Compliments of
Dr. Joseph Jefft,
President

PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION.

AT ITS

SIXTH ANNUAL MEETING,

HELD AT

MARENGO, ILL., DECEMBER 9, 10 AND 11, 1879.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

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

FOR 1880.

PRESIDENT,

DR. JOSEPH TEFFT, ELGIN, ILL.

SECRETARY,

W. J. ANDERSON, ELGIN, ILL.

TREASURER,

ERRATA.

On pages 74 and 75 where the words "butzric" and "lipzle" occur, read "butyric" and "lipyle."

Page 93—in Dr. Tefft's remarks—the second word in the ninth line, read "should," instead of "must."

JOHN SMALLWOOD, FREEPORT, ILL.,

GEN. L. B. PARSONS, FLORA, ILL.,

W. H. STEWART, WOODSTOCK, ILL.,

H. W. MEAD, HEBRON, ILL.,

N. ELDRED, GILMAN, ILLINOIS.

The seventh and next annual meeting will be held at Marengo, Illinois, Tuesday, Wednesday and Thursday, Dec. 15, 16 and 17, 1880.

Officers of the Association

FOR 1880.

PRESIDENT,

DR. JOSEPH TEFFT, ELGIN, ILL.

SECRETARY,

W. J. ANDERSON, ELGIN, ILL.

TREASURER,

R. M. PATRICK, MARENGO, ILL.

VICE-PRESIDENTS,

C. C. BUELL, ROCK FALLS, ILL.,

HON. WM. PATTEN, SANDWICH, ILL.,

S. W. KINGSLEY, BARRINGTON, ILL.,

E. H. SEWARD, MARENGO, ILL.,

J. R. McLEAN, ELGIN, ILL.,

ISRAEL BOIES, DAVIS JUNCTION, ILL.,

LUTHER BARTLETT, BARTLETT, ILL.,

PROF. F. H. HALL, SUGAR GROVE, ILL.,

I. H. WANZER, ONEIDA, ILL.,

CHAS. BOONE, WINNEBAGO, ILL.,

JOHN SMALLWOOD, FREEPORT, ILL.,

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MEMBERS

OF THE

ILLINOIS STATE DAIRYMEN'S ASSOCIATION

FOR 1880.

R. M. Patrick	Marengo, Illinois
E. P. Vail	" "
S. K. Bartholomew	" "
Allen Sisson	" "
P. Pringle	" "
W. J. McDowell	" "
J. Bruce	" "
W. W. Bingham	" "
N. Brotzman	" "
T. H. St. John	" "
C. L. Carpenter	" "
Calvin Spencer	" "
Timothy Loomis	" "
John T. Nills	" "
E. H. Seward	" "
P. B. Smith	" "
B. S. Parker	" "
A. P. Abbott	" "
F. W. Patrick	" "
H. E. Patrick	" "
F. G. Hackley	" "
Joseph Mullis	" "
Dr. Joseph Tefft	Elgin, Illinois
C. C. Church	" "
H. L. Borden	" "
D. A. Halpin	" "
J. R. McLean	" "
W. A. Pratt	" "
D. S. Hammond	" "
T. Bishop	" "
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M. H. Thompson	" "
C. W. Gould	" "
W. J. Anderson	" "

T. W. Tefft	"	"
Jonathan Tefft	"	"
D. F. Barclay	"	"
G. P. Lord	"	"
Guy Adams	"	"
E. G. Douglas	"	"
Sylvanus Wilcox	"	"
James C. Brown	"	"
W. Burton	"	"
C. N. Nebber	Woodstock,	Illinois
T. McD. Richards	"	"
J. H. Foote	"	"
W. W. Joslyn	"	"
D. E. Wood	Huntley,	"
Ahira Thompson	Harmony,	"
A. J. King	Union,	"
James Mills	"	"
Samuel Farr	"	"
Calvin Gilbert	"	"
B. Cady	Coral,	"
J. M. Frink	"	"
Robert McAdams	Algonquin,	"
G. R. Stone	Hebron,	"
John Boyd	175 Lake St., Chicago,	"
B. P. & C. E. Baker	"	"
Charles Baltz	"	"
Chicago Linseed Oil Co	"	"
O. S. McAllister	Hampshire,	"
L. C. Ward	St. Charles,	"
J. B. T. Wheeler	"	"
John H. Bennett	Belvidere,	"
S. Cohoon	"	"
Jacob Mabie	"	"
L. W. Lawrence	"	"
G. W. Sands	Capron,	"
C. A. Hammond	Poplar Grove,	"
A. S. Albro	Wayne,	"
Luther Bartlett	Bartlett Station,	"
I. H. Wauzer	Oneida,	"
C. C. Buell	Rock Falls,	"
Prof. Frank Hall	Sugar Grove,	"
Wm. Patten	Sandwich,	"
S. W. Kingsley	Dundee,	"
A. C. Clark	Manchester,	Iowa
John G. Cherry	Cedar Rapids,	"
I. Boies	Davis Junction,	Illinois
*John Keating	South Elgin,	"
E. A. Tefft	"	"
H. A. Bogardus	Batavia,	"
J. H. Gage	Holstein,	"

