PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

FIFTH ANNUAL MEETING,

HELD AT THE CITY OF

ELGIN, ILL., DECEMBER 10, 11 AND 12, 1878.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

ELGIN, ILL.:
DAILY LEADER STEAM PRINTING AND PUBLISHING HOUSE.
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Officers of the Association

FOR 1879.

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The sixth and next annual meeting will be held at Marengo, Illinois, Tuesday, Wednesday and Thursday, Dec. 9, 10 and 11, 1879.

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OF THE

ILLINOIS STATE DAIRYMEN'S ASSOCIATION

FOR 1879.

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Tefft, Dr. J..... " "
Tefft, Jno. ..... " "
Towne, H. L. .....Batavia, "
Todd, Hugh .....Elgin, "
Tefft, Thos. W..... " "
Thompson, C. L. F. ..... " "
Thompson, M. H. ..... " "
Vernon, C, D..... .....Springville, Iowa.
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Wheeler, J. B. T..... .....St. Charles, "
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Wing, W.....Elgin, "
Wheeler, S. M..... ..... " "
Waterman, W. G.....Barrington, "

ILLINOIS
STATE DAIRYMEN'S ASSOCIATION.

FIFTH ANNUAL MEETING,

HELD AT ELGIN, ILLS., DECEMBER 10, 11, AND 12, 1878.

ELGIN, DEC. 10, 1878,
2 O'CLOCK A. M.

Convention called to order at 2 p. m., with President TEFFT in the chair; when after some preliminary remarks, relative to the dairy interests, the president read the following address:

DR. TEFFT'S ADDRESS.

FELLOW CITIZENS, DAIRYMEN OF ILLINOIS:—Universal custom has made it incumbent upon the presiding officer of gatherings like this to deliver an opening address, regardless of his opinion or qualification to meet such an emergency.

Then, to add to our embarrassment on this occasion, the executive committee of this association have gone on and parceled out to gentlemen the available topics for discussion from which a well-directed talk could be made, and left for us the only chance to direct our thoughts between wind and water, without the liberty of touching either.

You will please permit us to say that we are happy to meet you here to-day on this occasion, and in behalf of the dairymen of this vicinity you will please allow us to extend to you, one and all, a hearty

welcome, hoping and trusting as we do that your sojourn with us will result in good to all.

The time allotted unto man for his abode on this earth is entirely too short for him to commence as our first parents did, at the beginning of the world, and study up, step by step, the various improvements down to the present day in farming generally, and dairying in particular. Therefore men are wont to learn the experience of others through the press or by personal associations with their fellow man. Taking a survey of our country generally, we find those agriculturalists or dairymen who are most in the habit of associating themselves with their fellow man, far better informed in that which pertains to a thorough knowledge of agricultural pursuits in their various forms, than those who choose to isolate themselves almost entirely from their social relations with their fellow co-laborer.

Dairying serves to improve and elevate the mind of those who are engaged in its pursuits, on account of the daily intercourse which necessarily belongs to this branch of farming as now carried on in this section of the state.

The dairymen, together with those engaged in other branches of agricultural pursuits, hold the most important position of any class in this country. We as a people can far better dispense with all others than with this class.

Yet we see many of the young people of the farm rushing into the village or city and leaving the farm labor to be performed by hirelings (who usually have but little interest other than to pass the time and take their money and depart) or by their aged parents. The result of this in many cases is, the farm is neglected, contingent expenses arise, to meet which the farm has to be mortgaged, and sooner or later, should this state of things continue, will be swallowed up by the increasing dues and eventually go into the hands of the capitalist. In this we are only following in the footsteps of our illustrious cousins in England, who have allowed 10,207 capitalists to own about two-thirds of all the realty in that country.

We seriously question whether the God of nature ever made or man ever invented, a higher or better calling for the young, active person, male or female, than that of the honest farmer or dairyman's life.

It serves to more fully develop the muscular system than all other professions put together (if we except the mechanical), and

thereby lays the foundation for health, beauty and future happiness. In looking over our criminal docket we find but rarely the name of the farmer or dairyman there; visit our penitentiaries and the ruddy face of the farmer is scarcely ever found there. Turn your eye to the hangman's gibbet, but not to find the dairyman or farmer there; for they much prefer to stretch hemp by hand or horse power than by that finer attachment to the cervical portion of their bodies. Look at us, located as we are in the valley of the great Father of Waters, in a country rich in the component parts of that which goes to produce and sustain plant life, perhaps the richest in the known world—if we are to believe the report of Mr. Cobden, an English gentleman who visited this state at or about the time the Illinois Central railroad was being chartered and built, and who made or caused to be made a careful chemical analysis of specimens of the soil from various parts of the state. His report to his fellow-countrymen (if our memory serves us) was, that the soil of Illinois which he examined, contained more of the principle necessary to produce and sustain vegetable life than that of the valley of the Nile, which has long been considered the richest in the known world. English capitalists, believing his statement to be true, eagerly sought the stock of this railroad, and it was soon built after the charter was obtained.

We now see how fully time has verified Mr. Cobden's statement made many years ago, of the richness of our soil, by the amount of actual productions of the state, the marketing of which has become a serious desideratum with the farmer at the present time.

It would appear advisable that the farmer should condense the products of the farm as much as possible, before sending the same forward, as he thereby reduces the amount to be paid for freight.

It costs, at present rate, about one-eighth of a crop of wheat to freight it from Chicago to New York. In flour it would cost less, besides having bran and shorts to feed stock. Corn costs nearly one-third of the crop to freight it as above, but in starch, glucose or glucose syrup, would cost less; also if put into pork or beef, but would cost very much less if fed to cows and put into butter and cheese. Butter costing only one-thirty-sixth and cheese about one-seventeenth part of the product to freight as above.

We estimate that the production of butter in the United States the present year, will reach in round numbers about 653,000,000 pounds. Of this amount, the people of this country will undoubtedly consume about 630,000,000, and we shall probably export about 23,000,000.

We also estimate the production of cheese to reach in round numbers about 315,000,000 pounds. Of this amount the United States will consume about 180,000,000, and we shall export about 135,000,000 pounds.

England imported in 1875, 181,418,496 pounds of butter, at a cost of 24 cents 9 1-10 mills per pound. Of this amount the United States furnished only 6,360,827 pounds, which was sold in that country for 23 cents 6 9-10 mills per pound, being about 1 1-3 cents less than butter brought from other nations imported the same year. The largest importations in that year were from Germany, Holland, Denmark and France. The home production the same year was estimated fully equal to the whole importation. This holding true, the consumption of butter in England for 1875 would be a fraction over 14½ pounds per head for the entire population. The importation of cheese into England in 1875 was 182,158,256 pounds. Of this amount this country furnished 101,010,853 pounds; being considerably more than half of the amount imported.

This importation, large as it may appear, is claimed by the writer in the Encyclopædia Britannica to be but a small part of what is actually consumed by the people of that country. The amount imported as stated above, would give to every man, woman and child of England, about seven and a half pounds per annum. This would be very nearly twice the amount used per capita in this country.

Our exportation of butter and cheese being almost entirely to England, perhaps it may not be amiss for us to take a general survey of her financial prospects for the future, as well as her home prospects for a continuation in the production of dairy products. Her imports in 1876 over all exports amounted to about $873,000,000. The present year they must much exceed that of 1876. Should this state of things continue in the future it will only be a matter of time when her resources will become exhausted, as no people or country—however rich they may be—can long continue to live, financially, with a heavy annual balance of trade against them.

The census returns of England and Wales for 1861, show that 1,833,652 persons were engaged in agricultural pursuits in that year, and in 1871 the number had decreased to 1,447,481, a dropping out of 386,171 persons from this pursuit in ten years. Nor is this all. The decrease of cattle for the three years ending in 1877 was 374,686 head. This shows a large falling off; but shall we wonder at it when we come to know that the average estimated annual rental value of the

whole lands of the country is given at fifteen dollars and four cents per acre! Now the question is, can English dairymen afford to pay the above rental price of land and continue in the dairy business, so long as we are allowed to put our dairy goods upon their market for only about one cent per pound additional cost to their value in our markets? We anticipate the answer that may be made right here that our cheese is not as good as their home manufactured. We can but admit the fact—for it is without doubt a fact—that within the last two or three years we have sent them much poor butter and cheese.

It is also a fact that we have sent them much that will compare favorably with their home make or other importations. In verification of this statement as to the richness of our own cheese, compared with other brands found in the English market, you will please allow us to give an analysis of some six different brands of cheese reported in the Encyclopædia Britannica, a work of English production, which should be perfectly reliable in statistics and facts given so far as that country is concerned. Therefore we quote from it the following:

ANALYSIS.

BRAND.	Water.	Caseine.	Fat.	Milk Sugar.	Asht. Salt.
Stilton (Supposed to be night's cream to morning's milk)	20.27	33.45	43.98	.....	2.20
Double Gloucester	33.41	27.75	32.69	2.23	3.92
Cheddar, full cream	30.32	28.18	35.53	1.66	4.31
American full cream	27.29	25.87	35.41	6.21	5.22
Parmesan (Skimmed)	27.56	44.08	15.95	6.69	5.72
Neufchatel (Reported wholly cream cheese	36.58	8.00	40.71	15.80	0.51

It is much to be regretted that the different markets which we select to place our butter require so much difference in make. Butter salted for American consumption would hardly be tolerated in the English market.

Cheese made for the Southern trade requires to be flat or thin, while a flat cheese is not wanted in the English market. Therefore our dairymen are required to make a different sample of each of these staples to suit the market for which it is destined, and if a surplus on one of these markets the other may take it but very reluctantly, if at all.

In our recent visit to New York city we found that market not over-stocked with either prime butter or cheese, while at the same time we found a large accumulation of a poorer quality of both. Perhaps much of this poor article will hardly be sold at any priice—saying nothing about a remunerative price at all.

Now, in our judgment, the continuation in the manufacture of such an article is suicidal to the best interests of the dairymen of this country. In justice to ourselves we should put nothing upon a foreign market but what is strictly prime.

France, with a less acreage of land than Texas, exported to England in 1867 $11,000,000 worth of butter, while the whole United States only exported $1,184,367 worth. While France is largely increasing her export trade in butter to England, we have fell back from $7,234,173 worth in 1865, to only $4,424,616 in 1867. No doubt there is a cause for this large dropping off with us, and it behooves us to look to this matter with an eye singly to its importance.

On motion of C. C. BUELL it was voted to accept the president's address, and that the same be printed in the proceedings,

It was now voted to take up the topics as arranged in the programme, and proceed to their discussion.

Topic No. 1—"Grasses; the best varieties as adapted to our soil and climate"—was taken up, when the following paper by W. J. BURDICK, of Whitewater, Wis., was read:

W. J. BURDICK'S PAPER.

"Improvement of Grasses and Grass Land by the System of Surface-culture."

The value of good drainage cannot be overestimated in promoting the health, wealth, happiness and prosperity of mankind. In the physical organization of the earth those means were not overlooked by its Divine Author, in external and internal formation, whereby man can improve it to suit his peculiar views and interests. Hence the success of the improvement of grass land will depend upon the degree of its drainage.

One of the most formidable obstructions to securing good drainage is mill-dams, located on the natural base-line, which cause serious damage to agricultural interests in their locality. In our personal examination of grass land, we have seen thousands of acres of good agricultural land that in its present condition is almost entirely worthless, caused by the check of natural drainage. In the discussion of this topic we shall assume the position that good drainage is the first requisite, in agricultural pursuits, to secure success. The first important work in the improvement of grass lands is to secure good drainage. Hence, to know where to locate drains is a question for careful study and close examination, to secure the best results for the least expense. To secure good drainage, it is very important to obtain a good outfall to the base-line, which will greatly increase the value of the cross-sectional drains. We are aware of the fact that we cannot give a general formula how to drain all classes of land by the same class of material, as the surface of the land is very diversified in its formation, varying from the bluff-rolling, to almost level plains. We would recommend the V-formed open drains as being superior to those of other forms. The V form will make a stronger bank, also the particles of alluvium will not form at bottom of the ditch, because it will increase the velocity of the volume of water flowing through the ditch. The size or dimensions of a drain will depend upon the volume of water you wish it to convey, and also the condition of the surface of the land that you wish to drain. Hence these two conditions will require a careful examination before locating a drain.

After securing good drainage, our next work will be in preparing the soil for the introduction of the grass seed. It is a well established fact that we are a strong exponent of the system of surface-culture for the improvement of grass lands, in all of the various soils and conditions of the surface. I am well aware of the fact that I am contending with a time-honored institution—the use of the plow in the improvement of grass land—but nevertheless we are willing to submit our experience in this class of work, and also the specimens of grasses grown under our supervision, for the inspection of those present. We will note a few of the many reasons why we believe the system of surface-culture of grass land to be superior to the use of the plow, to-wit: That we are obeying nature's law, in this system of work, in preparing the soil to receive the grass seed. This position is demonstrated in the biblical history of grass, as we learn there the agricultural implements were very rude in their construction, and meant to perform the work required of them to do in pre-

paring soils to receive the different varieties of seed, which was only surface work. Yet what a luxuriant growth they obtained!

We will now pass over the intervening space of time, to more recent date in the history of the cultivation of grass by the system of surface-culture. Look at its history in England, Holland, Germany, Scotland, and other progressive countries of Europe! Land that has not been plowed during the past 200 years, the rental value increasing in proportion to its age. Even in many of the New England States, grass land that the virgin soil has never been broken by the plow produces the very richest quality of grasses grown in these states.

We will now notice our experience in the improvement of grass land in the North-West. In the year 1853 the writer located near the city of Oshkosh, Wis. Heard the general complaint about the growing of tame grasses, and it was an admitted fact that Wisconsin was never designed to become a dairy state of any importance, or even the respected state of Illinois. It is wonderful to contemplate the change that has taken place since that period to this time, relating to the dairy interest, of which you are all informed as to its progress. We know by experience that the looser we make the soil with the plow we increase its capacity to receive heat, which will aid rapid evaporation of moisture, so very essential to promote a strong growth of vegetation, especially that of grass, which was one of the principal causes in the loss of the young seeding in the early settlement of the North-West. Again, another reason for the loss was this: Chemical analysis of wheat and Timothy hay shows that they require about the same elements from the soil to sustain a vigorous growth. Here the farmer was disappointed in the unsatisfactory growth of his favorite grass, which was timothy. The writer has a thorough agricultural education, one naturally adapted to the growing of grasses. Here on the old homestead was my instruction in the system of surface-culture in the improvement of grass lands. At the time of writing there is grass land that has never been broken with plow, upon the old farm, yielding a very generous supply of grass, very good in quality. About eight years ago was commenced the work of improving the grass land in the North-West, with the view of securing a smoother surface for the working of machinery requisite in securing a crop of hay. Our work was slow and expensive. Only a few men could afford the expense, as the cost ranged from $5.50 to $10 per acre for the labor and other expenses added thereto.

After we had leveled the surface of the land, our attention was called to obtain the variety of grasses adapted to the various conditions of the soils.

Allow me to introduce specimen grasses, grown on all conditions of soil of the North-West, also by the system of surface-culture. I will mention a few of the many varieties of grasses that are successfully grown in the North-West. I shall mention all of the English names that I can apply to them: Timothy, red-top, bent-top, white or brown top, orchard, foul meadow, meadow fescue, rough meadow, sheep fescue, meadow oat grass, Italian rye grass, floating fox tail, sweet-scented vernal grass, Kentucky blue grass, spear grass, blue grass, eragrostis, etc.

Among the family of clover we have the following list: Alsike, common June, alfalfa, mammoth Italian, white and crimson.

All of the grasses that I have mentioned are adapted to the soils of the states of Wisconsin and Illinois, if they were introduced and cultivated. From this list we select the combination of grass seed suitable for all class of soils, as we are seeding lands by the system used in England, with a large variety of grass in mixture—this has often been explained in previous writings. Since one year ago last June I have been located in Craw Fish Valley, engaged in the work of superintending the improvement of grass lands with the latest improved machines, of which I will submit the following report: My first client, C J. Millard, manager of the Rock Lake creamery, located about two miles south of the village of Lake Mills. Cost of labor, $1.85 per acre. Land very rough in many parts. Varieties of grass and seed used—timothy, red-top, F. M. clover, sown in the spring. My next client was H. C. Drake, proprietor of the Drake cheese factory. The cost of labor was less than the work for Millard. The cost of seed the same; also the same combination—Alsike and red clover, sown in the spring. My next was Messrs. Wm. and Geo. Everson (patrons of the Rock Lake creamery.) Cost of labor about $1.50 per acre; cost of seed the same as Drake's, also same combination. I was very busily engaged in this class of work till about the first of December, cultivating and seeding several hundred acres of grass land. I wish to notice the result of the work, in the yield of grass those parcels of land produced, also the value of good draining. The young seeding of Mr. Drake's meadow was very light; caused by excessive moisture in the soil, produced by the mill-dam across the Craw Fish river, which is causing very serious damage to a large

tract of excellent agricultural lands. This meadow of Mr. Drake's has been cultivated and seeded to tame grass. I will say that I seeded about nine acres of Hungarian stubble land, and cut about two tons per acre the first mowing, on the farm of Drake's. I have a sample of the grass grown on that thirty-three acres, which I wish to call special attention to the rapid development of this seeding, caused by good drainage, as the soil on the Everson lot was considered to be inferior to Drake's lot. Hence here is a proposition demonstrated, that the growth of cultivated grasses will depend upon the condition of the drainage of the soil, as the yield of hay on Messrs. Everson's was about one and one-half tons per acre, while on Drake's it was but about three-fourths of a ton per acre. Again, the thickness of the sward will be in proportion to the dryness of the soil.

