a little more, put to press, in good large sized cheeses, in about 15 minutes after salting, at a temperature between 80° and 83° F. Apply pressure gently at first, and in about 50 to 60 minutes take the cheeses out, pull up the bandage neatly, not leaving over 1 to 1½ inches on each end. Use warm water for the end cloths; see that you apply full pressure before leaving them for the night; turn them again in the morning, if possible; pare off the the corners or edges, have them in the press full 20 hours, keep the curing room as cool as possible, sprinkle occasionally with cold water during the hot weather, turn them every day, keep well greased, or the ends well covered with cap cloths, do not sell under 8 days, on the other hand do not hold too long. Stencil the weights and brands at the end of the lap on the box. Cut down your boxes level with the cheese. Give good weight; and shou'd you happen to make an inferior lot, do not put on your usual factory brand, but notify the buyer of them, and all will go well.

Yours respectfully

PETER MACFARLANE.

*General Inspector.*

St-Hyacinthe 3 May 1894.

## SHOTS FROM HYATT.

ED. HOARD'S DAIRYMAN:—If C. P. Goodrich would try partial soiling for his cows, and feed ensilage, rye, grass and ragweed, as I feed turnips, he would know more about "butter flavors" after awhile Cows eat leeks. One mess of milk is spoiled. Why? Ten hours have not passed since the leeks were eaten. Ten-hour turnips, ten-hour rye, grass, ragweed, leeks, and wild onions! Can t you get this through your head? Bro G., as usual, gets some things right; he's right and Brown's wrong about taints being mostly drawn in by the breath. Bad food and feed fed wrong are the potent factors.

Right again when he says "if the greatest part of a cow's food is turnips, the flavors will be very pronounced." A cow will eat from 4 to 6 bushels in a day, but who would be simple enough to feed so many? A townsman had a yoke of oxen that he wanted to make juicy beef of quick. He said the pair got away with 18 bushels of turnips a day. He laid gas pipe from the stable to the Onion river, and as that emptied into Lake Michigan, turnip flavor was "very pronounced."

He gives Mr. Morrison good advice about shipping butter. His reputation saved him for once. Mr. Goodrich says "a cow can be fed a small amount of turnips safely."—Probably 4 quarts to a little Jersey and 50 pounds to a grade Short-horn! I have claimed no more. The Hon. A. D DeLand, dairyman, factoryman, buyer, expert, has a nose that probably knows more about scents and taints than anyone's whole body in Jefferson county, Wisconsin. He can smell sour milk acros an 8 acre lot. While carrying milk to his factory I could feed my cows turnips and sweet corn one week, and oat meal and sweet corn the next, and he could not tell by the milk or its product what was being fed. After feeding heavy on turnips three weeks one fall, he said one morning "I hope you won t commence feeding turnips this fall till we are done making cheese." I promised not "to commence."

Bankers, editors, lawyers, deacons and saloon keepers have had my butter and wanted more—butter made when feeding rutabagas and turnips. My whole milk went mostly to Chicago, daily, last October, when my cows were eating more turnips daily than I ever fed them before. In all our leading hospitals now, a turnip diet is being prescribed for the sick, instead of salts and ginger, Do you see? A. X. HYATT.

Sheboygan county, Wis.

P. S. One silo filled in this town, of two cheese factories to each mile square, scores of dairyman feeding turnips. Our friend, H. K. Loomis, raised hundreds of bushels of flat turnips last year and he did not sell them. He, his wife and little daughter, and his three Jersey cows got away with them.

## FAT IN RELATION TO PRODUCT.

EDS. COUNTRY GENTLEMAN — Mr. Arning, page 333, does me an injustice, unintentionally doubtless, by perverting my meaning. My contention always has been, not that all the fat in the milk comes from the fat in the food, or that some of it may not come sometimes and under some conditions from the protein, but that the proportion of fat in the milk may be increased by feeding foods rich in fat. What Dr. Voelcker says, to the effect that the fat comes mostly from the protein in the food, and that it never has a close relation to the fats in the food, may be taken for just what it is worth; and with its antidote, that our Dr. Collier of the New-York Experiment Station, a gentleman who possesses considerable persistence in his beliefs and conclusions, and who in saying this goes somewhat contrary to previous statements from that station, has distinctly stated the contrary, and that he has found there is a relation between the fats in the food and those in the milk. Of course, Mr Arning has a right to his opinions, but so has another person a right to wrestle with him to bring him to a better way, one that is—I think I may say — universally practised by butter-makers in efforts to increase their products in the easiest way.

It may be pertinent to say here that the amazing products of butter that have been reported should be quietly and reverently buried, as having lived past their day; for if there were cows able to make such yields, why were they not at Chicago? It may be asked, does Mr. Arning think that if Mary Anne had no carbonaceous food and no fat in the food, she would have made any butter worth speaking of? Could she have eaten only foods rich in protein and made her butter, except at the expense of what fat had accumulated in the tissues previously —considering, of course, that that the alleged quantity of butter made was not a mistake? H. STEWART.

## TUBERCULOSIS.

(1) Dairy cattle have to be well and closely housed in winter, and are kept in large herds. This fact makes it easy for the disease to spread when once an infected animal is introduced.