*John Keating, a well-known and highly-respected member of the Association, was killed by the bursting of a wheel on a feed-cutter, while at work on his farm, near South Elgin, Illinois, December 31, 1879.

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION.

SIXTH ANNUAL MEETING,

HELD AT MARENGO, ILLS., DECEMBER 9, 10 AND 11, 1879.

MARENGO, DEC. 9, 1879,
3 O'CLOCK P. M.

The convention was called to order at 3 o'clock p. m. by the president, Dr. TEFFT, who occupied the chair. After stating that the convention would now be considered formally opened, the president called upon T. McD. Richards, president of the Kishwaukee Farmers' club, who delivered the following address of welcome:

MR. M'D. RICHARDS' ADDRESS.

Mr. President, and Members of the Illinois Dairymen's Association: Ladies and Gentlemen: In behalf of the Kishwaukee Farmers' club, the citizens of Marengo and the dairymen of McHenry county, I bid you welcome on this annual reunion of yours. Marengo and vicinity open their homes and hearts to make your stay pleasant, and we all hope to profit from your essays and mutual discusssions. This is a region deservedly noted, at home and abroad, for

its excellent butter and poor cheese. I presume, however, skim cheese will continue to be made so long as factory patrons and manufacturers can both make money by so doing. Class me as one of a large number who will not eat cheese thoroughly skimmed. "If this be treason, make the most of it."

McHenry county is one of the pioneers in the manufacture of good cheese and "Gilt Edged" butter. Bartholomew, Stewart Brothers, and a few others in this county and Kane, made cheese, long years ago, that superceded the noted "Western Reserve" and New York cheese. Mr. Israel Boies (a name honored by dairymen everywhere) may justly be considered as the pioneer in the manufacture of an extra quality of butter in this vicinity, where now so much is manufactured, and is so widely appreciated.

Dairymen of Illinois, your executive committee have outlined an extensive field for discussion on this occasion. Very few dairy topics have as yet received solutions that command universal assent. The field is wide and still open for both argument and experiment. In the same neighborhood several methods are considered best for feeding dairy cows. The causes and prevention of abortion, a very serious drawback to dairymen, remain unknown. The best methods of setting milk, still in dispute; the best breeds of dairy stock a subject of difference, and so on. Above all these topics, so useful, and necessary to be discussed, let us not forget to study to so manage this industry that its most noted product shall be a race of men and women noted for intelligence and worthy manhood and womanhood. Illinois is a great state—only in its infancy of development. I am proud of her past progress, and hopeful for a glorious future. I feel quite sure the dairymen of Illinois will bring no dishonor to its fame. One word more, and I give way to your regular proceedings. Dr. J. Woodworth, one of the members of the Kishwaukee Farmers' club, who was also a member of your association, and a worthy patron of both, and I may justly add, a man of science and a practical man as well, convenes with us no more on earth. I am sure we all duly appreciate his energy and suggestions in the cause of dairy improvements, and offer in this public manner our grateful tribute of respect to his memory.

In the absence of Judge Wilcox, of Elgin, who was to

have responded to the address of welcome, the president called on Mr. Charles Baltz, of Chicago, who spoke as follows:

MR. BALTZ'S RESPONSE.

Mr. President, and Ladies and Gentlemen of Marengo: Allow me, in behalf of the dairymen here assembled, to thank you for the very kind welcome just tendered us. We have left our places of business, our shops and our farms, to come here and discuss with you questions of mutual interest in this our annual convention. And I hope that our coming here will not be in vain; that this convention will be a grand success, as its predecessors have been; that the discussion of these various questions pertaining to the dairy interests of our state, will result beneficially to each of us.