I am pleased to report to your respected secretary that we have meadow land that was cultivated and reseeded under our personal supervision that is yielding three tons of good, nutricious hay per acre; also pastures that are producing good grass in sufficient quantities to supply all the feed necessary for neat stock, at the rate of one acre per head, through the feeding season. Those pasture lands are reseeded with a large variety of grass seed, adapted to suit the condition of the soil. We find the first stratum to be nature's combination, as it has received the grasses from the rains and also from decayed vegetation, which it has utilized to promote a rapid growth, as is demonstrated by the specimen in our collection.

I object to the use of the plow, as it destroys many valuable varieties of grasses that are not reseeded, which greatly increase the value of these lands in promoting the interests of the dairyman and stock-grower. Again, when the low grass land has been broken with the plow, it is very uncertain when you will re-establish another sod of any strength and vigor, as the grass will yearly decrease until it is entirely gone and its place is taken by obnoxious weeds, which is very often demonstrated in various sections of the North-west. When we introduce the cultivated grasses into the soil of the native grass land by the system of surface-culture, the young plant has the protection of a portion of the native grass until it gains sufficient growth to withstand the changing influence of the atmosphere to which it is exposed. Again, when the surface of the soil is preserved by the system of surface-culture there is a steady decay of the mature grass, and it becomes plant food for the young plant of grass, till they are entirely destroyed by the cultivated ones. Again, I object to the

use of the plow; as it is more expensive than by the system of surface-culture with the aid of improved machinery, even if the results were alike, though we claim the preference in favor of the system of surface-culture.

We will now review the second division of this topic with the comparatively and relative value of the grasses in our collection. Those grasses that are adapted for permanent pasture land are those which will reproduce undershoots or blades, at the base of the column or stem, when cropped off. With Kentucky blue grass, or June grass, red-top, orchard, meadow fescue, white top, pod annie, pod compspa or blue grass, sheep fescue, eragrostis peclurica hordim jubatim, Italian rye grass, sweet-scented vernal grass, foul meadow—all of the above-mentioned varieties are grown in the states of Wisconsin and Illinois, therefore they are acclimated to the condition of the soil and climate.

For upland pasture the orchard grass will produce the largest per cent. of feed in a given time. I have known it to grow at the rate of an inch to every twenty-four hours, for several weeks. This grass is a great favorite with the men who have tested its values, in our section of the state. The meadow fescue is a very valuable grass, and is well adapted to the upland, also to the lowlands; if they are well drained. This grass does not mature as soon as the orchard. My specimen is from eight first seedings. The sheep fescue is very much like meadow fescue in its growth. The Italian rye grass is doing very well in our vicinity, which can be seen by the specimen we have in our collection. Agroslus alba, or white top, is a very valuable variety of grass, which grows quite extensively in our lowlands, which produces a large yield of feed much sought after by all kinds of stock. The foul meadow grass cannot be too highly prized for the lowlands. This has become very popular within the past few years, as it is giving universal satisfaction to all who have introduced it into their lands. It flourishes as well on quite moist land, and yields often eight tons per acre. The past fall I have cultivated and reseeded one hundred acres of lowland for A. R. Earl, Esq., one of the farmers in the town of Astalon, Jefferson county. Used a strong proportion of the foul meadow in the combination of grass seed; also mixed with the combination of grass seed about sixty bushels of dry, unbleached ashes. Demand for this valuable grass seed is very rapidly increasing each year. All of the varieties of grass that we have named are adapted for the dairy stock-grower's farm.

For meadow seeding I would change the varieties in the combination, selecting those that mature at the same time. I would recommend the cultivation and reseeding on old meadow lots in the months of August and September, to secure a good yield the following season. I would use a prime dressing of a prime compost manure while cultivating the soil, thereby thoroughly mixing them together. Then sow the combination of grass seed and harrow lightly with a smoothing harrow. I am now referring to upland meadows. Lowland meadow I cultivate soon as the grass is mown, even in the month of July, but do not sow any grass seed until about the 20th of August. Sow seed until the 13th of October. Continue the work of cultivation until there is a low temperature, so that the seed will not germinate; then resume the sowing of the grass seed and let it freeze with the soil and grow in the following spring.

Pasture lots on upland I cultivate soon as the frost is out of the ground in the spring of the year; reseed and hold it as a reserve lot until about the 10th of June, when it will be in a splendid condition to use, producing feed the balance of the season without injury to the young seeding. Lowland pasture lots I cultivate and seed in the fall of the year, mowing the first two crops of hay; thus it will become a very strong sod, so the feeding of stock will not injure it. In relation to the quantity of grass seed sown per acre, that will depend upon the condition of the soil, also the variety. English authority says that when a lot of land is well seeded, each square foot of land produces one thousand one hundred healthy grass plants. I am using thirty-six to forty quarts of mixed seed per acre, with good results. American seeding will average about one hundred and seventy-five plants per square foot. I observe that when I use a heavy seeding I am not annoyed with a strong growth of obnoxious weeds, and also will have an improved sod on the surface of the land which has been cultivated.

I will now state that all varieties do not mature at the same time, as perchance there are some persons present that would claim the grasses were very much crowded while they were growing. The combination is formed by mixing the earlier and later varieties together, which will cause a steady growth of grass through the entire season, thus affording a generous supply of feed for the use of all classes of stock.

I have often been asked this question: "What length of time will those lands remain as you leave them, when they are culti-

vated?" also, "What will be the condition of the grass a few years hence?" I will answer the first question by saying that will depend upon the way in which they are used. If the stock is allowed to run over the pasture lots when the soil is quite wet it may produce roughness on the surface, but generally they will remain smooth. In relation to the last question, that will also depend upon how they are cared for. Over-feeding on grass land is very injurious to the longevity of grass, especially on meadow lands. I believe if the farmer would not allow stock to feed from his meadow land on any condition whatever that it would increase the yield of grass 25 per cent. When the first blades form in the early part of spring they are very essential in promoting the growth of the later-growing blades, and when they are cropped by the feeding of stock, the effect is as injurious in retarding the growth of the plant as though it had been severely frozen, which will cause a light yield of grass.

Again, I would recommend early cutting of grass, to maintain a vigorous growth, as in that condition the plant has stronger vitality to nourish the forthcoming blades. This position is demonstrated in all of the early-mown meadows, compared to those cut later in the season. Look at the beautiful rich dark green color of the early-mown blades; what a giant-like appearance by the side of the poor, pale, feeble look of those later cut. The timothy plant is very peculiar in its growth, and being a bulb plant, it is naturally adapted to a dry soil, which can be seen by the various specimens of the plant in our collection of grasses. The bulb is nature's store-house of moisture from which the column draws a supply, increasing its demands until it is fully matured, leaving the roots of the plant very weak in their vitality, which will cause a premature decay. Hence the timothy plant was designed by nature for dry soils and early clipping to secure a strong and vigorous growth. I would not recommend the sowing of timothy on low, moist land, as this retains a greater degree of moisture through the hours of night, and when the scorching rays of the sun come in contact with excessive moisture on column it will cause the fungus on roots, which greatly decreases its nutritious value for winter feed. Hence here is a serious mistake with many in sowing timothy on lowland meadow as the base of their seeding, for there are other varieties of grasses that will grow most luxuriantly in that class of soil and withstand the attack of the fungus. Among those varieties foul meadow is the most prominent in maintaining its deep green color through the entire season of its growth. Also meadow fescue and orchard grasses are not easily affected by exces-

sive moisture of the soil. I am well satisfied that timothy is far more superior as a pasture grass than for hay, as it is No. 7 in the grade list of grasses for its comparative value. And again, timothy will lose about 55 or 60 per cent. in curing, while the orchard will lose only 29 per cent., meadow fescue 31 per cent., foul meadow 44, rough meadow 31, and red-top 48 per cent.

I wish to call the attention of dairymen to this fact: that timothy is not so valuable a grass as it is accredited to be. I suspect that this position will draw out criticism from those who believe that timothy is superior to all other varieties of grass. In relation to alfalfa, it is thoroughly tested that there are many thousands of acres of land in Wisconsin upon which the alfalfa will become the leading crop for the dairy herd. I have examined prime fields of the alfalfa growing in many sections of the state. The class of soil that is natural for the growth of alfalfa is a rich loam underlaid with clay-mixed sand subsoil, and that stratum resting upon gravel formation, as the alfalfa will root very deep, and this class of soil is thoroughly underdrained in its natural formation. In regard to this clover I will submit the following report: The sapling or mammoth variety is a very valuable clover, if it is properly cultivated, for several reasons, to-wit: 1st. It has a porous root which will withstand the influence of the alternate thawing and freezing which is so disastrous to the common red clover. 2d. It produces a very large amount of feed per acre. I would recommend feeding this clover until about the 10th of June. Then cut a crop of hay or seed. Under this treatment you will produce a very prime quality of hay, as the columns will not be coarse, as though it had not been cropped off. 3d. For a fertilizer I would allow it to grow till the blossoms are formed. Then summer fallow the field. Alsike clover is a valuable plant. The alsike is fast becoming a favorite with those that have tested its merit. I have used a large amount of this seed the past two years in the combination of seeds. I use about one pound of seed per acre. I have a specimen of this clover that measures five feet in length. I am using it quite freely in the lowland. It is a very hardy plant,and does not winterkill like common red clover, as it has a fibrous root. I would not sow this seed upon too dry soils, as it dwarfs in its growth. The Italian clover is doing very well in this secton of this state. It has a very soft stem; is not harsh as the common red clover. I have a specimen that I selected the past summer that measures five feet in length.

Trifutim incarnation, or crimson clover.—I am not entirely satisfied what the result of experiments with this clover will be, as it will require another season to determine its value. The value of the common red clover is too well known to retain it, except it can be cultivated so that it will produce a fibrous root. This result is produced with this system of surface-culture by sowing seed on cultivated sod land. This is the reason why this clover so long retains its strong vitality. I have examined this clover that the seed was sown ten years ago. This clover will grow a root in proportion to the condition of the soil. If the soil is pulverized very fine and deep, it will grow a very long, deep root. I do not sow any grass seed with the cereal grains. I highly cultivate the stubble land if the crop has been secured. Sow the combination of grass seed from the 15th of August until the 15th of September, excepting clover; leave that to be sown the following spring. I have seeded stubble land by this system and cut two tons of hay per acre from it next season. The principal cause of losing young seeding when sown with spring grain is, that it is too tender to withstand the scorching effect of the hot sun when the grain is removed; also the soil is in a very porous condition, as the following experiment has demonstrated, to-wit: When the thermometer indicated 70° atmospheric heat, in clay soil it would indicate 130°, sandy soils 107°, alluvial or black soils 110°. In highly fertilized soils the degree of heat is still higher. Again, I find the degree of heat varies in proportion to the drainage of the soils. On the lowest or cold lands, and on those affected by cold spring water, the vegetation is the latest in growing. Hence, this experiment demonstrates two potent facts, to-wit: 1st, The absolute necessity for good drainage. 2d, The lowland is the most natural soil for the production of grass. Also we have the varieties adapted to these soils, which are giving the very best satisfaction to all the parties that are engaged in the improvement of this class of soils.

In relation to the condition of the lands we are engaged in cultivating, I say that we are prepared to improve all classes of land, from the very rough to the very smooth surface, even the willow-growing land, at a cost less than to subdue them by the system of plowing. Also, we have in our collection eighteen different varieties of grass seed; therefore we are prepared to give formulas of the combinations of grass seeds to suit all conditions and varieties of soil, as we have thoroughly tested these grasses and know their value in comparative and relative forms.

In conclusion I will submit the following proposition for the consideration of those interested in the improvement of grass land, to-wit: That the improvement of the grass land is the first work to insure a higher quality of the dairy product. 2nd, That the value of the products of the cow is in like ratio to the quality and quantity of the food and the care she receives from the herdman. 3d, That the grass lands, when they are properly drained, cultivated and reseeded with a combination of grass seed adapted to the soil, will yield a greater revenue than any other class of land, in ratio to their expense. 4th, That in work of improving the grass land by the system of surface-culture, we promote the growth of many very valuable varieties of grasses, adapted for the use of the dairy herd, which would greatly enhance the value of those lands that are destroyed by the system of plowing, and are not replowed in the reseeding. 5th, In the reseeding of these lands with a combination of grass seed, adapted to suit the different varieties of soils, we increase the yield from 30 per cent. to 200 per cent. per acre.

C. C. BUELL was a new beginner come here to learn. His farm was composed of a variety of soils, mostly prairie, and of a sandy loam—most too sandy, and was mostly reclaimed from wet soil. His upland produced clover freely; his lowland, Kentucky blue grass, or June Grass, which are one and the same. His upland was all right—he could handle that, but the lowland was what caused him trouble. Cattle would punch it up or "bog it." Had for a year or two put his harrow onto it, and then seeded with red-top and timothy. This year mowed it and got a good crop. Could not say as this plan would do for all lands. Had read much of the writing on the grass question, but thought all statements should be made based upon actual experience or definite knowledge.

E. H. SEWARD said that the question of grasses was at the bottom of our success as dairymen; no dairy region could prosper where good grasses could not be produced. There were a great variety of soils in this state; they must

all be treated differently. Often the same eighty needed several kinds of treatment, and as many kinds of seeds. Red-top wants a wet soil. Clover needs a deep soil, as it roots very deep. Much of our lowland was now coming into red-top by a process of natural seeding. More seed should be used, not wait for nature to seed for us. Timothy seems the most natural grass to our soils, and will thrive on any vegetable loam soil—but that it easily winter-kills is a mistake. It is the fall drought which kills it; it is a bulb plant and must have plenty of moisture. Clover is the best, all considered: it yields the most abundantly, will produce more milk than timothy, but not quite as good for pasture as red-top or blue grass. It is a mistake not to try to make our land yield more grass; there is too much loss; we must use more fertilizers. Top dressing is good for grass. Clover not only yields a great profit, but it is in its nature a fertilizer, preparing the way for other crops, especially for oats and corn; we should all raise more—should alternate with our crops. And all should remember that grass was the farmer's "backer."

C. C. BUELL said some recommended muck for a top dressing for grass lands. Some was good, some worthless.

MR. JOHNSON wanted to know as to the expense of making new land by the use of muck. He lived on the prairie, where help at from $15 to $23 per month made it too expensive; could see no profit in it.

C. C. BUELL could not tell as to exact cost or profit of using muck. He knew that to make all the barren places in our farms productive would remove many "eye sores." He believed the wet places should be made dry, and the poor ones productive, regardless of cost.

E. H. SEWARD thought, as to muck, it might not pay for the first year, but for a term of years it would certainly pay.

J. R. MCLEAN, if not for a bad cold, could "knock the socks" off from Buell and Seward. He did not blame Seward for drawing out his "muck holes," but he did not believe there was any pay in it. Clover and timothy are natural to our soil. We did not as a rule use seed enough. He used to use his thumb and finger to scatter the seed, but now his son runs the farm and he takes a whole handful. Red-top is not fit for anything; cows can't eat it—they would require a new set of teeth each year. Cannot rely upon it in mid-summer; will not stand drought.

D. C. SCOFIELD: How is it for hay?

MCLEAN: It is poor for anything. He knew of one piece of land in the East which had produced hay for 38 years, and when he had last saw the hay it stood as high as his chin—this was natural seeding, of mixed grasses.

D. C. SCOFIELD inquired as to the proper time to cut timothy for hay—whether in the blossom or seed.

MCLEAN did not admit that in the blossom to be the best time; thought a little riper to be the best time.

C. C. BUELL inquired if any dairyman had any experience with browse as feed for dairy cows. None had.

E. H. SEWARD: Had never kept a record of the falling off of tame grasses to a normal condition. This could only be determined by a record for a period of years.

A member asked McLean as to the best time to cut hay to produce the most milk.

