upon which the patient should wipe his lips only, and upon which he should never spit, should be renewed every day.

"The contents of the spittoons should be mixed with sawdust or some other combustible and burned, or at least emptied into the water-closet. If emptied into a yard, they may tuberculize fowls or allow microbes to spread through the air. No known disinfectant is powerful enough to rapidly destroy the tuberculous microbes contained in saliva; therefore, the contents of spittoons should be destroyed by boiling or thrown into closets. At the same time, there should be poured into the closets a solution of chloride of lime. It would be safer to mix the saliva with sawdust and burn it.

"Spittoons should be used, not only in hospitals and private houses, but also in depots, barracks, and all places for public meetings.

"These precautions should be taken in reference to all diseases that occasion much expectoration, because pneumonia, inflammation of the chest, congestion of the lungs, measles, whooping cough, catarrh, certain forms of bronchitis, laryngitis, etc., may be communicated by saliva dried and converted into dust.

"Clothes soiled by a consumptive patient should be left some time in boiling water before being washed.

"Avoid sleeping in a room with a consumptive patient, and remain in it as little as possible, unless the above-mentioned precautions are taken in regard to saliva.

"Rooms in hotels, watering places, etc., occupied by consumptives should be so furnished and carpeted that disinfection can be readily accomplished after the departure of a patient.

"After the death of a consumptive, the place inhabited by him should be carefully disinfected and thoroughly aired. New tenants should see that these precautions are taken.

"After the death of a consumptive, all his clothing and bed linen should be well washed before being used and the room thoroughly disinfected by sulphur vapor and washed with chloride-of-lime water.

"In private as well as public houses, carriages, omnibuses, hotels, theaters, etc., sweeping ought to be replaced by washing with a cloth wet with some antiseptic solution.

"The parasite of this disease may also be found in beef (above all, cow beef), poultry, rabbits, and milk. The latter should be boiled, or, better still, sterilized. Milk is sterilized by placing the vessel containing it in a tin pail full of water and letting it boil forty-five minutes. The habit of drinking blood at slaughterhouses is dangerous and without any salutary results.

"Some persons have a tendency to consumption and should be especially careful; for instance, those whose relatives have died from consumption or who are feeble from privations. The abuse of alcoholic liquors is particularly favorable to consumption. Over 2,000 infants under 2 years of age die annually of consumption in Paris.

"This disease is curable, where it has not advanced too far, for those who

are willing to submit to long months and sometimes years of treatment and repose in special sanitariums."

When to Cut Alfalfa.

For the past five years the Utah Experiment Station has been carrying on a line of investigation to determine at just what time in its growth alfalfa should be cut for best results, composition, annual yield per acre and feeding value all being taken into account. In connection with this work the feeding red clover has been compared with that of such well-known roughage crops as timothy hay, corn fodder and alfalfa.

For this experiment a field was divided into three equal pieces, one being regularly cut when the first blooms appeared, the second in full bloom, and the third when half the blossoms had fallen, these being denominated early, medium and late cuttings respectively. Incidentally there was made a comparison of the first, second and third crops.

The details of this investigation are reported in Bulletin No. 61 of the Utah station, a copy of which may be obtained by addressing the director at Logan. Below are given the more important facts, together with the conclusions that may be legitimately drawn from the results:

1. The largest annual yield of hay per acre is obtained by the method of early cutting, and the lowest by the late, the average result standing as follows: Early cutting, 100; medium, 92, and late, 85.

2. The early cut alfalfa contains the greatest per cent of protein and fat, the most valuable food constituents, and the lowest per cent of crude fiber, former decrease constantly, while the latter increases rapidly from early bloom to the full maturity of the plant.

3. The proportionate amount of leaves to stems is greater at early bloom than at any subsequent time, and both leaves and stems contain a greater per cent of protein and a less per cent of crude fiber at this time than at any later period of the growth of the plant. The relative proportion of leaves to stems in the different cuttings is as follows: Early, 42 to 58; medium, 40 to 60; late, 33 to 67.

4. Alfalfa leaves as compared with stems are very much richer in protein, fat and nitrogen-free extract, and they contain a much smaller proportion of crude fiber. The per cent of the protein and fat grows constantly less and that of the crude fiber greater from the time of early bloom to maturity. The average composition of all cuttings and crops shows the leaves to contain 150 per cent more protein than the stems, 300 per cent more fat, 35 per cent more nitrogen-free extract, and 56 per cent less crude fiber.

5. The more important nutrients, protein and fat, have the highest per cent of digestibility in the early cuttings, and it grows less and less with the age of the plant.

6. In the feeding tests, the highest gains were made from the early cuttings and the lowest from the late, the results standing proportionately as follows: Early cutting, 100; medium, 85, and late, 75.

7. The variation in the amount of the different cuttings eaten per day was very slight, being the highest for the early cutting and the lowest for the late, but the quantity of dry matter and also of digestible matter required for a pound of grain was decidedly lowest for the early cutting and highest for the late, the relative amounts of dry matter standing as follows: Early cutting, 100; medium, 131, and late, 166.