On my way out here from Chicago to-day, riding through the country lying between here and that city, I was strongly impressed with the thought that if this section of the country was properly developed it might yet be the greatest dairy country of the world.

I hope each one of us will do his best to make this an interesting and beneficial gathering. We can do so if we try. I had little thought of being called upon to respond to Mr. McD. Richards' address of welcome, when I came in, consequently I hope you will overlook any errors I may have made in my few rambling remarks.

The president, Dr. Tefft, then read the following address:

DR. TEFFT'S ADDRESS.

Fellow Citizens, Ladies, Gentlemen and Dairymen of Illinois: In accordance with a general custom which was early adopted and has been carried out from year to year, at our annual meetings, it devolves upon me at this, the sixth anniversary of the Illinois Dairymen's Association, to present to you a partial resume of our operations during the past year. The manner and purpose of our organization, the many advantages and happy influences arising from and extended by this and similar associations, and the progress made in the different departments of dairying

have been so frequently and graphically presented and discussed by others, at former meetings, that any attempt on my part to engage in the same could but be extremely irksome to you.

The year just passed has been one replete with fluctuations in the market price of dairy products. Butter and cheese have not only been very low in our markets, but have been unprecedently low in the European markets. We thought we had good reason for believing this would be the case in the early part of the present season, when we saw the great amount of poor butter and cheese in the commission houses, in cold storage, and piled upon the wharfs in the city of New York, last fall. To clear this market we expected much, yea, most, of this cheese would have to be dumped into the Atlantic ocean, to feed the dolphin and sea serpent. But, luckily, some of it was shipped to England, where it is said to have been used to feed swine and where it sold for nearly or quite enough to pay transportation.

We have simply invited your attention to the above for the purpose of showing in a measure the cause of the depression in the markets in the fore part of the present season. In our judgment this was largely due to our holding and placing too much poor cheese in the hands of the commission merchants during the warm weather of last year.

This season the dairymen have taken a different course, and we have no flooded markets this fall, although the production of cheese has been quite equal, if not in excess of, that of last year in our country. Had our cheese of last season been in quality such as to bear transportation to South America, we venture to say it could all have been sold at fair, remunerative prices, along as it was ready for market. Our exportation of butter to that climate is already very large, why should it not be so with our cheese? We answer—Simply because we do not take care to make a cheese to suit that market. If we desire to sell our dairy products we must cater to the wishes of the consumers, to a certain extent, at least.

The consumption of this article of food for man has largely diminished in our own country within the last two or three years; and why so? Simply because but very little good cheese is to be found in the market places.

It would seem that the home market, which should be the best of all markets, is largely if not wholly ignored by our dairymen at the present time.

It was claimed in 1876–7 that the consumption of cheese in this country was fully four pounds per capita. Were that so for 1878–9, our 47,000,000 people would require about 188,000,000 pounds of cheese for home consumption alone. But how is it now? We estimate a falling off of about twenty-five per cent. in the home consumption, reducing the amount required from 188,000,000 to 141,000,000 pounds and leaving a surplus on our hands of about 47,000,000 pounds. Now this is an item in marketing that nobody but the dairymen of this country has any power to remedy. The American people too well appreciate the nutritive qualities of good cheese, when taken into the human system, to discard its use, if such cheese can be readily obtained.

Last winter a bill was drafted and presented to our legislature, which passed the senate and came near passing the house, to recognize the Illinois State Dairymen's Association as a state institution, with power to establish and maintain an experimental dairy station somewhere in the state. One of the objects of such a station would be to examine, and recommend the raising, the best and most profitable breeds of cows for the dairy of Illinois. The United State census of 1870 gives Illinois 640,321 cows. It is now computed that the state has at the present time between 800,000 and 1,000,000. The estimated average life of a cow in the dairy is about six years. This holding true, it will call for the annual rearing of about 150,000 to fill the vacant places of valueless cows in the state of Illinois alone. This being correct, it behooves us as citizens, and especially as dairymen of Illinois, to look well to this matter of breeds for the dairy. Prof. Johnson tells us of a breed of cows that required nine pounds of hay to produce one quart of milk, and of another breed which required only five pounds. Now if this be true (and we have but little doubt of it from our own observation),would any gentleman within the sound of my voice hesitate for a moment, all other things being equal, which breed to select his cows for the dairy from? This is only one item of the use of such a station; although a very important one, perhaps not the most essential one to the dairyman. The fact that our