McLEAN said his experience was to cut in the dew or milk of the grass, the best time.

C. C. BUELL thought this a very important question, and should be thoroughly discussed, so as to get more light upon it.

SEWARD thought the statement of McLean, that hay should not be cut until the seed had fallen, should not go out to the public; the fact was, timothy had two blooms—first a white, second, a blue bloom—and should be cut in the first bloom, at least for him. Scofield was reminded of an apple: it was good only once, to-day and not to-morrow. If a farmer has 100 acres to cut, he cannot cut it all in a day or two. When must he cut, green or ripe?

SEWARD thought this a common sense question. It could not all be cut in one day, therefore some would be a little too green and some a little too ripe, but the average just right.

A member thought the farmer who had 100 acres of hay, had better have 50 acres of it in corn.

C. H. LARKIN wanted to know about the two blossoms on timothy; did not understand it; thought all plants were allowed only one blossom each year,

SEWARD: It may not be true that timothy has two blossoms. The first might change color; perhaps it did.

A member had lived on the Western Reserve; used small teams, plowed shallow, and raised poor crops. New settlers came in, with large teams, plowed deep, and sowed clover, and were soon raising large crops. Believed clover the cheapest fertilizer the farmer had. If cut early it would

seed itself. As to cutting early or late, he believed McLean's theory correct. It should be really ripe, but for milk it should be cut green.

S. W. KINGSLEY inquired as to the mode of using clover as a fertilizer.

C. H. LARKIN wanted to know which he could do the cheapest, draw manure three-fourths of a mile, or use clover.

O. C. DIGGINS: Would draw the manure. To plow in, was the general mode practiced where clover was used.

W. W. BINGHAM thought to spread on a coat of dry straw and plow in, was as good as a coat of manure. After some further discussion of this question—

No. 2—"Soiling; is it profitable to the dairymen of this state? And to what extent?" was taken up.

W. W. BINGHAM: Could not say much on this question from experience. Had farmed but little. Knew a man who kept sixty cows upon one hundred acres of land by means of soiling. His own plan was to drill in his corn for fodder; used five bushels of seed per acre, and obtained a very large yield of fodder. Also used oats cut green for soiling. Sowed three bushels per acre. Found this to be good feed for soiling. Kept his cows in the stanchions twenty hours out of the twenty-four. Kept twelve cows on six acres of pasture. His farm contained thirty-six acres. Intended to keep twenty cows as soon as his farm was in a little better condition. Raised nine acres of corn. Bought five tons of bran. The remainder of the feed was raised on the farm. Of good milk, twenty-one pounds was sufficient to make a pound of butter.

C. H. LARKIN: Knew nothing about it at all. Had no definite figures to give. His neighbor, Judge Wilcox, had made experiments. Hoped he would be here.

C. C. BUELL had supplemented his pasture by feeding clover. After second growth often fed rye and corn.

C. H. LARKIN: Did you feed it as a matter of necessity or for profit?

BUELL: Fed it for profit.

DR. TEFFT: Said the French farmers made more money than we from their land and dairies. Many only used ten acres; and upon these small tracts, highly cultivated, they supported large families; and even laid up money. But economy, of course, had to be practiced.

MR. JOHNSON: Doubted if fancy farming paid.

On motion of R. P. McGlincy, the Chair appointed E. H. SEWARD, W. W. BINGHAM and BENJ. COX as a financial committee.

On motion, adjourned to meet at 9 a. m. to-morrow morning.

WEDNESDAY, 9 A. M.

Convention called to order as per adjournment, and the discussion of the programme resumed.

Topic No. 3—"The supply and demand of dairy products; and their future market." Upon which question Capt. W. H. Stewart read the following paper:

CAPT. W. H. STEWART'S PAPER.

Without going into statistical details of what the supply is--or the demand, which I suppose is measured by the consumption, since there appears to be quite an accumulation of surplus,—it is sufficient to know that whatever may be the demand, for a long time at least, the supply will be readily forthcoming.

The real question that crowds upon us is, how we may reduce the cost of the supply and increase the demand and consumption. I have no doubt that by a practical adoption of the rule of the "survival of the fittest"—by carefully weeding out from the herd all animals which do not come up to a high and advancing standard, and then, by warm and healthful quarters, generous and appropriate feeding and kind and careful handling, the cost of the raw material may be very much reduced and value increased.

The question has frequently arisen, whether we would not soon get to indulging our American right and custom of riding a good thing to death. And the present stagnation and accumulation seems to excite suspicion that the dreaded time had arrived. Yet I think not, except accidentally. The general pinching financially compels the shortening of sail and running close. When cheese is used as an extra—a luxury—it goes by the board, and the drying up of the million little streamlets, each in itself of no great consequence but in the aggregate works a fearful shrinkage of the main river. For this, as dairymen, we can only wait and hope for the better time coming. While waiting, one thing—which I think is a greater, a more persistent and permanent cause of staying consumption—we may study with profit if it leads to action: Kinds of food generally are a matter of taste. Taste can be educated. Its gratification grows into a habit. Habit makes a necessity, and the necessity makes a permanent,

steady demand. The English, especially the poorer classes, are said to be a cheese-eating people. They have been educated to it. Doubtless at first, through hard necessity, to fill an alimentary requirement caused by a want of flesh beyond their reach. But the habit being formed, its gratification has become a necessity. Hence the absorption of the wonderful quantity of cheese that is annually shipped from our growing surplus. Situated as we are, there is little danger of our being forced to the use of cheese for the want of meat, yet the taste can be very much sharpened by tickling the palate and coaxing the frequent and general use by constant satisfaction.

Since the commencement of the factory system of making cheese, the use of it in this country, in this very way, has grown to magnificent proportions. It was evidently a goose that was laying golden eggs. But instead of nuturing and encouraging the goose to increase her laying, I fear many of us have gone for the goose as the old story reads—we have stolen her fat for butter and left the eggs tasteless, worthless, saleless, goldless. For two or three years the manufacture of skim cheese has increased to a sad extent; and what is the outlook?

Just at our sorest pinch, when financial stagnation is pressing us with a heavy hand, our goods are tramps, roving about everywhere begging for a market. A shrug of the shoulders, and the stereotyped phrase of the price current, "Only fine mild cheese at all saleable," and that slow and pulseless, is the polite rejoinder. Shading prices even are received with unmeaning indifference.

Go and interview for a little while the retailers in this city. Say they—"We have been unable to obtain a respectable article of cheese, and a little goes a great way. No one wants it, and it doesn't pay to keep much." And so it is all over. The president of this society and of the Elgin board of trade—where millions of cheese are annually sold—is compelled to import from outside districts cheese for his own consumption that is fit for his table, his board of trade for the sale of skims being unable to furnish it.

The fact is, the home consumption, notwithstanding the low price, has fallen off at least seventy-five per cent., while it ought to have at least twenty-five per cent. increase. This alone would bring to the trade wealth and happiness. More than this, by sending the life-blood of the cheese to the butter-tub, you not only kill the cheese trade but smother the butter trade as well. If with the new year we can with honest money content ourselves, with honest goods as well I can only see fair sailing in the immediate future.

CAPT. STEWART further said that oleomargarine was better for butter, than skim cheese, was for cheese. He deprecated the making of skim cheese. It was not fit for use; and should not be tolerated.

JOHN COLETT: Was at Quincy a few days since. Saw in a grocery store, a good, full-cream cheese. Asked the grocer where he obtained it. He said, New York. We cannot get good cheese in Illinois. They do not make it. They skim too much.

THE CHAIR said, they do not skim as much in Wisconsin, but find a ready sale for their cheese.

T. McD. RICHARDS: Thought every factory should brand their cheese, as to quality. If skimmed, sell it for just what it was. As long as there was a demand for skim cheese, factorymen would make it. They could make more money by so doing, but if all products could be sold upon their merits, no harm would be done.

E. H. SEWARD: Thought an inspector might be appointed, to brand cheese, as well as to inspect wheat. A law should be passed to regulate the whole matter. It should be sold for just what it is worth. As it now is, Illinois cheese stands as low as any state in the Union, and is still on the down grade. Wisconsin makes better cheese than we do, and finds a quicker sale. Illinois factorymen skim as long as they can see anything to skim.

R. P. MCGLINCY: Did not think a law could be passed in Illinois to regulate the matter. Had had experience in this matter. Endeavored to have a bill passed preventing the adulteration of milk; but the average legislator could see no harm in the adulteration of this natural food, and so

the bill could not be passed. The dairy business did not receive the attention it ought to. No one paid any attention to it. But as long as the buyer gave within one-half cent as much for "skims" as for full-cream cheese, they would be made.

JOHN COLLETT: Thought the whole thing could be remedied. It was a lack of consumption. Not an overproduction. People eannot get what they want, so will have none. If all could be branded, both skims and full-cream, a change would soon be felt.

COL. WILCOX: Wanted to know if the branding system had ever been tried. And with what result. Said the man who made a good plow, a good mower or a good machine of any kind, was not slow to put his name upon it. Why not on cheese as well. It seems to him the only remedy. Every manufacturer of any article for domestic use will not fail to brand his goods. And, not only this, but will have his private trade mark, which in many instances is of great value.

COLLETT said if this could be done, Elgin would support as large a butter and cheese house as any city in the United States. Could keep twelve salesmen constantly employed.

SEWARD: Thought selling on commission should be discouraged.

COLLETT: Dealers did not understand it. They, as a rule, were not judges of dairy goods. They often do not know what they buy or sell.

W. W. BINGHAM thought dairymen had missed it by trying to make money at the sacrifice of reputation. The factory plan leads to this. All want to make as much money as possible. The dividend plan is wrong. It is quantity they are all striving for, and not quality. The more the factoryman makes the more money he gets. Times are hard; as they improve, prices will also improve.

WILCOX: All was in a lump. Individuality was entirely swallowed up. No person who makes a good article should be ashamed to brand it. He bought his butter from a private dairy. Could not afford to buy creamery butter.

S. N. WRIGHT: Thought the whole matter rested with the dairymen themselves. They should demand full-cream cheese, and compel factorymen to make them. Dairymen should not take a gallon of milk to a factory where skimmed cheese is made. And all should be sold on the board of trade.

DR. TEFFT: Said there was a demand for skim cheese and it would be made.

B. COX: Had one month's milk made into full-cream cheese. Received 4 cents per gallon for his milk, while he was receiving 4.65 for skims and butter.

SEWARD thought the factorymen encouraged the making of all butter and skimmed cheese, as the figures showed there was the most money in it for them. The factoryman made six cents and the dairyman lost fourteen cents per 100 lbs., which is all wrong.

COLLETT said if the watch factory put their goods upon the market as watches only, they would never have a

reputation. But they brand their goods "Elgin Watches," which is a guarantee for their quality. There is honor among business men as well as others, but many are poor judges and do not really know what they handle. If all were branded then the poor judge would know as well as the good judge, just what he was handling. All other goods for domestic use never fail to be branded, as to their merits. Why not cheese as well as soap?

MR. BARNETT, of Sugar Grove, sold all his cheese for nine cents. Made all full-cream cheese. People came to the factory to get it. Had no trouble in selling all he made.

A member: How about your dividends?

MR. B: They are not as large as paid by the factories where skim cheese is made.

A member: That tells the story.

MR. BARNETT received milk only once per day. Often it came to the factory sour; but he never failed to make a good cheese.

This statement was received with some degree of allowance by the dairymen present, who had been taught to believe that when milk was once sour it was impossible to manufacture good cheese from it.

J. R. MCLEAN: Said he and other dairymen had devoted nineteen years to learn how to care for and handle milk. He now learned with astonishment that all this time had been worse than wasted, for here comes the information from Sugar Grove, that *sour milk* is as good as sweet

milk for cheese making. As to skimmed cheese, he bought some full-cream, took it home, his family would not touch it, but wanted some of that *mild* cheese—which means skimmed. There is no disputing the fact that it would often bring more in the market than full-cream. It is ready to eat as soon as made; not so with full-cream. The trouble is, the supply is too great; it is enormous, amounting to as much as one-half our national debt. Our Canadian neighbors come to Elgin, learn to make skimmed cheese, go home and make and ship to England $8,000,000 worth, and have hardly begun yet. He here read from the Utica *Herald* as to number of cows, exportation etc.

SCOFIELD: Wanted to know the amount of skimmed cheese, in pounds, equal to the cheese which would satisfy an Englishman?

COLLETT: Thought, although cheap, it was in the end an expensive food, as it cost so much for medicine to work it off.

JUDGE WILCOX: Took exception to some of the figures read by McLean, from the Utica *Herald.* They were preposterous and should never be given to the public.

DR. TEFFT: Said those figures were made by J. H. Real, and should be received with great allowance.

On motion topic No. 4 was passed, and

Topic No 5—Was taken up. "What per cent. depreciation is there in keeping up a dairy from all sources?" This eminently practical question seemed to stagger many of the dairymen present, as no sensible answer could be given, only by one who had kept his accounts exactly, and this is what few dairymen do.

S. W. KINGSLEY: Knew the shrinkage was large, but just what per cent. he could not say; but at least twenty-five per cent. Did not keep figures as to the loss or cost.

MCLEAN: Said it was a new topic, no one had thought of it before but gone ahead regardless of cost or profit. It should be thoroughly investigated and a definite conclusion arrived at, as the business is a constant drain on both mind and body.

SCOFIELD thought they were not talking to the question—to count capital, interest, etc. We had all better give up our farms; we were making nothing.

S. W. KINGSLEY, in speaking to this question, said the cost of keeping up a dairy was large. Thought that 25 per cent. was not too large. He also digressed, and gave the following as a sure remedy for milk fever in cows: "One pound of common chalk pulverized and mixed with vinegar sufficient to swallow easily."

C. C. BUELL hoped the main question would not be dropped. Was a new beginner in the business. Had not yet made much improvement; had not even built a good barn. Was farming to make money. Kept 40 cows; had 100 head altogether. Stabled all his stock; had four barns or sheds, did not cost $100 each; they were so warm that no frost came inside; would have to renew them once in fifteen years. Could do his work cheaper than the man who had big barns. Could bring his feed to the barn. Expensive buildings were not essential to profitable dairying.

HENRY SHERMAN: How are your sheds made?

BUELL: They are studded with 2x4's, boarded on both sides and filled with tan-bark. Straw roof filled in overhead with straw. This will make as comfortable a stable for cows as though it cost $3,000—it is the true plan.

MCLEAN: Was glad to learn how Buell made his sheds, and that some one as well as himself did not run to big barns. To arrive at an exact figure of depreciation one must inventory each year.

JUDGE WILCOX: Was aware that farmers were not in the habit of keeping close accounts. Had given it much thought, and had commenced a system which he believed would give a correct result as to the actual depreciation of the dairy. Would like to hear from the dairymen who had kept such an account. Must take a correct inventory to ascertain how one stands. Wear and tear of tools and machinery must all be included. The farm should have the proper charge for all taken from or put upon it. One large item of expense was generally overlooked; it was by contracting to deliver to a factory a specified amount each month. This often necessitated buying cows at large figures. Hoped to be able next year to give exact figures.

After some further discussion it was voted to appoint a committee of three to carefully investigate and report, at the next annual meeting, what, in their opinion, was the true answer to this question.

THE CHAIR appointed JUDGE WILCOX, C. C. BUELL and W. WING as such committee.

S. N. WRIGHT wanted to know the value of heifers with calves by their sides, as compared with old cows.

MR. LAMBERT (Canada): What breed?

E. H. SEWARD: Grade Durhams come in at from eighteen to twenty months old.

MR. MCRICHARDS here gave all present an invitation to attend the next annual meeting of the Kishwaukee Farmers' Club, to be held at Marengo, Jan. 26, 1879.

On motion, adjourned to meet at 1:30 p. m.

WEDNESDAY, 1:30 P. M.

After the convention assembled the secretary announced that he had received several important communications, from various persons appointed to take part in this meeting. On motion it was voted to dispense with the reading, but that they be printed in the proceedings.

Topic No. 6 was called for, but the parties assigned to open this discussion were absent.

Topic No. 7—"At present prices, does the dairyman, whose milk is manufactured into butter or cheese, or both, at a factory as now generally managed in this state, receive what he ought for his milk? If not, why? And what is the remedy?"

This being one of the most important questions for the dairymen to consider, all present listened with great interest to JUDGE WILCOX, who spoke to this question as follows. He said:

The points I desire to make in the discussion of this question will be more readily comprehended by first describing, summarily, the factories in general in the northern part of this state, and their proprietorship and management generally.

There are within a circle having Elgin for its center and a radius of fifty miles, probably between sixty and seventy cheese and butter factories. Many of these are inexpensive structures, erected hurriedly without proper regard to their adaptation—either in their surroundings or internal arrangements—to the business. Two men, as partners, are proprietors of seven of these sixty or seventy factories. Two men are severally the proprietors of three each. Four men or firms, are severally the proprietors of two each. Of the remainder no person or firm operates more than one, so far as I have been able to ascertain.