8. The annual beef product per acre was largest from the early cuttings, not only in the general average, but in each separate season's test, and that from the late cuttings was smallest, the proportional products standing as follows: Early cutting, 100; medium, 79½, and late, 69½.

9. Taking all points of comparison into consideration, both separately and collectively, including everything that pertains to the largest yield and highest feeding value, the tests favor cutting alfalfa for cattle feeding when the first blooms appear.

Bruises.

When the little one falls and sustains a bruise, some old-fashioned remedies are about as good as anything that can be suggested by the physician or the surgeon, says Dr. Julia Holmes Smith in Ledger Monthly. When soft, muscular tissue comes in contact with a hard substance there is a rupture of the tiny blood vessels, and the blood oozes, out in the surrounding tissues, and the result is black, green and blue discolorations which we associate with bruises. Nature immediately commences to restore all these vessels, and really no external application is of any good except to protect the part and allow Dame Nature to do her work. This is true of any wound, and the idea that such and such a thing is a healing substance is really a mistake; but naturally one is eager to do something for the little sufferer, and our grandmothers were not far wrong when upon a bruise they bound a bit of fresh beefsteak, or brown paper soaked in vinegar, or bit of cotton saturated with diluted arnica. The swelling goes down, and there is relief to pain, and Dame Nature is helped in her work. The pressure of such an application promotes the re-absorption of the blood, and some of these applications effect a deadening of sensation to the wound.

The prices of pure bred cattle has come up better and quicker than the prices of cattle of poorer breeding. It pays to cater to the men that want the top of the market.

A Faithful Foster Mother.

In all branches of animal and bird life the foster-mother is to be found, and there have been many family gatherings quite as strange and unusual as "the wolf and the lamb feeding together, and the lion lying down with the ox." But without doubt one of the most remarkable instances of a creature fostering the young of an entirely different species was that of which many of our readers may have heard recently, says Everybody's Magazine.

Early in October a cat and five kittens were found one morning comfortably ensconced in the hayloft of a stable at Brockenhurst. They were not wanted there, and so the men about the place removed the happy family to a crib in the stall where a broody but persistent hen had been for many days sitting upon some china eggs.

All went well at first, and the little party seemed comfortable enough, but before long sounds of a struggle were heard and the cat left her little ones with a good deal of haste; in fact, she gave every indication of having been wonderfully helped in her exit from the new homestead.

An investigation was at once made by the stablemen, who found to their astonishment that the broody hen had taken up her place as a foster-mother of the kittens. She was not to be turned out of her nest, and had soon settled differences with the cat.

But she by no means extended her resentment to the tiny kittens. They to her were as dear as the chickens which she could not hatch from the china eggs, try she ever so hard.

She would coo to them and do her best to amuse them, and when they became restless, she did not fail to exercise her maternal abilities in keeping the little creatures well within bounds. Sometimes, while attending to one side of her nest, a kitten would stray from the other. But the foster-mother was not to be so evaded. The kitten would soon become known to the hen, and she would at once leave her place and search till she found the truant, and persuaded it by pushing and other means within her power to return to the old homestead.

Of course it was necessary that the cat should be allowed to approach her offspring from time to time, in order to exercise her right and privileges as the actual mother of the kittens on such occasions, but the hen had to be forcibly removed and the door barred against her. No sooner, however, was it opened again than the hen would drive out the cat and resume her place as head of the household.

At night the hen spread her wings over the little animals just as though they were chickens, and certainly they seemed to like the cosy warmth of their feathered quilt.

Although other birds often act the part of foster-mother to broods of an alien species, the common fowls seem particularly adapted for such a peculiar office.

Hilling Potatoes.

There are those that advocate hilling up potatoes, and there are others that oppose the practice. The latter people are sometimes inclined to pass as reformers and imagine they will have accomplished much good if they can accomplish in making level culture of potatoes universal. We have heard men declare that the hilling of potatoes in this country is due to our habit of following a custom long after the circumstances that gave it birth have ceased to exist. They say that the Irish hilled them up to keep them out of the excessive wet, and that now no excuse exists for the practice. But those that are advocating change in this matter should not be too sure of their ground. There is much truth in the argument they make, but it is not all truth.

Whether level or hill culture is the best depends on local conditions, and general rules cannot be formulated. More than that, seasons differ in their dryness and wetness, and the variations of rainfall make an immense difference in the results. We know a man that followed level culture of potatoes successfully for a number of years and advocated it. But one year the rains during the whole growing season were excessive, and the heavy ground in which his crop was growing was constantly soaked and sometimes water was standing on it. The neighboring fields that had the rows elevated gave fair results, but the level culture fields were drowned out. Perhaps a well drained field even in such a year would have given good results; but it is a fact that many fields that should be drained are not. On low fields, with heavy soils, level culture of potatoes is often unsafe. The progressive farmer will learn how to adapt principles to his local conditions.