creamery butter when first made is very fine and of excellent flavor, with an aroma not to be excelled by that of any other country's make on the face of the globe—although so nice when first made, it soon begins to lose its rich aroma and fine flavor, and more quickly becomes stale than the best dairy butter. This requires the most careful examination to find where the trouble lies, that it may be corrected. It has been estimated that the United States in 1878 produced 653,000,000 pounds of butter, and that Illinois is credited with one-fourteenth of this amount, which would give her 46,642,857 pounds. Now if by any means we can increase the keeping qualities of our butter, so as to realize one cent advance on the price per pound, it would place in the pockets of the dairymen of Illinois, per annum, the snug little sum of $466,428.57. What shall we say of cheese?

It is a well-settled fact that our cheese is not as compact but much more porous than English Cheddar, and does not hold its flavor as well and long as the English makes. It is also a demonstrated fact that our cheese contains more of the sugar of milk than their's and perhaps to this may be attributed the trouble. Some are disposed to charge our defect to climatic influences. It is possible and very probable we shall never know the actual cause of the trouble with either butter or cheese until some one makes a careful investigation of the matter, which is not likely to be done under our present dairy system. Therefore the necessity of a dairy station. Much more might be said on this subject, but time and space will not allow us to dwell.

The time was when we were taught that dairying must be confined to a strip of land from east to west a few hundred miles in width. This was and is a mistaken idea. Where good grass will readily grow, dairying may succeed, for the ingenuity of man may supply the other necessary articles. The dairy interest in this country west of the great lakes is being rapidly developed. Look at Wisconsin, with her annual production of millions of pounds of fine cheese, and Iowa, with rapid strides in the dairy business; while Minnesota, Nebraska, Missouri, Kansas and other western states are beginning to throw their mite on the wheel of fortune. While the foregoing and other states not mentioned may manufacture large amounts of butter and

cheese and throw their products on the market, they are not largely your competitors only so far as our own country is concerned. We must look to Europe for the larger part of the competition which we are likely to meet. France alone exports to England more value in butter than the entire United States does in both butter and cheese. Denmark is also exporting a large amount of fine butter to England, and so, also, is Sweden.

We saw Swedish butter (if our memory serves us) at the New York fair, put up in something like a wash-tub and covered with two thicknesses of coarse cloth, which had been exhibited at a fair in Europe and then sent across the Atlantic for exhibition at the fair in New York. This butter smelled and tasted rather old on top, but was solid and sweet further down in the package.

This is the kind of butter that you have to compete with in the European markets, butter that is so made that it will cross the Atlantic ocean in a wash-tub and hold its fine flavor. England imports both butter and cheese from us to export to other countries. Now why should we sit upon our haunches with folded arms and allow England or any other country to import for the purpose of exporting our goods? Why not open our eyes to the situation and export direct to those countries, and save the commission through English hands?

The Hon. W. G. Laduc, commissioner of agriculture, Washington, D. C., informs us in his report for 1878, page 287, that fully three-fourths of our export of butter and cheese is to Great Britain. The balance is to British America and the West Indies. On further examination of said report, we find on page 292 a much fuller statement, giving the names of countries where we have exported butter and cheese, with the amount to each country. We have copied this for the purpose of correcting an error which has crept into some of our conventions in this state, as well as other states. We allude to dairy, as compared with other statistical reports. We here give a few of the exports for 1878:

COUNTRY WHERE EXPORTED TO	BUTTER.		COND'D MILK.	CHEESE.	
	LBS. OF	VALUE.	VALUE.	LBS. OF	VALUE.
United Kingdom	14,343,758	$2,650,570	$ 34,135	120,929,600	$13,759,385
France	27,268	3,188	.....	3,400	364
Germany	2,854,128	434,595	132	47,476	5,986
Belgium and Netherlands	19,852	4,872	.....	4,872	492
Other European countries	5,897	758	.....	497	86
British America	1,158,924	208,756	3,488	1,651,726	180,368
West Indies	2,471,113	413,601	18,180	716,736	94,004
Mexico, Central and South America	563,791	126,202	9,957	307,864	40,120
Other countries	312,888	74,299	10,455	121,565	22,724
Australia	.....	.....	21,790	.....	.....
Japan	.....	.....	21,250	.....	.....
China	.....	.....	8,897	.....	.....
Total	21,837,117	$3,931,822	$128,284	123,783,736	$14,103,529