The seven factories of which the two gentlemen are the proprietors are in their location distant from each other—the distance between the two farthest from each other being at least fifty miles. Only one of these gentlemen possesses practical knowledge of butter or cheese making. It is impossible for him to receive the milk, make the butter and cheese, or even to superintend the work in each of these factories. Employes of the firm are necessarily intrusted with the business. He can visit each factory once a week or so and give the employes general directions. The factories of each of the two men who severally operate three factories each are also distant from each other, and though each of these gentlemen is skilled in the business, still the work of receiving the milk and making the butter and cheese is mainly intrusted to their employes.

Of the other factories, I believe it may be affirmed that most of them are under the proprietorship of men engaged in other business, and who are not skilled in the manufacture of butter and cheese, or if skilled, do not make or personally superintend the making of the butter and cheese. The factories generally neither internally nor externally present an attractive appearance, and the employes are far from being models in neatness of attire or person. Patrons of each factory, in numbers from ten to forty, carry their milk in eight-gallon cans to the factory every morning (except in some cases Sunday morning); an employe of the proprietor receives it, weighs (or, when the account is kept in gallons, determines the quantity) and enters the amount in a book. The inspection of the milk, if any

occurs, is superficial. The milk is conducted from the funnel through a pipe into a reservoir. An employe puts the cans, one after another, into a box or vat (of a capacity of thirty to forty gallons) containing hot water, scrubs them some with a brush, then holds them over a pipe and lets into them for a moment a jet of steam. This is the cleaning the cans receive. This water generally serves to wash forty to one hundred or more cans.

The milk being taken in, the employes proceed with the work of making from it butter or cheese, or both, as the proprietor of the factory (whose only interest in the milk, is the fixed sum of money which he charges for making, fitting for market and marketing, the butter and cheese produced therefrom) shall direct.

In from ten to fifty days thereafter the proprietor puts the product in the market—sells it on the board of trade at Elgin, or sends it to a commission house in some city to be sold, as his own convenience or interest dictates. Generally, upon the expiration of two months he announces to his patrons a dividend—and, without any explanatory statement, he simply gives each a check for a sum of money.

The prices agreed to be charged for making, boxing and marketing the cheese vary some—ranging generally from two to two and one-half cents per pound, and for butter generally it is five cents per pound. The proprietor of the factory keeps the accounts and figures the dividends. The patrons seldom keep an accurate account of the milk delivered. They do not know the aggregate quantity of milk delivered to the factory each month; neither do they know the aggregate amount of butter or cheese or both made, nor to whom or when or for what price the proprietor of the factory sold the products.

Concerning all of these important matters the dairyman is generally not only ignorant, but is unable easily to ascertain the facts. It is difficult for him to obtain the data by which he could determine whether the products were in quality or quantity sufficient, the price obtained the market value, and the amount retained only the charges agreed upon.

The proprietor's interest is promoted by obtaining all the milk for his factory which, with his facilities, he is able to handle; hence,

in the absence of any guarantee of quantity or quality of the products, it is unreasonable to suppose that either he or his employe would contend seriously with any patron about the purity of the milk. No inspection of the premises of patrons is made nor is there any examination into their manner of keeping, feeding and watering their cows, milking their cows, straining and cooling their milk, and caring for their cans.

The naked statement of the management generally of the factories is of itself evidence that the quantity of butter and cheese made was not as large, and the quality not as good, and the price obtained not so high, as might be; and hence, even at the low prices prevailing last summer and fall, the dairymen did not receive what they ought for their milk.

Experience teaches that when the management of a business is confided to hired help success is seldom attained, and the business of manufacturing butter or cheese from milk is no exception to this rule. It is bad enough to intrust one's business to his own hired help, but to intrust it to the hired help of another—as dairymen do—is still more disastrous. To this management of factories generally there are some notable exceptions. These exceptions are generally where all the operations in a factory occur under the eye and helping hand of a skilled proprietor, who appreciates the importance of neatness, care and economy, and of producing excellent commodities—and who therefore endeavors to prevent impure milk being received and to manufacture only first-class goods--and to have all the work done prudently and cleanly.

The dividends reported furnish further evidence that dairymen did not receive what they ought for their milk. The following is a statement of the lowest and highest dividends as reported from a large number of factories, to-wit:

FOR MONTH OF	FOR 100 POUNDS.		EQUIVALENT IN GALLONS.		DIFFERENCE.	
	LOWEST.	HIGHEST.	LOWEST.	HIGHEST.	100 LBS.	GALLON.
May	43 cts.	60 cts.	3.87 cts.	5.4 cts.	17 cts.	1.53 cts.
June	32 "	50 "	2.88 "	4.5 "	18 "	1.62 "
July	45 "	52 "	4.5 "	4.68 "	7 "	.63 "
August	50 "	72 "	4.5 "	6.48 "	22 "	1.95 "
September	73 "	92 "	6.57 "	8.28 "	19 "	1.71 "
October	83 "	100 "	7.47 "	9 "	17 "	1.52 "

In this calulation I suppose a gallon of milk to weigh 9 lbs., which is probably about 4 oz. above the average. Assuming that a patron had fifty cows, yielding per cow per day one and four-fifths

gallons of milk, the following calculation would exhibit the difference in his monthly receipts, upon the supposition that he received the lowest instead of highest dividend:

FOR MONTH OF	GALLONS MADE.	LOSS PER GALLON.	DIFFERENCE OR LOSS.
May	2,790	1.53 cents.	$ 42.67
June	2,700	1.62 "	43.7
July	2,790	63 "	17.57
August	2,790	1.98 "	55.24
September	2,700	1.71 "	46.17
October	2,790	1.53 "	42.67
			——$248.06

The total difference in the receipts—that is, loss—for the six months would be $248.06, a heavy item surely to the dairyman.

I desire to call attention particularly to the report of dividends for August, as it seems very instructive. It is as follows:

Gould & Kilbourne, Dundee	65c	North Aurora Factory	60c
" " Algonquin	65	John Anderson, Lodi	50 6-10
" " Home	72	Switzer, St. Charles	65
" " Wayne	72	M'Adams, Algonquin	65–70
James Carlisle, South Elgin	72	Spring Lake	70
Wm. H. Hintze, Kirkland	60	Barreville	65
Newman & Thompson, Springbrook	61	Clark's	65
Dunc. Johnson, three factories	60–62	Oatman, Dundee	70
Coon Creek	57	H. A. Bogardus, Batavia	60
Boice, four factories	60	Kibling, west of Batavia	60
Hawthorne Bros	59–60	Potter, LaFox	60
Mr. Hathaway, Hampshire	55	W. D. Turner, Geneva	60
Barrington	65	Montgomery	60
D. E. Wood, Huntley	70	Mr. Holloway, Kaneville	50
North Factory	70	Naperville	50
Coral	64	Junction	50

It will be observed that factories under the same proprietorship paid unequal dividends—the largest inequality amounting to 7 cents per 100 pounds, that is. 63-100 cents per gallon. Why was this?

Is it unreasonable to suppose that it was because those factories paying the highest dividends received more of the attention of the skilled proprietor than the others? The Home and Wayne factories are nearest to the proprietors' residence.

I think it can safely be affirmed on the one hand, that the factories exhibiting the best results did not make any more or better butter and cheese than could be made from the milk supplied to them, nor obtain any higher than the market price for the goods. And on the other hand, that the factories (which are the most numerous) showing the poorer results, did not get out of the milk all of the good butter and cheese which could be made. The logical conclusion is, that there was bad management or there would not have existed so much difference in results. I am led to believe, from the best data accessible to me, that fully two-thirds of the milk de-

livered to factories in this state during the months of May, June, July and August, did not bring to the dairymen, on an average, over four cents per gallon. Dairymen must do better than that or quit the business, if they wish to avoid bankruptcy, for milk cannot, without loss, be produced at that price.

Prices, I am aware, were low for good cheese last summer—but were they so depressed as to account for such low dividends? A gallon of pure milk is sufficient, under the most favorable circumstances (and dairymen should carry on, or cause to be carried on, the business under the most favorable circumstances), to make a pound of first-rate, full-milk (or cream, as it is called) cheese. Such cheese could have been sold on the board of trade, during the months of June, July, August and September, at an average of at least eight cents per pound, as I am advised by a gentleman thoroughly conversant with the transactions on the board of trade. The charge for making, boxing and marketing cheese say was $2\frac{1}{2}$ cents per pound; deduct this from 8 cents (the market price) and there is $5\frac{1}{2}$ cents left —that is $5\frac{1}{2}$ cents per gallon for the dairyman for his milk, for the months of May, June, July and August. This is $1\frac{1}{2}$ cents per gallon more than was received for probably two-thirds of the milk furnished the factories during those months. Dairymen need not be told that a difference of $1\frac{1}{2}$ cents per gallon is an important matter to them. A pound of good butter can generally be made from $2\frac{1}{2}$ gallons of pure milk. I am advised that during said months such butter, on the average, could have been sold on the board of trade for 23 cents. Deduct from this 5 cents for making and marketing, and there remains 18 cents; that is 18 cents for $2\frac{1}{2}$ gallons, which is $7\frac{1}{5}$ cents per gallon. These calculations, based upon correct data as I think, demonstrate that even at the low prices of last summer dairymen did not realize what they ought for their milk. A just estimate of the loss sustained by them would astonish even the most thoughtful dairyman. Now why this loss?

It may be difficult, if not impossible, to assign the true reasons for it. The main reasons are probably as follows:

1. The milk was defective.

2. The handling and manufacturing it was uneconomical and wasteful.

3. The products were deficient in quantity.

4. The products were deficient in quality.

5. The facilities for caring for and storing the products were insufficient, and hence sales were compulsory and disadvantageous.

6. The prices charged for manufacturing the products were too high.

7. Sending the products to commission houses to be sold, was damaging.

8. Middlemen—to whose fingers some of the proceeds, in passing, always adhere—were to numerous.

I shall not dilate upon these several reasons separately. The brief sketch given of the way and by whom the work at the factories was done will convince dairymen of the soundness of most of these reasons. As to the quantity of the products, in the absence of accurate statistics which might and I think ought to be furnished by the proprietors of factories, no definite knowledge is attainable. It is a matter of grave importance to the dairyman whether 9 or 13 pounds of milk were at the factory used to make a pound of cheese, and whether 22½ or 32 pounds of milk were consumed to make a pound of butter.

My experience, observation and conversation with proprietors of factories leads me to believe that on an average not less than 13 pounds of milk were consumed to make a pound of cheese, and 30 pounds to make a pound of butter. The waste in this particular alone has been large.

In quality the products—particularly cheese—have been notoriously inferior. Skim cheese has been the make generally. This cheese is made from milk divested of the cream, or most of it. To this short-sighted and pernicious practice of making skim cheese I attribute in a large degree the depression in the dairy business. Skim cheese is unfit for human food. It was well calculated to deceive—and has deceived the public; it looked fair and found sales at a price far in advance of its value. Proprietors of factories, commission men, dealers and dairymen made present money unjustly out of it—the latter the least, however. Consumption of this cheese decreased with the increase of knowledge of its demerits, and now it can scarcely be sold except in a market where it is supposed to be good cheese. The damaging financial results do not affect wholly, as it ought, those only who are engaged in manufacturing and selling it; it extends much further, and in its downfall it drags not only good cheese but the whole dairy interest. Unfortunately, like all wide-

spread calamities, the innocent with the guilty suffer. It will require years of faithful well doing in the manufacture of superior cheese to restore the valuable fame which this vicinity enjoyed in the production of cheese, a few years ago, and the prosperity then existing among dairymen.

As to the prices charged, they are the same generally as charged eight or nine years ago. By combination and shrewdness the proprietors of factories have managed to maintain their prices in the face and notwithstanding the heavy decline in the price of butter and cheese, in labor, and in property generally and in the profits of business generally. The proprietor—with less capital employed than any one of his patrons owning his farm and dairy, say 160 acres and 40 cows—probably made more money the past summer and fall than all his patrons out of their dairy business. The prices charged are probably nearly double the fair value of the services rendered.

It is superfluous to adduce any facts or reasons to convince dairymen of this vicinity, particularly those who were engaged in the business previous to the establishment of the board of trade, that it is, as a general rule, unwise to send butter or cheese to commission men to be sold on commission. Experience admonishes all that loss is almost certain to ensue when butter or cheese is sent off to be sold on commission. The goods should be retained in the factory until they are sold. This is one reason why they should be manufactured so they can be kept without injury, and proper storage provided at the factory.

The less middlemen to be paid in the prosecution of any business the better. Dairymen seem to have overlooked this fact. Probably in no other business can so many middlemen be found as in the dairy business. When the butter and cheese of the dairyman are not made separately by himself, but with others at a factory, what is wanted is help—laborers, butter and cheese makers—and not men merely to do the figuring, selling, and receiving the lion's share of the profits. Dairymen are capable of carrying on their own business —transacting all of it, and the sooner they unload all middlemen the easier and faster will be their progress to prosperity.

Now, what is the remedy for the financial infelicity of the dairymen?

For some of the untoward circumstances encompassing them it is likely remedies may be found in the suggestions already made.

The dairy has become an industry of vast magnitude, and it is of the first importance to success, in the present depressed state of business, that the product of the dairy should be as excellent in quality and large in quantity as reasonably practicable, and that these results should be reached as cheaply as practicable.

The first essential thing to this end is pure milk. By this I mean milk that is clean, sweet, drawn from a healthy cow and unadulterated, either by addition (as by adding water to it or other foreign substance) or substraction (as by taking cream off of it or the strippings of the cow). Without such milk it is impossible to make first-rate butter and cheese—such as will command always a sale at the highest market price, and generally a remunerative price. The production of pure milk is wholly within the control of the dairyman, and if impure milk is taken to a factory or made into butter or cheese, the fault is with him and he should bear the censure.

If all dairymen were careful and honest, only such milk would be delivered at a factory. But unfortunately this is not the case. Owing to carelessness or dishonesty, among the ten to forty patrons of every factory some milk that is not pure will be brought; and, under the present system—if system it can be called, it will generally be received and used; and in consequence of its use the whole of the pure milk with which it is mixed is more or less polluted and the product is injured. Such milk should always be rejected. If the proprietor of the factory bought the milk or was responsible, to the extent of their market value, for a reasonable quantity and quality of butter and cheese from it, unquestionably it generally would be rejected. The element of self-interest in such case would be present and incite to close inspection and prompt rejection of impure milk. It would also incite to more care, activity, and economy in every particular, lessen waste and expense, and insure a larger quantity and better quality of products and more remunerative and steadier prices.

If the milk shall hereafter be made up by proprietors of factories—other than the dairymen themselves--dairymen might insist upon its being bought by the proprietors.

If this cannot be accomplished, the plan prevailing to some extent in New York might be adopted. That plan is as follows: Let it be agreed that a pound of first-rate cheese be made for every 9 or 10 pounds of pure milk delivered, and a pound of first-rate butter for every 22½ or 24 pounds of milk delivered. And let the factoryman

agree to account to the dairyman for the value (on a particular day of each month or the average of the month) of a pound of such cheese for every 9 or 10 pounds (as agreed) of milk received (less the charge of making, etc.,) or if butter is made, to account for the value (determined in same way as cheese) of a pound of butter for every 22½ or 24 pounds (as may be agreed) of milk received (less the charge of making, etc.) Prohibit the making of skim cheese entirely. It is highly probable that some such arrangement—which would be perfectly fair and just—would achieve beneficient results to dairymen and reward reasonably the proprietors of factories. As the business is managed now, the proprietors assume no responsibility scarcely. If their hired men make a mistake—add too much or too little rennet, heat to too high or low a degree, or otherwise injure a vat of milk, by which loss ensues—neither the proprietors nor the employes sustain, as they ought, the loss. The dairymen usually sustain all the losses, whether from mismanagement, negligence or wilfulness. It is said that every factory has its graveyard, and if these graveyards could talk, a tale would be told disagreeably interesting and instructive to dairymen.

I must not be understood as casting any censure upon, or finding any fault with the proprietors of factories. Business is open to all, and if they have simply availed themselves of opportunlties to make money—without risk or much capital—furnished them by the dairymen, they are entiled to commendation for their penetration and enterprise.

Milk perishes quickly, and to become merchantable, generally, must be converted at once into articles of food less perishable, and this work of converting their milk into saleable commodities is therefore properly the business of the dairymen. It is to their interest that this work shall be done economically, cheaply and excellently, and not until they do it themselves, or see that it is done, need they expect the highest remunerative results. If they are so unwise as to furnish the opportunity, they ought not to complain if clear-headed and energetic merchants step outside of their vocation and engage in the—to them—thriving business of manufacturing butter and cheese out of the milk furnished by the dairymen, at a high, fixed price and of the kind and quality suitable to their interests. Shrewd men not only have the right, but always will, when permitted, seize upon a chance offered to make money, and I admire the proprietors of factories for the genius displayed in their government of dairymen.