Dairy Notes.

The question is now open to discussion whether or not salting butter causes the moisture to be expelled, otherwise than that expulsion that is due to working. Granular butter that has been drained as dry as possible and even permitted to drain for a day or more weighs more than the same amount of butter after salt has been added to it. Some dairymen believe that the only expulsion of water is due to the working that expels the water, while others believe that the salt causes the water to collect in larger drops, and thus flow out more easily. To the writer it looks as if the expulsion of the water is merely due to the mechanical working, and to nothing else. This view, however, may be erroneous.

The making of a dairy exhibit in Paris is only bread cast on the waters,

but it should be made all the same. We will do well to advertise our products, even if we can see no way by which it will benefit. Frequently such exhibits have very unexpected results. Major Alvord, in reply to a question as to the reason for making the exhibit, said that it was merely with the hope of future good. We believe, however, that its reflex influence on American dairy products will more than repay the cost of the exhibit, if it does not result in the selling of a single pound of butter or cheese to any foreign buyer. It will tend to raise the quality of those products in this country, and the raising of those products in this country even a single point means the enlargement of our own market by increasing consumption. The exhibition held in Philadelphia in 1876 had a very marked effect on our dairy products, and the Columbian exposition stimulated anew dairy endeavor. From the exhibits at the Paris exposition will come most valuable comparisons, and it would be a pity if American butter and cheese were not in competition with the rest of the world at that place.

The Farmers' Review has repeatedly asserted that under existing conditions the butter-makers of America cannot hope to obtain a foreign market for butter, due to the fact that the Americans are always ready to pay more for good butter than foreigners will pay for it. The attempts to make a market in China, Japan, India and in any part of the Asiatic continent are doomed to failure from the first, unless the people in those countries are willing to buy and eat a very low grade of American butter. Water will not run up hill, unless forced up mechanically. The London butter market is generally lower than the butter market in the big cities of the United States. At the dairymen's convention held in Watertown, Wis., last week, Major Alvord was asked how it was possible to build up a market for our butter in foreign lands when the price of butter in those lands is lower than in the United States. His reply was that "because of that fact the only market that has any hope in it for American butter is the London market, and even that market cannot be supplied as prices are now. He was asked, "What about China and Japan?" He replied, "There is nothing about them," meaning that the low prices those markets will pay make it impossible for us to look to them for a place to dispose of our products.

Agricultural Implement Outlook.

The first thing that strikes the average purchaser of agricultural implements in this year of grace 1900 is the advanced prices he is expected to pay over those prevailing in recent years, says Agricultural Advertising. This advance in most lines amounts to from 15 to 25 per cent, and as the advance in the price of farm products has not been correspondingly great, the farmer very naturally regards the increased cost of his tools and implements a hardship.

The manufacturers of agricultural implements have been greatly disturbed by the necessity of this advance in prices. Whenever two or three manufacturers have met, the subject has been discussed with many misgivings; but they have been confronted by a condition and not a theory, and they have consequently been helpless to do other than demand more money for their products.

The cost of raw material during the year 1899 made advances unprecedented in the industrial history of the United States. For example, bolts and nuts have advanced 135 per cent; harrow discs, 115 per cent; corn planter and other wire, 80 per cent; rake teeth, 110 per cent; bar and iron steel, 125 per cent; cast iron, 100 per cent; plow steel, 75 per cent; pipe, round and square, 250 per cent; steel wheels, 65 per cent; harrow teeth, 125 per cent; steel springs, 250 per cent; lumber, 35 per cent; malleable iron, 85 per cent; plow and cultivator beams, 125 per cent; labor 10 per cent.

It is not difficult to see the reason for these advances. During the period of financial depression following the great panic of 1893 the mines and mills producing steel were operated on such an economic basis that no increase in facilities was possible. Many plants were closed entirely and underwent that deterioration which always results from non-use. As a consequence the unprecedented and world-wide demand which sprang up in the latter part of '98 found the iron and steel men unable to meet it, and an advance in prices was inevitable. Manufacturers all over the country deluged mills with orders by telegraph, offering any price for an immediate delivery of goods. We see the consequence in the table of prices given above.

Many manufacturers are today putting out implements manufactured from material partially contracted for before the sharp rise of materials, and are bearing a good part of the advance, which is a basis of the present cost. There is every indication that in the future they will have to pay even more, and consequently will be compelled to demand more for their products. It is therefore probable that purchasers of implements can secure better prices today than they can six months or a year hence.

For Borers.—Prof. J. C. Whitten gives the following remedy against borers: To one bucketful of white-wash put in 2 to 3 pounds copper sulphate and one spoonful of carbolic acid. It is better to use skim milk in place of water in mixing lime. Pour hot water on coppers. Mix when whitewash is cold. Apply on body of trees with a brush. This will not kill borers already in a tree but will keep borers from going in.