The amount of the cereals exported in 1878:

Wheat	72,404,961 bushels	$ 96,872,016
Wheat flour	3,947,333 barrels	25,095,721
Bread, etc.	14,392,231 pounds	730,317
Barley	3,921,501 bushels	2,565,736
Corn	85,461,098 bushels	48,030,358
Corn meal	432,753 barrels	1,336,187
Oats	3,715,479 bushels	1,277,920
Rye	4,207,739 bushels	3,051,739
Rye flour	6,962 barrels	30,775
Other grains	.....	1,077,433
" " prepared	.....	1,709,639
Rice	631,105 pounds	33,953
Total value		$181,811,794

The amount of cotton exported in 1878:

Cotton, raw material	3,391,795 bales, or 1,607,533,511 pounds	$180,031,484
" manufactured	.....	11,438,660
Total amount	.....	$191,470,144

We have made below an estimate of the milk used in the United States in 1878 for culinary purposes, on a basis of a population of 47,000,000 people, divided by five, giving 9,400,000 families. Now if we give each one of these families of five persons one pint of milk per day it will call for 1,175,000 gallons per day for the United States, or 428,875,000 gallons for the year. This, at ten cents per gallon. would come to $42,887,500.

Amount consumed as above		$ 42,887,500 00
Cheese	312,543,923 pounds @ 10 c	31,254,392 30
Butter	653,000,000 pounds @ 20 c	130,600,000 00
Condensed milk	3,600,000 gallons @ 10 c	360,000 00
Total amount of milk product in 1878		$205,101,822 30

RECAPITULATION.

The value of wheat, flour and bread exported	$122,698,054	
Wheat consumed at home, 1 bushel per capita, at $1 per bushel	47,000,000	
		$169,698,054 00
We estimate the dairy product to exceed the wheat by		$ 35,403,838 30
The dairy product of the country exceeds the entire exportation of all cereals.		
The exported cotton, manufactured and raw material, amounts to		$191,470,144 00
The dairy product exceeds the cotton export by		$ 13,631,748 30

In conclusion, we would most emphatically say that in our judgment the world is not over-stocked with dairy products, and more than that, we very much question whether it is ever likely to be so.

Look to the southern states in our own country and you will see they are not likely to become either good butter or cheese makers. The question is asked, Why not? We answer—Simply, because they do not raise the grasses necessary to do so. The spears of grass in some portions of those states are as scarcely seen as an honest politician in the country at large.

Think you of the many millions of mouths to be supplied with one of the best of foods for the human system; one that is universally received in its normal state by nearly or quite all of the mammals on the face of the earth. Cheese contains the nitrogenous and more or less of the phosphates of milk, and is better adapted to building up and sustaining the system than any other known solid food of similar cost. Butter is largely carbon, a substance necessarily called for and used by animals in sustaining the fire of life. You ask us how we know this to be a fact; we answer—by observation. Look with your mind's eye to the Esquimau who lives in the far northern clime, where the mercury congeals in the winter, and hardly thaws during the summer, who takes the oil blubber (which is largely carbon) and drinks it with as much gusto as our toper does a glass of whisky and with much happier results.

We believe it to be a duty that every manufacturer who is engaged in the manufacture of dairy products owes to himself, to make his goods of such quality as the market where he expects to sell demands. We see no good reason for commissioning perishable goods like butter and cheese.

If not saleable when ready for market at some reasonable price, it is far better to hold them in the factory, where they can be looked after and cared for, than to send them forward to commission men to be placed in store-houses or piled upon the wharfs of any city on the face of this broad earth. After once ready for sale they are never out of the way until in the hands of the consumer or actually consumed.

The exportation of butter, from January 1, 1879, to Nov. 27, has reached 34,705,284 pounds; the excess over last year for same time, 13,518,230 pounds. The exportation of cheese for same time is 120,366,857, a falling off of 8,638,316 pounds, as compared with last year, as per New York price-current report of Nov. 27, 1879.

On motion it was then decided to take up the topics in their order according to the programme, and

Topic No. 4—"Has the manufacture of skimmed cheese had any thing to do with the depression in the price of dairy products?"—was taken up. Charles Baltz, of Chicago, was called upon, and talked a short time upon the subject.