Like rulers generally, they have managed to draw good pay, while their subjects (the dairymen) have been gradually approaching impoverishment.

It should not escape the attention of dairymen that the tendency of business, as to sales of butter and cheese, under the guidance of leading men among the enterprising proprietors of factories has been for the last year and a half, to sell on commission, instead of on the board of trade, as formerly. The board of trade was established by dairymen to prevent that sacrifice of their products resulting from sending them away to commission men to sell.

Commission men in vain assayed to thwart,on the start, the success of the board of trade. After it became a success, and they could only get the dairy products by purchasing them on the board, they came and bought them and paid good prices, and the dairymen received their reasonable reward. The commission men, shrewd gentlemen, became members, gradually they obtained control, and, as a result, to-day comparitively few sales are effected upon the board of trade, and thereby loss of their proper profits ensues to the dairymen. Several of the leading proprietors of factories (men who have the selling of immense amounts of butter and cheese belonging to dairymen) are to-day carrying on commission business in Chicago. Unless dairymen lift their voice against it, determinedly, the extinguishment of the board of trade—to them and them only, a most valuable institution—will soon take place. The agencies of dissolution are insidiously at work, and dairymen only are interested in staying them. And, unless they make their power felt to this end, the destruction of the board of trade will be accomplished.

The remedy is for dairymen to insist upon their products being sold on the board of trade, and watch closely all proprietors of factories who are also carrying on a commission business. Dairymen have the power and the right, and it is, it seems to me, of the utmost importance to them to prevent the ruin of the board of trade, and this can only be done by demanding that their products shall be sold thereon, and that they shall not be sent off to be sold on commission. Another fact dairymen should note, and that is, that the Northwestern Dairymen's Association has passed substantially from the control of dairymen and is now in the hands of commission men, proprietors of factories, editors of papers, manufacturers of cheese-boxes, vendors of patent inventions, salt, annatto etc., and merchants

engaged in supplying factory fixtures and implements. This fact should be borne in mind by dairymen when reading the suggestions and advice to them found in the annual published proceedings of that association.

Dairymen can hardly escape bankruptcy if they continue in the course they pursued the past season, and are now pursuing. The present system, if the wasteful, expensive and unprofitable manner in which their milk is converted into saleable commodities can be called a system, must be so changed as to produce more remunerative results to the dairymen or else abandoned. It is favorable to the proprietors of factories, who are in the main middlemen, and unfavorable to the dairymen.

The dairymen can, and if changed at all, must change it. If more and better butter and cheese, and for less money, cannot be made from their milk (of course I mean pure milk) by the proprietors of factories, than in the past season, then dairymen will be forced to make up their milk at their several homes, or associate together in proper and convenient numbers and erect factories, employ practical cheese and butter makers and under their own supervision manfacture and sell their own commodities or abandon the business.

It is indispensable to the success of the dairy business now, that only first-class butter and cheese shall be made. Such goods can always be sold at home, they are ever in demand and sought after, purchasers will hunt for them and come for them and pay a reasonable price for them. Such goods, too, can be kept and hence facilities for keeping them, when necessary, should be provided. To make such goods, only pure milk can be used; hence a system of inspection of premises, stables, cows, water used, dairy utensils used and management of thedairy, generally, and the milk itself, must be adopted and enforced where the milk is manufactured at factories or upon any associated plan. Then there must be less waste and expense in manufacturing and better methods of selling. If the proprietors of factories would purchase the milk or manufacture it upon the plan of responsibility, before stated, or upon any other plan which will compel them to assume that degree of responsibility which is necessary to insure the best results and is fair and just, then dairymen might hope for reasonable success without making up their milk themselves, either associated with each other or individually. If, however, no such arrangement can be effected with

proprietors of factories now existing, then what shall the dairyman do? To go on as heretofore is certain loss. Shall he quit the business? That he cannot do at once without sacrifice of property. Shall he make his milk into butter and cheese at his own home? or shall he associate with certain of his neighbors and they make up for themselves? The question whether a dairyman shall himself manufacture his own milk into butter and cheese, will of course depend on circumstances. Where he is capable, favorably situated and able to supply himself with proper facilities and willing to give careful personal attention to the business, undoubtedly he can make more money, all things considered, by manufacturing his own milk. The time and labor devoted to the work would not exceed much if any the time, labor and expense of carrying the milk to the factory and the sour milk, butter-milk and whey retained would be valuable to raise calves and pork. But where not thus situated, probably it would be more profitable for the dairyman to associate with others and have it made up at a factory of their own.

MR. LAMBERT (Canada) inquired as to the amount of milk required at different times of the season to produce a pound of butter or cheese.

WILCOX: Thought 22½ pounds sufficient to produce a pound of butter. His plan was to use the old style shallow pan; did not like deep setting; did not believe as now worked that we received all there was in the milk.

MR. BOIES used 23 pounds of milk for pound of butter.

DR. WOODWORTH used less than 22.

HON. WM. PATTEN said there was a great difference in the yield—it was all the way from 20 to 40 pounds; the season, and the feed used, had much to do with it.

C. C. BUELL: Did not know whether Judge Wilcox was a Granger or not; would make a good one at all events. Did not think all his statements would "hold water." Did not believe any factory could give a certain number of pounds of products for a specified amount of milk. It is all mixed—no two alike; each thinks his plan the best, and the only. The largest yield he knew of was one pound of butter from twenty pounds of milk. He knew of factories only paying fifty cents per 100 pounds for milk; this is too low; farmers could not live at it.

WILCOX: Advocated no definite plan of setting. And in reference to capital going into the business, he knew of no capitalist going into it; they were mostly irresponsible men, of no bottom whatever, which the dairymen of this vicinity had found out to their sorrow of late.

E. H. SEWARD: Thought Wilcox made a good point when he described the loose manner in which the factories are now run. It is a fact, the dairyman knows nothing about what is being done with his milk. It pays the factoryman better to make both butter and cheese, and so he makes it. The factoryman is independent; he has your milk and your money. He pays himself first and you last. You stand all the bad debts, shrinkage of weights, bad cheese, and all the other bad things of the business. The dairyman should have something to say, as to how the milk shall be worked up, how and when sold, and to whom sold. This can all be remedied if farmers will all unite.

C. H. LARKIN said the whole plan needed moral support, before any radical change could be effected. In reference to capital invested, he said, in 1875 the Condensing Co., of Elgin, made the following figures with reference

to the patrons delivering milk at their factory: Putting land at $55 per acre, cows at $50, and horses at $100 each, there was invested $553,293. The value of milk produced by these patrons was $61,812. Lands have not essentially changed, cows have. Had no direct interest in any cheese factory. Most certainly dairymen had a right and ought to know just what is being done with their milk. Had often kept his milk at home. Thought that 20 4-7 pounds of milk was enough to produce a pound of butter; he had also used 28 4-5 pounds for a pound of butter. He feeds high; believed it the best plan.

HON. WM. PATTEN: Had been a patron of a factory for five years; it did not pay; must try some other plan. Had known cheese sent to Chicago and sold for 2½ cents. After paying for selling, how much was left? Was now working up his milk at home, and found it the true and best-paying plan.

W. W. BINGHAM gave interesting figures as to his dairy. Sold his butter in Chicago.

G. P. LORD said the plan, or habit, of skimming milk was a fraud, and should be stopped; if every patron should skim his milk it would bankrupt any factory.

WM. LAMBERT: Told his experience with watered and skimmed milk. He brought suit against one patron from whose milk he had taken twenty-five per cent. of water, because he did not see him put it in. We needed better laws to prevent the adulteration of milk.

On motion, the chair appointed R. P. MCGLINCY, C. C. BUELL and E. H. SEWARD a committee to nominate officers for the ensuing year.

The secretary read the following report as the doings of his office for the past year:

SECRETARY'S REPORT.

Cash on hand at last report	$ 1.04	
Cash received for membership	4.00	
Cash received for reports sold	.75	
Cash received for advertising	32.00	
Cash received from H. W. Mead, Treasurer	79.00	
By cash paid for printing reports		$111.00
By cash paid for postage, stationery, etc		2.75
To cash on hand to balance		3.04
	$116.79	$116.79

Which report was accepted and placed on file.

WM. BURTON said—in reference to skimming—it was a bad practice. If you take a little for coffee, and then a little for strawberries, and then a little for butter, you would soon take it all. The dividends are small as it is; if this practice is pursued they will be still smaller. The manufacturers test the milk, and should receive none but good. The dairymen themselves were to blame. We could really tell but little about the dividends we see published; they are often paid larger than they really are, so as to draw patrons from other factories which pay less. A good deal of jockeying is done.

WILCOX: Was glad to hear Mr. Burton's remarks, but was sorry to know such facts existed; it was impossible to get good dividends where such practices were indulged in; he was astonished to know the practice existed to such an extent. The making of butter and cheese from the same milk was a new thing. It took time to perfect the business so as to make it profitable.

G. P. LORD said if permission to skim was given, he could get rich out of water.

Mc RICHARDS: Thought if all patrons of a factory took the same ratio of cream from their milk, no moral wrong was done. All would furnish alike and all receive alike.

WILCOX: Thought the best plan for each dairyman was to take out just what he wished for family use, when it was milked, but never skim.

Mc RICHARDS objected to the general tone of the discussion. He did not believe the dairymen of Illinois were all dishonest or foolish. He did not believe the practice of skimming was near as great as represented, at least in McHenry county; but yet, if any is done, it ought to be stopped.

C. C. BUELL said the question was being treated in a "milk and water" way. He thought they were making a "mountain out of a mole hill."

D. C. SCOFIELD added his protest against skimming. It was all wrong, and the crime was in proportion to the amount taken. One takes a pint, one a quart, and pretty soon you have taken all there is worth taking.

L. BARTLETT: Said there was a great difference even in good milk. Some is worth two cents per gallon more other. He could not believe this practice existed to any alarming extent. He had a better opinion of dairymen.

G. P. LORD said the best plan was for each dairyman to keep a cow for family use.

A member said the evils extended to the factories, where each employe took all the cream he wished for family use—or even more.

After some further discussion of this subject, it was dismissed, all feeling they had been pretty well skimmed.

The committee on nomination of officers for the ensuing year made the following report, which on motion was adopted, and the names submitted were declared duly elected:

President, Dr. J. TEFFT, Elgin.

Secretary, M. H. THOMPSON, Elgin.

Treasurer, R. M. PATRICK, Marengo.

Vice-Presidents, Hon. NATHAN WILLIAMS, Rock Falls; Hon. WM. PATTEN, Sandwich; S. W. KINGSLEY, Barrington; Dr. J. WOODWORTH, Marengo; J. R. MCLEAN, Elgin; I. BOIES, Davis Junction; L. BARTLETT, Bartlett Station; Prof. F. H. HALL, Sugar Grove; I. H. WANZER, Galesburg; CHAS. BOONE, Winnebago; JOHN SMALLWOOD, Freeport.

On motion, the convention adjourned to meet at 7:30 p. m.

EVENING SESSION.

WEDNESDAY, DEC. 11, 1879.

Upon the reassembling of the convention—

Topic No. 8—"Is it profitable to grind feed for the dairy? if so, can it be profitably done on the farm?"

This was considered a very practical question, and one which was of great interest to all dairymen. Their attention was more particularly called to it last winter, during the mud embargo of the roads.

E. H. SEWARD said it was an important question; but just now, as grain is so cheap, it was a question as to profit, between grinding and feeding whole. Grinding at home costs a great deal. The iron mills only cut, they do not grind. If there was some sure, cheap way, it might pay to grind on the farm, but at the price of grain now it would scarcely pay. If a few neighbors could unite in one mill—and that a good one—he thought it might pay. Thought to steam feed was better and much cheaper and made better milk. Two bushels of rye would make five after it was steamed, and would feed 45 cows one day. After steaming it should be mixed with bran and fed warm. It took longer to cook corn than rye. One bushel of rye is equal to three bushels of oats for milk. His plan was an upright steamer; water flowed from an elevated tank; the grain was steamed in a barrel. About one and one-half hours was consumed in cooking a batch. It was less labor than grinding, and cheaper, for the fuel was no object as a few cobs did the business. Stock prefer steamed to ground

feed. Cows will shrink when changed from cooked to ground feed. Had experimented with all varieties of feed; believed cooked the best, but must not be fed too hot.

C. C. CHURCH had known cows to become spring poor on cooked food; did not think it as good as dry feed.

C. C. BUELL thought grinding the best plan, and believed it paid. He used a "Big Giant Mill" and ground on the farm; could grind fifteen bushels per hour if kept in order. Commenced to grind as soon as hard enough in the fall. Used horses or mules as power. It did not pay to haul over two miles to mill.

CAPT. W. H. STEWART thought it paid to grind, and if it could be ground on the farm all the better.

DR. TEFFT believed in grinding, but wanted his ground very fine—it was the only way to get good results.

WM. PATTEN had used an iron mill, with good results. Now chopped his feed fine, which also gave good results.

MR. LAMBERT inquired as to the value of the cob ground; the opinion being that there was no value in the cob.

WM. PATTEN thought the profit of grinding depended a great deal upon the amount of labor required, etc.

C. C. BUELL said he had often changed from ground feed to stock corn, and found his cows did well.

W. W. BINGHAM: Believed in grinding. Had used all kinds of feed—found corn and oats to be the best, all considered. Often mixed bran.

C. C. BUELL: Asked as to feeding cows buttermilk, and how fed.

MR. LAMBERT said buttermilk was not fit to feed to cows; if fed to one cow, her milk would spoil a batch of 4,000 pounds; it took five pounds more to a hundred for butter, when fed.

BUELL thought we must not draw too sudden conclusions; bran if fed alone made poor milk, but if mixed with other feed it was good; it might be so with buttermilk.

W. W. BINGHAM: Thought sour milk fed to cows would affect butter.

MR. LAMBERT wanted to know how we could have our milk come to the factory in better condition. But no one seemed to know just how to do it.

Topic No. 9—"Should gross or net figures be given at conventions?"

No one seemed to take interest in this question. The discussion rambled over the entire dairy question.

LAMBERT thought that cows when warm should not be allowed to drink cold water.

MR. PATTEN said hot and cold milk should not be mixed.

MR. LAMBERT said in Canada all milk was carried in large cans, while small ones were used—each farmer bringing his own milk. He liked this plan the best.

DR. TEFFT inquired if any dairymen had experimented —as keeping green corn.

MR. PATTEN had cut clover green and put in his barn. Was told it would burn his barn, but it did not. Was good feed, his cows liked it, and it produced a good flow of milk. Believed this the correct plan.

On motion, the convention now adjourned to 9 a. m. to-morrow.

WEDNESDAY, DEC. 12, 9 A. M.

After the convention was called to order, topic No. 2 was again resumed, as the subject of soiling was considered of great importance to the dairyman.

G. P. LORD said he had read in the *Country Gentleman* how we could cut but 40 tons per acre, of green corn, while in France it is claimed 120 tons can be raised. Now can we raise 120 tons per acre? If one person can do it, all can do it. Under the same circumstances, he believed corn fodder very valuable feed for milch cows when dry weather usually begins. In August, he began feeding 40 head one bushel of cut-corn fodder per day—i. e., run through a cutting machine. One-third of an acre would make 1,600 messes; this was cheap feed. To make it pay we must keep more stock on the same land; we must make more than we do now. The French people have a mode peculiar to themselves. They dig deep trenches in the ground and bury the green corn, which comes out sweet and good—is kept in this manner for a long time—when it is freely eaten by the cattle. Anyone could try it, it costs nothing.

DR. TEFFT thought this an important question, and should be further discussed. He quoted from a paper read by ex-Governor Price, of New York, on this subject, showing the plan of burying. Said it was chopped fine and then spread in layers in ditches, with layers of straw, and then covered two feet deep with earth; pains is taken to close all cracks or openings. When taken out it showed no fermentation, and stock would eat it readily. Could be kept sweet by this plan for one year. If this is a fact, we can keep our cows cheaper than we now do. Two acres would keep a cow for one year.

GEO. P. LORD said the French plan was to dig trenches nine feet wide by four deep; when filled was raised above the level of the ground. Some have said, to dig these trenches would cost more than to build all our railroads—they might be worth more. The country was new yet, and we have much to learn in the line of agriculture.

MR. LORD did not advocate this expensive mode; had had experience in feeding; in the old way fed corn-stalks whole, now cut all his stalks. They were then out of the way—did not trouble in the manure.