(2) There is such a large number of dairy farmers who are absolutely unfit, by nature and education combined, to keep cows; who herd them damp, in foul, diseased stables; who let them lie in their own manure the whole winter long. Any man can see this if he will ride through the dairy districts in the spring of the year and look at the manure plastered cows, that stand by the roadside, advertising their owners ideas of keeping a cow clean.

Cows cannot be kept *healthy* and warm enough to give milk *profitably* in this way. Their milk will not only get diseased from the cow herself, but it is exposed to the foul air of a foul disease breeding stable, and there is nothing in the world which will absorb foul germs quicker than milk. Dairy farmers, whether they realize it or not, are deeply interested in this matter of *preventing disease in dairy* cows. The consumers in the cities are being greatly agitated over the statements of physicians on this question of the conveyance of disease in milk. They are already moving to have some system of herd inspection established, whereby they can be reasonably sure that their children are not being poisoned with foul milk and butter. Who can blame them for invoking the severest measures of law in this particular? Already parties have established milk dairies near some of our larger cities which are weekly inspected by a skilful veterinarian, and his certificate of the health of the cows statedly sent to the consumers.

There is a serious movement all *along the line in favor of preventing* disease by the introduction of noxious germs in food. The farmer is the only natural food producer and he must put himself in sympathy with this movement, or his food will become an object of suspicion. The dairy farmer in particular is greatly interest in every well organized effort to promote the health of cows. His occupation is gone when once his cattle or his practices come under condemnation. Hence he must at once take up this study of cattle sanitation, how to build and keep healthy stables and so produce healthy milk.

*Hoard.*

## CHEDDAR CHEESE MAKING.

In the Journal of the Bath and West of England Society, as reported by our esteemed English contemporary, *The Dairy*, we find a series of very *interesting observations on Cheddar* cheese making, from one of the most skilled English experts, Mr. Lloyd. The following is a summary of three years experiments, and these conclusions will prove valuable to American makers if well studied and understood.

Mr. Lloyd says:

To make Cheddar cheese of excellent quality, one, and one single organism only, is necessary in the milk, that is the Bacillus acidi lactis; every other organism present will tend to make the work more difficult. Hence it is imperative that *scrupulous cleanliness* be the primary consideration of the cheese maker, as of all those who have in the least possible respect to *deal with the cows, the milk or the* apparatus employed.

Secondly. No matter what system of manufacture be adopted, two things are necessary—two results must be obtained. The one is that the whey be separated from the curd so that when the curd is ground it shall contain not less than 40 o/o of water nor more than 43 o/o; and the other is that the whey left in the curd shall contain *developed in it before the curd* is put to press, at least 1 o/o of lactic acid if the cheese be required within four months, and not less than 8 o/o of lactic acid of the cheese is to be kept for ripening.

Lastly. The quality of the cheese which complys with the foregoing standards will vary according to the quality of the milk from which they have been made, and proportionately to the amount of fat present in that milk. The fat is the constituent which most effects the quality of the cheese; hence it is not possible to expect the same quality of cheese to be made from land which yields large quantities of poor milk as from land which yields small quantities of rich milk. But with due care (in making) the larger yield of cheese which can be obtained from the poorer milk should balance, *in value, that of the higher quality* which can be made from the richer milk yielding pastures.

Mr. Lloyd, in the above last paragraph, has forgotten one consideration in his calculations as to relative value. It is this: that the poorer cheese, in proportion to value with the richer cheese, costs more to make per pound It is cheaper to make ten pounds of good cheese, worth one dollar, than to make fifteen pounds, worth that sum. The cost of labor is just the same to make a pound of poor cheese or butter as it is to make a first-class pound. Here is a very important fact in economics almost always overlooked by the careless and indifferent.

# Science.

## LECTURE ON AGRICULTURAL CHEMISTRY.

*Lecture given by R. Campbell before the Farmer's Club of St. Colomba de Sillery.*

Agriculture is the art of cultivating the soil with the object of raising the largest crops at the smallest cost and with the least injury to the soil, and therefore the farmer ought specially to know the nature and composition of the crops he raises, of the land on which they grow, and of the manures which he ought to apply to the land.

The farmer has also to employ himself in rearing and fattening stock and in manufacturing butter and cheese, and consequently he ought to know the *composition of the animal, the kinds* of food it requires and the composition and properties of milk.

Thus we have to consider the plant, the soil and the animal, which all three, consist of two principal parts: the organic which burns away in fire and the inorganic or mineral one which does not burn away; this can be shown by burning straw, earth, and flesh.

The animal derives its mineral or inorganic matter from the food it eats, the plant from the soil, and the soil from the rocks from which it has been formed. The animal derives its organic matter from the food, the plant partly from the soil and partly from the air, and the soil from the remains of dead plants and animals *that have gradually been mixed with it.*

Now having traced the source whence these three objects derive their organic and inorganic matter, let us see of what compound bodies does the organic part of plant chiefly consist. They consist chiefly of woody fibre, starch, gluten and oil or fat.

You will no doubt ask me to explain each of these four substances as we constantly come across them in all agricultural papers, and many of us are in the dark about them.

Well then *woody fibre* is the substance which forms the greater part of all kinds of wood, straw, hay and chaff, of the shells of nuts and of cotton, flax, hemp &c.; they are insoluble in water.

*Starch* is a white powder which