Charles Baltz: He was entirely unprepared, he said, to talk on the topic before the convention, though he had often been called upon to do so. Being a cheese dealer, however, he was willing to do or say any thing that would make an improvement in the manufacture of skim cheese. In regard to it having any effect on the market, he thought that the market was governed, mainly, by the laws of supply and demand. He would not take either side of the question, but would strike a mean between the two extremes. Possibly skim cheese, when made in the summer, may hurt the price; but if it is made properly it will always find a good market. Let it be made as it will, it will find a market. The dealer buys it because it is cheap, and the consumers buy it from the dealer because it is

cheap, and these try and palm it off on their families for good cheese until they are sick of all kinds of cheese. His idea in regard to making skim cheese was that we should make a grade that would be beneficial to both the retailer and the consumer; then the trade would not be injured. Some skim their cheese on all sides, and then skim it in the middle. Of course such stuff will hurt the trade; it will always do it. He thought it would be well to discuss this matter pretty thoroughly. In some sections, skim cheese can be made to advantage; in others, it cannot. Those manufacturing cheese should try and keep up the grade. It should be kept up in order to increase our home trade. Make cheese that people will eat and you will always find sale for it. He had heard people complain that they could not get cheese fit to eat from retailers.

There was another thing he wished to speak about, though it was foreign to the subject in discussion. He thought farmers should be very careful, at that time of the year when the weather was soft, and not let their cows out on their meadows and pastures. There are always, in such weather, little green spears, that sprout up and are eaten by the cows, which lend their flavor to the cheese and butter. If the butter is not salted as it should be, they can be easily tasted. He had often detected these flavors in butter. They have a tendency to spoil both butter and cheese, and one cheese spoiled by them will do more harm to the market than many good ones will do good. He would recommend that in an open winter the cows be kept in the barnyard and not let run on the meadows.

He thought the milk-men should help the manufacturer in doing away with poor grades of cheese, by paying him a good price for his work.

In regard to boxing cheese, he would say that a cheese should not be boxed before it was cured. It stops curing as soon as boxed. There was a great deal said about salting cheese properly. Skim cheese required more salting than cream. You often find green spots in cheese—the result of poor salting. Get good salt and work it in well and you will find no trouble in preserving your cheese. Get good milk, make good cheese and put it on the market, and you will never be troubled with low prices.

R. M. PATRICK: Said he would take the ground that the manufacture of skim cheese had much to do with the decrease in prices. Statistics relative to the consumption of cheese in this country and England, proved, conclusively he thought, that if we made a good quality of cheese our home consumption would be greatly increased. Our average consumption is four pounds per individual. In England the average is fourteen pounds. If we could get to where our average consumption was as great as this, we would consume more than we could manufacture in this country. He believed that if we would make good cheese our home consumption would be increased 100 per cent. He would take issue with Mr. Baltz on the subject of the manufacture of cheese. A little skimming does not injure cheese; but it is impossible to make good cheese out of milk skimmed too much. It is true, there is a demand for skim cheese. In the south, for instance, there is a demand for skim cheese, because the cream will not keep in a warm climate.

J. R. MCLEAN: Thought Baltz carried the matter too far. Didn't think that herbs, such as found in our pastures, would hurt cheese at this time of the year or at any other. He had seen some very good skim cheese, and some very

poor; some so poor that his family wouldn't eat it. He thought, like Patrick, that cheese a little skimmed was the best. In his opinion the greatest danger came from another quarter. We were making our cheese too hard. Some of it was so hard that it would make good car-wheels. In regard to the distinction between skim and cream cheese, he had seen his friend Baltz, on the Elgin board of trade, pass by good cream cheese and buy skim cheese right at the side of it. If this is done, how does skim cheese hurt the market? He didn't think it hurt it any. So long as the buyer can get skim cheese for much less than he can cream he will not buy the cream.

On motion of J. R. McLean the chair appointed a committee of three, consisting of J. R. McLean, T. McD. Richards and W. Boies, to draft resolutions relative to the death of Dr. Woodworth.

On motion it was decided to adjourn when they did to 7:30 p. m.

On motion of E. H. Seward a committee of three—R. M. Patrick, E. H. Seward and D. Wood—was appointed to act as a finance committee.

Charles Baltz, of Chicago, asked if any arrangements had been made with the railroad companies to reduce the fare for those attending the convention. On being informed that no such arrangement had been made, he remarked that if there had been any he was going to offer a resolution thanking the company.