WM. PATTEN thought the present style of plow had much to do with the kind of manures used.

W. W. BINGHAM asked if there was not some other articles as good as corn for soiling.

WM. PATTEN wanted to know if we were far enough advanced to engage in this kind of farming. The more he put upon his farm the less per cent. he received from it. In Germany they had no fences. All stock was kept by soiling. As to the number of cattle kept on an acre, he could now keep double the number formerly kept, or twenty years ago. Some dairymen had said that one man should be employed on the farm to every fifteen cows; at present prices the receipts of the dairy would not pay the help. If one man could keep 60 cows on 100 acres, another ought to do the same. And if it can be done, then the most of our farmers are snstaining a great loss, and are far from a perfect style of farming. He began by sowing rye in fall; in spring sowed oats—four bushels per acre; then drilled corn, then field corn; also raised beets and turnips and other roots; also using corn meal. By this plan he could make

one acre keep one cow. Sowed his rye at different times, as well as corn, so as to have green feed at all times. He had come to this meeting on purpose to learn about soiling. Most men were land poor; they were compelled to spread their manure too thin. Used three bushels of seed per acre for drilled corn.

GEO. P. LORD: Said clover was used by many. Also Hungarian was much in favor, as two crops per year could be raised. He used two bushels of seed per acre for drilled corn, and when full-grown could see only the first row.

BINGHAM said after cutting his rye he then used the same land for corn, thus raising two crops per year. Kept his cows in the stanchions 20 hours out of the 24. By this style of farming, the small amount of land used called for less labor—he used no pasture at all—and the land tilled is consequently very rich and productive.

THOS. BISHOP: Thought this mode of farming looked green. How 10 acres could feed 60 cows in summer was a mystery. He used a large piece to feed 30 cows; did not believe in this wheel-barrow style of farming. Ten acres could not keep three cows; it could not be done. He was one of the doubting Thomases.

BINGHAM: Fed meal all the summer. Used orchard grass and red clover.

DR. TEFFT said he noticed that Ben. Butler said we of the United States were land poor, while in France ten acres was considered enough, where the whole country only about equaled Texas. France, in 1876, exported $186,720,000 of butter and cheese, while we only exported $17,789,000; theirs are small farms ours are large ones.

WM. PATTEN thought it would be a long time before we could reduce our living expenses to a level with Germany or France.

BINGHAM said it was an established fact that small farms would always yield a greater per cent. than large ones.

THOS. BISHOP: Could see no difference between large and small farms. A small one could keep four or five cows, a pig, a chicken or two, a goose and a turkey or two—how could these manure it so as to produce such wonderful crops? It can't be done; its all nonsense. Small patches may do for amusement, but when you talk about making money, you have got to have room to do it.

BINGHAM said on 36 acres he raised corn, cherries and all kinds of small fruits, as well as eight or ten cows. Made a good living and more too.

WM. PATTEN inquired how much he paid for labor.

MR. BINGHAM: Do not call my own time worth anything, and I do most of the labor.

S. N. WRIGHT inquired of Bishop how many cows he kept.

MR. BISHOP said he had 40 cows.

MR. WRIGHT: Had considered Mr. B. one of the best farmers in the county, but was now in doubt, as he (Wright) had only about one-half as much land as Bishop and he kept 45 cows and four horses. Came to this meeting to learn about soiling. He felt confident that no one was aware how much stock could be kept by soiling and feeding in the barn. Thought one acre sufficient to keep a cow.

MR. BISHOP: Knew many men around him who were trying to carry too much; were always hard up for money. He kept on his farm 40 head of cattle—and managed to keep out of debt, and have $1,000 a year more than he knew what to do with. Kept plenty of pasture; only fed three acres of fodder corn the whole season, and that was not fed yet. His expenses were light; he paid but $12 per month for help.

S N. WRIGHT: I paid only $10.

BINGHAM: I do my own work, which is cheaper still.

MR. LORD here stated that it took about 15 minutes to cut the feed for 40 cows at one feeding.

After some further discussion of this subject, the matter of adulteration of milk was again taken up—when Geo. P. Lord offered the following resolutions, which were seconded by W. W. Bingham, of Marengo:

WHEREAS, It has been publicly stated in this convention, that the practice of skimming milk is quite general with those furnishing milk to our creameries, and that this habit has obtained mainly through the misapprehension on the part of dairymen, and whereas the adulterations of milk by substracting cream prevents manufacturers obtaining the best possible results, and reduces the current price of pure milk, to the injury of all interested in the business, and

WHEREAS, In the present depressed state of the market, it is of importance that the quality of dairy products be greatly improved, and this improvement can only be achieved by the use of pure and unadulterated milk, therefore

Resolved, That the abstracting of cream from milk furnished those who manufacture it and divide the proceeds pro rata among their patrons, is unjust, in that it unfairly reduces the value of all the pure milk furnished such manufacturers and injures the reputation of the dairy products of the West, and that such practices should be abandoned at once.

Resolved, That, in the judgment of this convention, those who receive and manufacture milk, the proceeds of which are to be distributed pro rata among their patrons, have accepted a sacred trust—a trust requiring great vigilance and care—and that they are morally as responsible for the quality of milk they receive, as they are for the products of their factories, and that it is as unjust for them to receive adulterated milk, knowing it to be adulterated, as it is for dairymen to furnish such milk, for they cannot but know that the adulterated milk reduces the value of all pure milk they receive, and therefore works to the injury of their best patrons.

Resolved, That as it is absolutely necessary that the quality of our dairy products be so improved that they will command a price in the market that will remunerate the producer for his milk, and as such improvement in the quality can be obtained only by the use of pure and unadulterated milk, this convention advise all engaged in the business of manufacturing milk, to adopt at once a thorough daily inspection of all milk received by them. Such inspection should show the temperature of the milk when received at the factory, the quality of the milk as indicated by the lactometer and the quality of cream in every hundred pounds of milk, and should be recorded in a book in such form and manner as would enable all their patrons to know the daily average quality of all milk they receive, and they should positively refuse to take milk from any and all persons who skim or abstract any portion of cream from their milk.

Mr. Lord spoke to these resolutions, strongly deprecating the practice of skimming. A farmer might just as well take one can of water and one can of milk to the factory, and ask pay for two cans of milk. The practice was wrong, and should be stopped. How is it with the individual who accepts the trust to receive this milk? Does he know of this skimming? or does he consent to it? If 20 men take to a factory, and five take poor milk, the other 15 would have reason to complain and just cause to protest and demand that all bring good milk. When cows are coming in at all times of the year the milk should average about the same; of course where grain is fed in abundance the milk is of a better quality. There is not a set of dairy-

men of the whole world that feed as high as the Illinois dairymen. The Eastern dairyman cannot afford to feed, for his grain is worth more than his milk. There is no reason why we should not make the best product in the world. He admired a man who could make a good cheese without using a particle of cream. The skimmed cheese was really the philosopher's stone.

C. C. BUELL: Was amazed that so much could be said on this matter of skimming; he really did not know how to vote. It was all plain, for it rested with the farmers —they were to blame if there was any blame; did not think any resolutions would prevent it.

MR. LORD: Said the question had been discussed at every meeting of this convention, and now some action should be taken. Silence gives consent.

W. H. STEWART: The resolutions seemed like an attempt to shift the responsibility—it was always somebody else. The remedy lies just where the crime lies. No one wanted to go smelling around, and tell his neighbor he was skimming his milk and that it was wicked, and that he should cease the practice at once—or go where wickedness finds its reward; this would be a small and mean thing to do. Factories are thick; confusion would be the result. The farmer and not the factoryman should make the charge. There is no way to get at it. Who is going around to find it out? It would be similar to the tax on incomes; it would be odious—it could not be done. Did not like the resolutions.

MR. LORD said: It was stated here yesterday that the farmers were the dishonest ones; if this was not true, it should not be said. If there is no way to find this out, then this statement should not be made. The person who

receives the milk should know whether it is adulterated or not; if he has no means of knowing, then this charge should not be made against the farmer. The person who has the custody of the milk is the proper person to watch this matter, and if necessary make the charge—whether it be the richest or poorest, largest or smallest patron of the factory. No man has any right to take any cream at all—and no maker can say so. We are zealous about this, because our money is in it. We have a right to watch this. If one patron is crooked it interests all, and we have a right to demand that all shall be honest. Our product is double in value all the gold and silver in the United States; indeed, it is so large that one can hardly conceive or comprehend it, and is constantly on the increase. He spoke warmly as to the second resolution, and the trust accepted by the manufacturer—he was the proper person to detect any wrong-doing, and should at once bring all guilty parties to justice.

C. C. BUELL objected to this debate, as it was a wholesale denunciation of manufacturers.

CAPT. STEWART also thought it taking too much latitude, inasmuch as it was attempting to place all the blame upon the manufacturers. This was all wrong; they have sins enough of their own, without assuming for others.

THOS. BISHOP: Said most of these charges were made by men who did not patronize cheese factories. They sell to the condensing factory and have no right to complain. They take their Sunday or surplus milk to the cheese factory, and it is the poorest milk received.

After some further discussion, a vote was taken, the resolutions were adopted by the convention, thus placing themselves squarely on the record as against skimming, or receiving skimmed milk at factories.

Topic No. 10.—"Do the benefits derived from manures equal the depreciation of dairy stock?"

JOHN KEATING: Thought this a hard question to answer, but a very important one. He believed the depreciation of a dairy to be at least 12½ per cent.; at the same time he believed the manure would nearly if not quite offset this. Manure is worth $10 per head per annum from a large dairy, if rightly applied. He thought top dressing the best plan of application.

THOS. BISHOP: Received more from old cows than it cost to buy new ones; therefore it was a gain and not a loss to change cows.

After some further discussion of this topic the state of the finances of the association were thoroughly discussed.

DR. TEFFT stated the present condition of the treasury, strongly urging all to become members, so that the proceedings might be promptly published.

R. P. MCGLINCY also spoke to this question. He said the reports ought to be printed, and that the secretary should be paid; no one could afford to work for nothing—gratuitous labor was always dear labor.

SECRETARY THOMPSON suggested that as the annual fee was so small—only one dollar—that all double up, and the difficulty would be overcome at once. This suggestion seemed so sensible that the double up plan was adopted at once, whereupon the financial condition was greatly improved.

DR. SLADE said although the association were making efforts to secure aid from the state, it might be a long time before we could get it.

On motion of G. P. Lord two more members were added to the committee on legislation, one of which should be the president. And on motion of C. C. Buell, the committee were voted power to appoint the other member—which the committee proceeded to do by appointing Mr. M. H. Thompson as the other member.

On motion of M. H. Thompson, it was voted to make all members of the press, present, honorary members of the association.

On motion of W. W. Bingham it was voted to invite the ladies of northern Illinois to attend and participate in the meetings of this association. He believed the ladies could help very much in making the meeting interesting. He also extended a cordial invitation to all to attend the next annual meeting of the Kishwaukee Farmers' Club, to be held at Marengo soon. He further invited the Illinois State Dairymen's Association to hold its next annual meeting at Marengo.

R. P. McGLINCY spoke in favor of the next meeting being held outside of Elgin, and after some discussion it was unanimously voted to hold the next annual meeting at Marengo, Illinois.

THOS. BISHOP was glad to see improvement being made in the manner of conducting the meetings. We had formerly been overrun with professors. They did not come any more; hoped we were done with them. All had some patent, or salt, or something else, to sell.

After some further promiscuous discussion the meeting adjourned, to meet at 1 p. m.

THURSDAY, DEC. 12, 1878, 1 P. M.

Convention called to order as per adjournment, when Topic No 11—"Is it practicable to reduce the cost of producing milk so as to correspond with the decline in prices?"

JOHN KEATING read the following paper upon this topic:

JOHN KEATING'S PAPER.

As surely as the summer's bloom is followed by the winter's snow, as surely as the copious rain is followed by the parching drought, as surely as the glory of mid-day is followed by the darkness of the night; so surely are times of high prosperity and inflated values followed by periods of depreciated stagnation and distress. Such has been the experience of mankind from the beginning, and such has been our experience of late.

We have passed through the happy days of prosperity, into their pleasant heats, their fertilizing showers and their glorious sunshine, and we are now surrounded by wintry cold, draught and darkness. What then are we to do? throw up our hands in despair, and exclaim that it is useless to struggle against hard fortune? By no means. Despair helps nothing and summer will come again. The question then suggests itself, is it possible for us to reduce the cost of producing our milk so as to correspond with the decline in prices, and thus to do as well in the future as in the past? To this I would most emphatically answer, no. It is not possible to reduce our expenses so much, the depreciation is too great. We must be satisfied with cheaper living and smaller profits.

But, while we cannot do everything, we can do something; we can do much. We can lessen the cost of producing milk very much by pursuing the right course with patience, vigor and determination.

What then is this course, and how can we pursue it? And here I must confess I feel my inability to point out, much less lead, in such a course, and that I can but offer a few suggestions which have occurred to my mind.

The first, and most important step in reducing the cost of producing milk, consists in increasing the average yield of our cows. Worse than dull markets, worse than low prices is this fact; this

lamentable fact, our average yield is too low. We feed sixty cows to produce the milk that fifty ought to make. In times of high prices we might endure this; at present it presses us severely. This question of a high average is really a most vital one. Were we to know the number of cows we keep for nothing, were we to know the number, we keep at an absolute loss, we should be struck with horror. "Where ignorance is bliss, 'tis folly to be wise," may be sometimes true, but where ignorance is loss and ruin, 'tis folly not to be wise. Is it a fact, as often asserted that as the dairy increases our average decreases; if so, why is it so? The principal reason is, I think, that for years we have been pursuing a suicidal course, regardless of many warnings. We have been selling our best calves to the butcher, raising few or none of our own cows and depending on the culls and scalawags of the North-west to supply our dairies. This slaughter of the innocents must cease. We must raise our own cows from our best calves, and when we have done this we shall find our average much increased, and consequently our production cheapened. It will be of little use for us, however, to raise our own calves if we do not take particular pains to raise good ones. In order to raise a good average of calves, it is necessary that the cow should be a good milker and that the calf be sired by a male of a good milking breed. This is a matter of the most vital importance. A first-class male is a necessity in every well conducted dairy, and the man who uses a poor, infirm beast merely because he gets him cheaper, is very blind to his own interest.

The importance of this question of a large average yield can hardly be exaggerated; it is the foundation of all successful dairying. The man who gets from his cows an average of $2\frac{1}{2}$ gallons, will prosper, while his neighbor, who gets 2 gallons, will lose. Simply because one man makes a profit, even it be a small one, while the other man gets back barely what he gives and sometimes less, and consequently never gains. I firmly believe that this matter of small and decreasing average yield, has injured the dairymen of the North-west more than disease, accidents and low prices combined. We must constantly bear in mind that it is on the profit we live; on the excess of receipts over expenditures. This fact alone will account for those cases, with which we are all familiar, where men with small dairies and small farms have prospered, while others whose annual sales have been much larger have lost money. We *must* get the deadheads out of our stables, we *must* make a better average in the future than in the past or the depreciation in prices will ruin us.

You will notice that in speaking of this necessity of a better average yield from our cows that I have dwelt mainly on the necessity of raising our best calves and of weeding out our poor cows. I have done so not because I consider that this is all that is necessary, or even that it is of the first importance; far from it. With the best of cows we will fail, and miserably fail, if we do not shelter them from the cold, feed them generously and water them abundantly. But in this matter of feed and shelter, as far as my observation and experience goes, we have done well in the past and are doing well in the present. In the matter of water, perhaps, this is not so generally true. Some cows still drink in holes, broken in the ice, on rivers and sloughs, at the risk of breaking their legs; and some travel a mile or less across a snowy waste to a distant spring. This is all wrong, it is expensive, it is ruinously extravagant. Clear water, abundantly supplied in our barn-yard to our cows, will prove a paying investment and will materially cheapen the production of milk.

Give me *good* cows, not runts or scalawags or culls, warm barns, well ventilated, rich food, properly fed, clean spring or well, water close at hand, careful and intelligent milkers and I will produce milk as cheaply as it can be done in North America.

Ah! but careful and intelligent milkers are necessary, and they cost money. Do they not cost too much? Must we not reduce the wages we pay, if we would keep pace with the reduction in the price of milk?

We must; we certainly must. I believe that the laborer is worthy of his hire. I would be the last man on earth to attempt to oppress or grind the workingman. But we must be just to ourselves and to our families as well as to our laborers. The dollar which we pay him now has increased very much in value in purchasing power within the past few years. Prices of clothing and food are much lower, the expenses of an individual or family much less. We ourselves receive much less for what we sell than we formerly did, and justice—simple justice—demands that we should hire labor at a lower price than we have been paying. In order to effect this it is necessary that we should act together with some degree of unanimity. If we succeed in doing this, we will have cheapened the production of milk so much. This question of wages is a very important one. Dairymen must from necessity employ a great deal of help. I presume that the wages paid will average on most farms one-third, and on some even a larger proportion, of the expenses. A reasonable and just reduction in wages is therefore a thing much to be desired,

but we must guard against false economy. It is not economy to hire a scalawag man, any more than it is to buy a scalawag cow; we must carefully avoid both. It is not economy to keep but one man, when you have work for two. Pay good men fair wages, as the times go, and employ enough help to do your work in a thorough and seasonable manner. With brains at the helm, I am convinced that the more men employed, the more money made. Let us get out of our farms and our cows *all* that is in them. Let us raise no weeds, keep no dead-heads, and we will succeed in spite of low prices.

It is important for us also to consider that everything which tends to a better system of farming, to an increased yield per acre from unplowed meadow and pasture lands, to better drainage, to better care and application of manures, better care of tools, better fences, more thorough eradication of weeds—the curse of the agriculturalist; in a word, *everything* that tends to thrift, economy, enterprise and progress, will cheapen the production of milk, directly or indirectly.

As I have said before, I am not sanguine that with our best endeavors we can keep pace with the depreciation in price of our products, but this very depreciation may be profitable to us in another way.

If the efforts that we are obliged to make to stem the tide of bad fortune should make us better farmers than we were before, better men than we were before; if it should cause a renewal in us of the old-fashioned virtues of honesty, economy and industry; if it should cause us to adopt the golden rule, "Pay as you go," if it should compel us to do without superfluities and luxuries until able to pay for them, then might we truly exclaim with the "Bard of Avon"

"Sweet are the uses of adversity,
That like a toad, ugly and venomous,
Bears yet a precious jewel in its head."

THOS. BISHOP: Asked if there were not many ways of furnishing milk. Some used a small patch of ground, bought all their feed and made a large quantity of milk, while some used large farms and produced no more. Which was the better plan? Who could give the exact figures? He would like to know which was the cheapest. He could keep one cow on five acres; no less. Some claimed to

keep one cow on two acres; did not believe they were well kept. As to why the price of cheese is so low? it was all plain to him—it was because there was too much cheese. When pork is low, there is too much pork; when wool is cheap, there is too much wool; and the same with everything else. We are now making more milk than the land will naturally produce. We would make more money to kill one-half of our cows and let one-half of our farms go wild. He made eight or ten cans per day; his neighbors made a long wagon-load; we all make too much. His expenses, of all kinds, including taxes etc., were about $900 or $1,000 per annum. As to the loss from keeping up a dairy—there was no loss. He sold his fat cows for about $40 per head, and could buy in for less money. Always kept his cows fat and in condition to sell; he could clear annually from his little farm $1,300 or $1,400; what large farm could do better.

W. W. BINGHAM was also in favor of small farms. There was less wear and tear, and on the whole were far more profitable and more desirable.

J. KEATING said it would not do for one man to reduce his milk one-half, with an idea of controlling the market. If there could be a concert of action and all do so, it might do some good. It seemed to him that the sensible plan was for each man to make all he could from his land, let his farm be large or small; each farmer should keep all the stock his farm would carry.

C. C. BUELL could see, that if you cut an article in two pieces, how it might affect the whole; same with silver or gold. Thought a good agricultural paper was a good medium to learn how to do these things scientifically; there had been too many hap-hazard experiments; must get

down to business and facts. As the Germans and French people do, we lacked knowledge as to soils, etc. We ought to know *why* bran is not good feed to make butter; we do not. We only know such is the case. As to the low prices, no one rule could be adopted. No two farms were alike; every farmer must make a rule for himself. Science at best was nothing but good common sense.

S. N. WRIGHT: Was a small farmer. Began with 125 acres; now used but 85. Had paid out since last January $101 for feed; had kept 43 cows. While Bishop had used five acres of land for each cow. These five acres, at $70 per acre, would be worth $350; which, at ten per cent., would be $35. Now this is as much as an average cow will yield net. Where is the profit of such farming? He could keep one cow on two acres, worth $40 per acre—or $80 per cow for land—the use of which at ten per cent. is only $8. His labor was no more than Mr. B.'s, but his profits were much larger.

A. GULICK said the only way was to use all the manure we can and raise all we can—if you are a dairy farmer, then make all the milk you can. The average farmer gave too little attention to manure. He here gave an account of sickness in his herd, which so far he could not understand or explain.

S. W. KINGSLEY: Wanted to know the value of salt as a manure, as experimented with by the Kishwaukee Farmers' Club.

L. W. SHELDEN said exact figures had been kept, and would, when completed, be given to the public.

S. N. WRIGHT said that oil cake was an excellent feed for milch cows, and was not expensive in proportion to its real value, as compared with other feed.

S. W. KINGSLEY also spoke in favor of oil cake, as being a most excellent feed for dairy cows.

HENRY SHERMAN: Said he was 70 years old—most too old to make a speech. He was a city dairy farmer—that is, he let his farm—and took all he could get for the use of it. Could not tell whether he was making or losing money; he knew if a cow died he was pretty sure to get the hide. He did not believe all in one kind of farming; would not take all his eggs to market in one basket. He had drifted into dairying and should most likely hang on until he died; could then tell whether he had made or lost. He raised a little sweet corn for the packing factory. Sold last year $1,200 worth. The stalks were good feed for cows, if cut while green.

DR. TEFFT: The glut of the market was not for the best goods; they would always sell. We make too much poor goods. France is doing much better than America; her dairies are paying better; their prices are more reliable.

HENRY SHERMAN said he was the man who built the first cheese factory in this region; sent to New York for his outfit. There was no cheese here then and no price. Run it the best he could, and that was poor enough, but found he had too little religion to run the business, so got out of it. Patrons were ungrateful; would leave you just when you needed the milk the most, for one dollar. Factorymen are now charging too high; they must come down; the farmer must be allowed to make an honest living, dress well and pay the minister.

COL. WILCOX said he had to pay 25 cents for good butter, while poor was worthless. Butter at 25 cents does not look like hard times. As to exporting—you do not

supply the home demand for *good butter*. This should be done first, then export. All goods should be sold on their merits—the same as Babbitt or Colgate sell soap. A trade-mark is a valuable thing. You must make *good goods*, and you will find no trouble in selling. It should all be branded just what it is. Everything should be good. No farmer should keep scalawag cows; they cannot afford it. The farmer who keeps half poor and half good cows will lose; the account will just balance, with his time and labor thrown in. The cow that gives one-half gallon more than another is the cow to keep. There is where your profit is. He strongly urged all to brand their goods. Don't be afraid to put your name on every cheese box or butter tub.

R. P. McGLINCY also urged all to brand their packages. If Jones made cheese, why not put Jones' name upon it, with the date of its manufacture? Then a consumer could readily tell whether he was eating a new or old "customer." He believed it was not as much over-production as under-consumption, which affected the price. Make better goods, and then we will hear no more about over-production. Cheese is a wholesome food and cheaper than meat, and would, if good, be largely used.

DR. TEFFT said as the factories now charged five cents for making butter, they were receiving more than their share of the profit. No farmer could afford to pay this price, it was nearly one-third of his income during the summer months. The factoryman has it all his own way now, and runs his factory to make the most money for himself, and let the dairyman take care of himself.

GEO. MARSHALL said the Blackberry factory paid 40 cents per 100 pounds. Took the milk in large cans and they often found three or four quarts of Blackberry

creek mud in each can. This dirty practice is not fair; goods made from such milk will not keep. Farmers, as a rule, are run by everybody: lawyers, merchants and doctors all have a pick at the poor farmer, and last, and worst of all, the cheese factoryman comes in to carry off the skeleton. They receive your milk and make it into what they please, pay you when it suits them, and as much as they please and what can you do about it? They had no system. Could not sell on board of trade. The commission men and factorymen were in collusion to rob the farmer. There is no system among them only for plunder.

DR. TEFFT said the blame all rested with the farmer, they could dictate where and how their milk should be worked up. The true remedy is not to take our milk to a factory which would not sell its products on the board of trade. He had known farmers who had attempted to speak on the board to be hissed down by the buyers because they dared to talk for their side of the question. This was all wrong. The producer, manufacturer and buyer should all work together, their interests are mutual.

WM. BURTON said, as to selling on the board of trade, it was not always possible or practical to do so. When the tenth came the farmers wanted their money. Consequently the factoryman must sell or he can't pay. Both Marshall and Wright were as fast for their pay as anyone else, and would not consent for a factory to hold goods. Therefore if there is no price on the board we must sell somewhere else. It the patrons would back him he would sell anywhere they chose.

MARSHALL thought that if all would sell on the board no backing would be needed. Should sell for what they could get. Our factories are not honestly run. The factory he patronized was run by a broken-down lawyer, who knew

nothing about the business but to cheat the patrons. The truth is, if all would stop selling on commission the buyers would all come to the board to buy.

R. P. McGLINCY: Was glad to hear this question discussed. He believed all should sell on the board or not at all. It was a fact that commission men had made several attempts to break up the board but had failed so far. Goods should not be sold at factory. Hold till sale day, then all will be sold at a fair price. There is generally a tail to all sales made on commission, either in short weights, bad pay or some other way. He urged all dairymen to patronize the board of trade and mutually protect themselves.

WILCOX said the factorymen would look out for their interest, so must the farmer or he would be left out in the reckoning.

B. COX wanted to know if buyers would not come to the board meetings to buy *good goods.*

WRIGHT said he had known where commission men had offered to advance money to make monthly dividends. This clearly showed collusion.

BURTON did not see how a divividend could be made out without making a sale and showing the bills.

S. N. WRIGHT knew it to be a fact that a commission man had attempted to bribe the Clintonville factory not to sell on the board of trade. The whole manner of working up and selling is a fraud on the producer.

After some further discussion of this subject, in which it plainly appeared that the system, as now practiced, in making sales was not satisfactory, the convention adjourned, to meet at Marengo, Illinois, where the next annual meeting will be held.

T. J. BURRILL furnished the following paper, which was received too late to come under its appropriate head:

FERMENTATION AND PUTREFACTION OF MILK.

In early times, with peoples as with individuals, the changes which occurred in such a substance as milk when allowed to stand for some time excited no curiosity; stirred no one to inquire why the phenomena presented took place. If any thought is given to the subject a satisfactory conclusion is reached when it dawns upon the mind that milk sours because it is its nature to do so; it becomes unpleasantly odoriferous because it could not continue otherwise. From this low beginning it is a long way and by no means one without difficulties to the full knowledge now possessed by some investigators of the changes and their causes which take place so persistently in so common an article as cows' milk. It is possible that some whose business makes them more especially interested do not yet appreciate the fact that all these ordinary changes arise from the action of living organisms altogether foreign to the constituents of the milk itself. For a long time the idea has been current that in such organic compounds changes arose through spontaneous chemical agencies, that the oxygen of the air is the chief factor in the production of the results observed. This was supposed to be confirmed by the fact that the air being driven out by heat the changes came later, or upon excluding the air, as by heating and canning, they occurred not at all. But it has been demonstrated that pure air may have free and abundant access to putrescible compounds, such as milk, without the latter becoming in the least affected. There is no souring, no fermentation or decomposition of any kind. The milk retains its freshness and purity for an indefinite length of time; only the steady dessication causes the least change. The conditions are that the air be entirely freed from suspended particles and that the vessels be absolutely cleaned, or heated to a sufficient degree to kill all living atoms and their germs. It has been shown that air sufficiently filtered through clean cotton, wool, or even allowed to settle in a perfectly quiet reservoir is inert—absolutely incapable of producing fermentation or decay. Under such circumstances temperature has no effect. The protected liquid is preserved just as well at 90° Fahr. as at the freezing point. A liquid keeps its fresh condition as long as a solid body from which all water has been evaporated.

One point remains to be fully determined. Does milk,in common with other fluids, secreted within the body of an animal, contain, before it reaches the external air, the germs which by development and multiplication may cause the changes usually observed? In cases of disease living germs are often found in all the animal fluids and peculiar phenomena have been witnessed in such fluids after extraction and exposure.* On the other hand one looks in vain with the aid of the best microscopic instruments for such living particles in the same fluids from animals in perfect health; at least this has been the case in the personal observations of the writer. Blood has been drawn with instruments made for the purpose and kept absolutely free from living organisms, though not excluded from other agencies to which fermentation is assigned, and preserved indefinitely without heating above the normal temperature of the animal from which it came. There can scarcely be a question but that in the case of perfectly healthy cows, fed upon proper diet and drinking pure water, the milk would forever keep sweet and good, if preserved from contact and inoculation with living germs after it leaves the udder. This latter, it is true, is a difficult accomplishment, but, as an experiment, it can be done, and we certainly would be unwise to assert that it will never be done in a simple and practical manner adapted to ordinary use. Some simple device may overcome the almost insurmountable obstacle now met with, and introduce a new era in the dairy business and household economy, leaving us all to wonder why it was not thought of sooner. Indeed much progress has already been made in this direction, attained for the most part by common observation and practice. Thoroughly scalding the vessels—and this just before as well as just after use—keeping everything clean, and especially free from decomposing substances, beginning with the stable and ending with the arrangements for final disposition of the products, the lowering of the temperature, and finally the introduction of some tasteless and harmless antiseptic materials as dilute solutions of thymol, boracic and salicylic acids—all looking towards

*Professor Orth, of Gottengen, Germany, says: "Recent researches leave no doubt whatever that in some diseases the blood contains during life, though to a far higher degree after death, certain low forms of animal or vegetable life."

Dr. Wm. Roberts, of Mancaster, England, says the germ theory of disease "is now established upon a firm experimental basis."

Dr. Obermeir, of Berlin, and Professor Stricker, of Vienna, find low plants, fungi, in the blood of patients suffering from relapsing fever

Dr. Neftel, of New York, says: "My experiments so far lead me to the conclusion that the lower vegetable organisms can continue to live and multiply in the tissues of living animals."

Dr. J. G. Richardson, of the University of Pennsylvania, reports the experiment of swallowing bacteria and afterwards finding numbers of them in the blood drawn from his finger.

the prevention of infection by, and development of, microscopic germs —surely this is progress. When thoroughly understood and appreciated that these and similar operations are really for the purpose of killing or retarding the development of living organisms, capable of wondrously multiplying themselves in a very short period of time, and causing the uninvited phenomena which so constantly present themselves in the absence of these precautions, and when it is further confidently known that the destroying agents are altogether foreign to the prized liquid itself, shall we not use the means already at our hand with more intelligence, in better directions, by more economical methods and with surer results? It is so now. Those who have adopted the germ theoy of fermentation in all its faces, and proceed accordingly, are most and surest successful in the management of milk.

We have been so long accustomed to the idea that organic bodies, and especially those of animal origin not wholly freed from water, *spontaneously* decompose, it is exceedingly difficult, without ocular demonstration, to fully comprehend that in and of themselves such substances as milk, urine, blood, etc., are as stable and unyielding to the inorganic elements as the stone of which the everlasting hills are composed, yet this is the doctrine which is now and here advocated. It is the docrine upon which is based the great domestic and commercial interests in the canning of fruits, meats, etc., and even in the dessication of these products. But, it may be asked, are there *no* changes in the character of milk, in the flavor of cheese, as in "ripening," or the quality of butter, as when becoming old and rancid, not brought about by the action, direct or indirect, of living things, too small to be recognized by the unaided eye? What, for instance, is the reason that the liquid in which a bit of a calve's stomach (rennet) has been macerated in a warm place, so soon causes sweet milk to coagulate? Is this, too, dependent upon particles possessed with an individuality of life quite independent of that of the animal from which the stomach came? Is, indeed the calf itself indebted to such assistance from myriads of microscopic but effective agents? Is the digestion of our own dinners this day brought about, not wholly by ourselves, but by multitudes of co-laborers that have never received our thanks for their important services?

The asking of such questions may be considered fanatical, even distasteful or almost sacrilegious by some, yet he who thinks closely and observes carefully, especially if he has the time and means for

proper investigation, cannot avoid them if he enters upon the subject at all. The microscope shows in the solution from rennet as much of the germ theory of change as it does in the fermentation of milk when left exposed in the ordinary manner, and this evidence is convincing in a very high degree. Other phenomena coincide to make the conclusion irresistable. The living organism in the rennet is killed by heat, it propagates itself in a suitable liquid with the astonishing rapidity of its congeners usually found outside of living animals; a little used as seed permeates a great bulk of nutritive substance, as a little leaven (yeast, a plant) in the olden as well as the modern time, leavened the whole lump. The rennet plant can thus be cultivated, as the yeast plant is, and possibly in a much more convenient method than at present known. It *is* a plant, living, multiplying, absorbing, assimilating, dying—very low in the scale of classification, and scarcely differing from the equally low forms of animal life, yet having a definiteness and individuality which in some respects those of the highest rank, the lords of creation, might do well to imitate.