On motion a committee, consisting of J. R. McLean and M. Switzer, was appointed to select judges to examine

the butter and award the premiums. Dr. Tefft, the president, was later added to this committee.

On motion the convention then adjourned until 7. 30 p. m.

EVENING SESSION.

TUESDAY, 7:30 P. M.

Meeting was called to order at 7:30 o'clock, President Tefft in the chair. In order to accommodate R. P. McGlincy, who wished to leave the next morning,

TOPIC NO. 11—"The doings and acts of the Elgin Board of Trade"—was taken up. Upon that topic Mr. McGlincy read the following paper:

MR. M'GLINCY'S PAPER.

My paper on this subject must be largely composed of figures, and may therefore prove uninteresting to many; but the figures will have considerable bearing on the "doings" of the board, and will show what has been done by it since its organization in 1872.

At a meeting of the Northwestern Dairymen's Association, held in Elgin in January, 1872, I heard J. R. McLean and others speak of the manner in which dairymen were robbed by commission men to whom they consigned their cheese and butter. The drift of the speeches was about in effect like this: "We send our goods forward on commission, and, when we receive accounts of sales, they show that the cheese was either off flavor, too hard, or too soft, or they had huffed, or leaked badly, or were cracked; the weight did not hold out; 'they arrived just when the market was flat, and no demand for any thing, and, feeling that I must realize the best possible figure, I sold them, and inclose you check for the amount, less five per cent. commission.'" I may remark that it was stated the commission was always the same, no matter whether the goods were up or down, and it was a singular coincidence that goods nearly always went down when sold on commission, and up when sold direct to the dealer. Those were the days when the dairymen produced the milk, the factoryman the cheese, and the

commission man made a profit from both without risking his own capital. But the organization of the board of trade happily changed, in a great measure, this state of affairs; still not as effectually as some of us had hoped, and still do hope for.

Such statements as those referred to could have been made by scores of men who attended that meeting, for they had felt the sting in a greater or less degree, and were, therefore, competent to serve as witnesses in the matter. But where was the remedy, and how was it to be applied? These dairymen were scattered about the country, some distance from Chicago, our then almost only market for *Western* butter and cheese, with their farms to look after, or their factories to superintend; so they could not attend personally to the selling of their products. They well knew that they were at the mercy of the commission men, and yet they had relief in their own hands, if they only knew it. There were some wise heads in that convention, and among them none more so than the late Robert Stewart, of McHenry county—a man ever ready to give his time, experience or money to aid in developing the dairy interest, or to assist in bettering the condition of his neighbors; and, although I am not positive, yet I am inclined to the opinion that he made the motion for the appointment of a committee to adopt measures for the organization of a board of trade at Elgin, then, as now, the dairy center of the Northwest. But a board of trade,—asked one of another, until the inquiry became general,—what good will that do? They, of course, had all heard of a board of trade, for there was one in Chicago, where wheat and corn, oats and rye, barley and flour, bacon and lard, and even money, were bought and sold, but a board of trade for the sale of dairy products was then beyond their comprehension. They had heard of "puts" and "calls," "blinds" and "straddles," "shorts" and "longs," "profits" and "margins," and "bulls" and "bears," but just what meaning these terms would have, when applied to a butter and cheese board of trade, they could not understand; for they had been accustomed for years to doing business on an entirely different plan, and were suspicious that they might not succeed as well with the new mode as with the old one, yet, like drowning men, they were willing to catch at any thing that would afford them relief.

The motion for the appointment of a committee prevailed, and the chair appointed R. R. Stone and C. W. Gould, of Elgin, R. W. Stewart, of Hebron, and Ira Albro, of Wayne, as such committee, which was afterward enlarged by the appointment of J. R. McLean and George W. Lake. These gentlemen met and drafted a constitution and by-laws, which were adopted at a meeting held at Elgin, March 1, 1872, and at the same meeting the following officers were elected: President, Dr. Joseph Tefft; vice-president, J. R. McLean; secretary, R. R. Stone; treasurer, O. Davidson. I think at the next meeting a few samples of cheese and butter (the latter private dairy) were exhibited, and a few sales were made.