Let this example suffice. If the coagulation of sweet milk, by the aid of rennet, can be proved to be due to the action of organisms in a living state are we not prepared to accept the same or a similar agency for any change which we observe in this, apparently, unstable fluid? But the evidence concerning some of these changes, as that of souring, is still more direct, certainly better and more generally known. We cannot be far wrong in concluding that all the processes, through which milk and its products pass, are results, direct or indirect, of living, lowly organized plants or animals. Customers say the higher organized animals have something to do with certain changes of which we do not speak.

What is the nature of the microscopic creatures to which such marked results are attributed? The word *fungi*, now in general use, is commonly introduced whenever any name is applied to the organisms with which we have to deal. But this is applied to an immense order of plants of which the members differ among themselves almost as much as the trees of the forests and grasses of the fields. They have something in common as to their food and mode of life; but differ wondrously in appearance, in size, in method of propagation, etc. There are probably not less than twenty-five hundred species of fungi growing naturally in Illinois. Some are found upon old logs, some on upright trunks, some on or in the soil, some only

on the excrements of cattle,some on dead twigs,some on living leaves, some on the skins of animals and some in decomposing fluid substance. We can hardly imagine a place on or in the earth, or organic substance of any kind, where or upon which fungi are not found of one kind or another. We pride ourselves upon our cleanliness, but it is not hazardous to assert that every human being in our broad prairie state has living fungi in his mouth. Nevertheless the ubiquitous beings are subject to prescribed conditions of growth. They must have the proper food each according to its kind, the proper amount of moisture, the proper degree of heat etc. The well informed advocate of spontaneous generation of organic species does not think of asserting that the specific forms now existing are self-produced from the inorganic elements. Whether this process is ever true or not, even the lowest forms that can be classified and so distinguished as fungi have, as all scientists admit, sprung from parents like themselves. If spontaneous generation is true, it applies to still lower living atoms, which reach characteristic distinctiveness only through long series of development and so gradual change as scarcely or not at all to be noticed within the span of a human life. We may therefore say the species of fungi are as distinct as those of the higher plants with which we are better acquainted.

Again, the names mold or mildew are very often used in connection with such fungi as are supposed to be the cause of disease, of fermentation, putrefaction, etc. But these are so general in their application that little or no information can be conveyed by their use. If restricted to such species as are so commonly met with on bread, cheese, fruits, etc., the popular statements in regard to their effects are much exaggerated. For a long time it was supposed that yeast used in the making of bread and beer was a submerged form of various species of true molds, but this is conclusively shown to be an error. The blue mold that forms on bread is not the same or nearly the same which causes the fermentation of the flour in the process of raising. The molds of different kinds which appear around the edges of a neglected milk pan bear no relation to the much simpler form which induces the souring. It is probable that the species of molds in a restricted sense, do cause some of the phenomena to which this paper is devoted, but they are far from being the principal agents in the work. When they occur on milk that has stood in a warm place for some time it may be observed that there is a conspicuous absence of the putrid odor arising from such milk

devoid of the molds. These are, in fact, scavengers converting the partially decomposed materials into odorless carbonic acid and water.

Professor Law, some years ago, published drawings of fungi which he believed were developed in the milk from germs taken by the cows in the water they drank. After careful inspection of the figures it seems almost certain that an error was made in the interpretation of these growths. His general conclusion may have been correct, probably was, but the organisms he observed were not those causing the difficulty. It is exceedingly doubtful whether the germs of any fungus of the rank and development of the common molds ever passed through the secretory apparatus of any animal. The crude statements about *tilletia caries* (bunt of wheat), etc., being found in the blood of cattle, has been often enough refuted.

In a recent classification of fungi (Sachs' Text Book of Botany) two orders are given including plants of lower grade than any known molds, which embrace the principal agents in these processes of fermentation and putrefaction of milk and other substances, viz: the *schizomycetes* and the *saccharomyces*. The former includes the organisms known as *bacteria* and *vibrios*, all microscopic, and some of them the smallest living things of which we have any knowledge; the latter contains the yeast plants. Speaking of those of the first order in a wide sense as bacteria, it may be said that they are so minute that they were entirely unknown until the microscope reached a high degree of perfection, and for this same reason their presence is still often overlooked. But it is to these almost invisible objects that we must attribute the main effects in the processes of which we write. It is to these that contagious diseases are mostly due, if indeed to any living thing. I have been permitted through the courtesy of Dr. H. J. Detmers, one of the United States' commissioners for the investigation of the so-called hog-cholera, to repeatedly observe in the blood, contents of the intestines, urine, etc., of diseased pigs great numbers of infinitesimal belonging to this group. Upon inoculation, or in some cases upon feeding these living atoms to healthy swine, the disease was produced time and again. Introducing a half drop of blood-serum containing these bacteria into a vial of pure milk the latter soon became swarming full of the same objects. Again transferring a minute portion of the infected milk to fresh material like the first, multiplication of the bacteria took place, and inoculation from the second vial in the ear of a pig produced the disease in about the same length of time as before. To see the form

of these organisms a glass of excellent definition was required, and a power of at least eight hundred diameters. Yeast cells (of bread) are mountains compared with them. If any living things find their way through the animal tissues and escape, as with the milk, we may safely conclude it is something of this description. There is no evidence that higher and larger fungi as ordinary molds are ever developed from the minute forms described.

When fresh milk from healthy cows is placed under a high magnifier (500 to 1,000 diameters) the thin stratum appears violently agitated by currents caused by evaporation, etc., and by the molecular, oscillating motion known as the Brownian movement, but no bacteria can be found. Examine the same milk after it has stood in a warm place a few hours, and before evidence of acidity except to litinus paper is presented, a few bacteria may be observed; before coagulation they are quite common and finally become in some cases excessively numerous. Milk put in well-stoppered, scalded vials kept in a temperature of from 80° to 90° Fahr. sometimes becomes very sour but suffers no further change. But frequently after souring the inclosed liquid becomes putrid and highly odoriferous. Upon examining two such as these the difference can be ascertained. The former contains one kind of bacteria, the latter two. The first is at the outset minute and spherical or cylindrical and composed of joints which are often more or less bent upon each other. Its movements are of an oscillatory character, with slight or no progress in any direction. The second is not unlike the first in shape, though not so distinctly composed of easily-separated joints, but it moves with an endwise sliding motion of apparently, under the microscope, great rapidity. One is the lactic ferment, the other is the putrifactive ferment. They may occur together or either may exist without the other. But the lactic organism appears either more common or more active in its work.

In one experiment three vessels were placed in the same tin vessel which closed tightly. Milk fresh from a cow was placed in all of the inclosed vessels, which were of glass with open top. In number one the blade of a pen-knife was dipped which had previously been inserted in sour milk swarming with the lactic ferment. In number two a minute amount of milk just coagulated was placed, and number three was left as it was. Coagulation took place in the order named with about two hours intervening between the first and second and six hours between the second and third. After two

days a mold whose creeping filaments were previously observed, appeared on the first and after one more day upon the second but the third became wholly dried before the mold fruited. This mold proved to be *mucor mucedo.*

Other experiments confirmed the announcements made by others that the bacteria are disseminated slowly through the air while mold fungi fly readily everywhere. The former are especially distributed with liquids and remain though dried in contact with solid surfaces, ready to commence action at anytime nutritive substances reach them. The minutest quantity of old milk, not thoroughly scalded, may infect any bulk of fresh material.

The following paper, by G. E. Morrow, Professor of Agriculture, Illinois Industrial University, was read:

DAIRYING AS A PART OF GENERAL FARMING.

This meeting is held in a part of the state in which the dairy is a leading agricultural interest, if indeed it be not decidedly the chief; and in a city which is most widely known as a "dairy center." The active and influential members of the association are those who are directly interested in dairying, as their chief or exclusive business. It is natural and proper that most of the discussion should be on the topics in which the experienced dairymen—those who make milk, or butter or cheese production or sale their chief or only business—feel the greatest interest. But we should not forget that over more than three-fourths of the state, on a very large majority of the 200,000 farms of the state, dairying, in the sense in which those present use the word, is almost or quite unknown. Yet, of the 700,000 cows, in round numbers, owned in Illinois, at least a majority are found outside the "dairy region" of the state. Many of these are owned by residents of towns and villages, and many others by farmers who keep them mainly for rearing calves, often not milking them at all; but we still have an immense production of milk and of butter by those who never think of themselves as dairymen, and are never thought of as such; and who manifest little interest in the proceedings of such associations as this.

It is also to be remembered that dairying, as a somewhat prominent industry, is spreading into new sections of the state; that many farmers who have grown grain, or beef, or pork, as their only products, are thinking whether the dairy does not offer better profits.

In this paper, I can only suggest, and not fully discuss, a few of the things which these facts and the present condition of the dairy interest generally, make it worth our while to think about. I cannot expect some of my statements to be accepted by all.

Starting, then, with the general propositions that it is entirely possible, even if not probable, that any industry may be overdone; that a considerable diversity of production is undoubtedly best for a country or for a large community, and generally for an individual farmer; that in farming, as in other businesses in this country, it is coming to be increasingly important that all the resources, whether in lands or in labor, shall be made the best use of during as much of the time as possible, and that future profits from farm products generally, including dairy products, will probably not be as large as they have often been in the past, I believe the future increase of dairying will be more in the way of its being made a more or less prominent feature of farming, and that a less proportion of the dairy products will be produced by those who give to these exclusive attention. There are very many cases in which, undoubtedly, it will be best to make milk almost or literally the only article sold from the farm, but I firmly believe there are many farms and some localities from which better returns will be secured for the future by increased attention to grain raising even; certainly to grain raising for home consumption by increased attention to rearing and feeding some cattle and hogs or sheep. It is not long since very many successful dairymen insisted that, however true in theory, it was not true in practice, that dairymen should aim to rear their own cows. There has been much change of view as to this; but there needs to be more, until, as it seems to me, it shall be the exception and not the rule for dairymen to buy cows.

The experiences of the year have made us see more clearly than some of us saw even a year ago, that it is not at all a matter of course that comfortable profits will come to the dairyman; and I repeat what I have before said, that I see no reason to believe we are again to see such large average returns from the dairy as we did for a considerable series of years. Dairy farmers must carefully consider whether or not they can produce the grain feed for their cows cheaper than they can buy it; whether or not they can afford to continue to make a half or a whole day's work of delivering milk to the depot or the factory; whether or not even the manager of the farm must do something more than "see to things;" whether or not "deaconing" calves is the best course.

Probably there will be little dissent from the suggestion that those who have not been largely engaged in dairying, and communities in which other branches of farming have long been pursued, should make the change into dairying only with care and slowly; that it will rarely be wise to at once get all the farms in grass, and as soon as possible fully stock them with cows. But I advise this continuance of former work, not as a temporary course, while a trial is being made, and such farmers are learning a new business, but as a permanent policy in regions in which stock rearing and feeding has proved profitable in the past, and where skill and some reputation has been acquired and good facilities for such farming accumulated, I cannot count it wise to look forward to abandoning this, except in special cases.

For years I have counted it one of the most important helps to continued prosperity for our cheese-producing interest, that more attention be paid to developing and supplying, in the best possible way, the home demand for cheese. Over a very large part of Illinois I see no good reason why each county should not produce at least as much cheese as its population consumes; why one or two or three factories should not be mainly engaged in making cheese for the local markets. With the direct sales which could thus be made, certainly as good net prices should be obtained, and it ought to be easier to obtain a local reputation than to successfully compete with the whole country. And so I should be glad to see new cheese factories in many counties of the state; not great, costly buildings and arrangements for using the milk of 1,000 cows, but neat, cheap, economically managed factories, the milk for which should be largely furnished by neighboring farmers, into whose minds might never come the thought of exclusive dairying, but who should find it payed them well to keep anywhere from half a dozen to two score good cows, well cared for, the milk from which, or a part of which, should be daily carried to the factory by the team of the factory owners, or some neighbor living further from the factory, while the farmers go on with their "general farm work."

If it seems that I have understated the advantages of the dairy as an exclusive reliance for the farmer, I may make partial amends by magnifying its importance as a help to profitable farming by those who will continue to make some other branches their chief reliances. So long as the custom continues of making almost all American cheese after one general model, it is to be expected the factory system will practically abolish farm making of cheese; but this will not

be true as to butter and milk. Farmers everywhere will need and will use milk and butter for their own tables, and very many of them will continue to make butter for sale. As the country grows older, and the villages and towns grow larger, there will be a larger proportion of the whole population who will need to buy their supplies. Probably the milk supplies of cities and larger towns will continue to come mainly from those who make this a special business; but there is no reason why thousands of general farmers should not make first-class butter, and, securing a local reputation for so doing, receive a good price for it. The leading hotel of the neighboring town must get its butter somewhere, as must its leading citizens, and there is no reason why a neighboring farmer should not supply them at something above the regular price. As good butter can be made in a private dairy as can be made at a creamery. That it is not so good as a rule, is clearly true, but it can be so made, and is by a good number.

Where farmers expect to make butter for their own use, and often to have some to sell, it is clearly only good economy to provide such facilities as will make it possible to have the product good, and very often it will be found little more costly to provide for making twice the quantity absolutely necessary. The great mass of the butter made in the country will long continue to be poor in quality, and most of it made during the summer. The shrewd farmer will adapt his course to meet these facts, and most often, it would seem, he can best do this by making good butter, if any, and by making most of what he will need to sell, in winter. The arguments in favor of winter dairying, where buter is to be made in factories, are much more generally admitted than they were a few years ago. But if they have weight in such cases, they have equal force in the case of the farmer. His cows must be kept in any event, and they ought to have nearly the same care whether giving milk or not. As a rule he will expect to have milk and butter enough for his own family, and if this much can be cared for, more can be. The special dairyman may be but little more busy in summer than at any other season, but for the general farmer midsummer is not only the time when it is most disagreeable to milk and care for it, but it is also the season when, both on the farm and in the house, most is to be done. It is easier to provide for the proper care of milk in cold weather than to guard against the ill effects of extreme heat.

Another class, which may well give increased attention to dairying, is that engaged in rearing beef cattle more or less largely.

Doubtless with cheap lands and comparatively dear labor, the practice of allowing the calves to suckle the cows, receiving all the milk, has often been the most profitable. But I cannot believe this is to continue. A good cow can and will give more milk than is necessary for rearing her calf if it be otherwise well fed. Either by the plan sometimes followed, of giving one cow two calves and milking the dam of the other, or by milking and feeding skim milk, supplemented with other food, it seems certain the time is coming in this state when a more profitable use can be made of the milk than to have the calves take it all.

For such farmers, as well as for "general farmers" almost universally, it seems certain the best cows are those cows which combine milk and meat producing ability in good degree, even if they do not in either reach the highest point.

That I may not be misunderstood, I may say in the way of summary: I do not at all believe the teaching that a farmer should, necessarily, produce everything he uses, if this be possible; if he can buy cheaper than he can rear or manufacture, it is best economy to buy. But where there is a question as to which is the cheaper course, it is safer to lean to the side of home production. I would not advise a farmer to fritter away his time and strength in producing small quauntities of a multitude of products; he will do best to have one, or two, or three things to which he gives chief attention; but I grow to believe more and more strongly, that it is scarcely ever safe for a series of years, to depend on any one specialty, and so I would always have "more than one string to my bow." I do not take a hopeless view of the prospects of dairying; it has as bright an outlook as perhaps any branch of agriculture. Money is to be made from the dairy for long years to come; but, as I read the indications, it will rarely be wise for communities or individual farmers, unless in exceptional circumstances, to make milk and its products the only source of expected profit. Grain-growing and stock-rearing farmers will often do well to make more of the dairy than they have in the past. A very large part of the butter product of the country will continue to be made at farm-houses. Winter butter making has some special advantages for the farmers as well as for the creamery proprietors. Cheese factories may profitably be established in many localities where they are now unknown, especially with a view of developing and supplying the home demand. For the great mass of farmers, those cows are best which are well suited for both meat and milk making.

LARGE MILKERS.

Much has been written and said of late, in regard to the different breeds, as regards their milking qualities. Without any prejudice we give below the yield of a Holstein cow, the property of Dr. J. Tefft, of Elgin, Illinois. She is an imported cow, and is booked in the herd book, under the name of "Zwaan," and from the figures, which are taken from actual daily weights, she certainly ranks high among the great milkers of the country:

From May 12th, 1878, to March 12th, 1879, inclusive, her yield was 12,610½ pounds, or about 1,462 gallons. The time being 298 days, would make a daily average of nearly five gallons per day. May 5th, 1879, she again became a fresh milker, and now bids fair to exceed her last year's record.