I may here go back a little in the history of the board, and state that many who favored the organization felt that it would be more ornamental than useful, but the eight years of its existence have proved most conclusively that they were mistaken in their supposition. They inquired who would come to Elgin and buy their goods. By this move, if unsuccessful, they, or at least some of them, were fearful that the commission men would refuse to handle their products, and they would then be worse off than before. To some it looked like leaping from the frying-pan into the fire. Little did they dream that in two years Chicago, Cincinnati, St. Louis, Philadelphia, Baltimore, New York, and even Liverpool, England, would send dealers to their little inland city, to *buy* the goods direct from the manufacturers. But they have lived to witness the frequent visits of the representatives of the leading cities of the Union to the Elgin board of trade, in search of the best butter made in the world, and the best skimmed cheese that can be found. I say the best skimmed cheese, for I have heard dealers say that some of the cheese offered for sale was skimmed on the top and bottom, and opened and skimmed in the middle; so that would make it the best skimmed.

But to return. All of the books and papers belonging to the board, containing the reports of the sales made and the proceedings of the business meetings, were destroyed by fire in January of the present year, so I am compelled to rely on memory and the columns of "The Elgin Advocate," which publishes weekly a full statement of the sales and business of the board, for many of the facts and figures here given.

The first year the board was organized the sales of butter and cheese amounted to $81,000. Small as this is, it gave great encouragement to the friends of the enterprise, for, had this been disposed of in the usual way, the factorymen would have paid the commission men $4,050 for the privilege (?) of selling their goods. With this showing for the first year, all the factorymen who were within reach of the board became members, and aided in sustaining it. In 1873 the sales amounted to $219,177.53; 1874, $368,528.58; 1875, $496,220.04; 1876, $767,640.68; 1877, $1,059,085.08; 1878, $755,597.15. In the latter year there were sold 120,821 boxes of cheese, aggregating 4,897,346 pounds, and 1,113,955 pounds of butter. The falling off in sales in 1878 is due to the fact that many of the factorymen failed to report their sales. Had they been as prompt in reporting as they were in selling, the aggregate for the year would have compared favorably with that of the previous year. For the year ending with December, 1879, the sales amounted to $539,143.67. During this period there were 98,836 boxes of cheese, aggregating 3,648,314 pounds, and 977,879 pounds of butter, reported sold. Let us recapitulate, and see what the total sales have been since 1872, the year the board was organized, to December, 1879. We find that they aggregate $4,286,392.72. At five per cent. commission, the factorymen and dairymen, on that sum, would be out of pocket $214,319,63. Quite a respectable sum; and all saved by the board of trade, which has been maintained during the past eight years at a cost of $2 per member per year, a sum so trifling that none have felt it.

The question may be asked, Why do not all factorymen become members of the board, and share the benefits? In reply, let me state that but few factorymen in northern Illinois are not members of the board, having long since concluded that the advantages were far too great to be neglected. Our membership is scattered from Chicago to Pecatonica, and from the Wisconsin line, on the north, to the C., B. & Q. railroad, on the south, which scope embraces very nearly all the factories in the northern part of the state. Many private creamerymen and dairymen are also members, as well as the irrepressible commission men of Chicago, St. Louis and New York; and, so far as is known, all are satisfied with the board, and believe that its organization has been for the best.

I would not be a faithful chronicler of the "doings and acts of the board," if I failed to speak of its ups and downs in life; of the latter of which, however, it has fortunately had but few. The first year of its existence was but little more than an experiment. The following years showed that it was firmly established, and had become an institution of the land, and a refuge for all dairymen and factorymen who would seek its shelter, for its portals were ever wide open to the oppressed of both these branches of business.

In the year 1876 or 1877 a strong effort was made by several of the Chicago dealers to break down the board, but they signally failed. Dr. Tefft, the honored president, counseled the factorymen not to yield to the importunate demands to send goods on commission, but rather club together and start one of their number out as a salesman, with instructions to visit St. Louis and other cities, and sell their products there. But before the plan could be put into effect, St. Louis *came to us*, and we solved the problem of what to do with the cheese with little difficulty. Chicago dealers refrained from visiting the board for about three months, but, like the prodigal, they came back, even willing to be forgiven for their sins of omission. Since then they have been very peaceable, make very good members, and visit the board punctually every week. During the period referred to, while the dealers failed to visit the board, the factorymen were sorely tried, as were their pocket-books and the patience of their patrons, but *not the cheese they made.*

The organization of the board has proven beneficial in more ways than one. It has been the means of bringing the factorymen and dealers into a closer relation; through it factorymen have become acquainted with the prominent dealers in the leading cities; and, when the custom prevailed, during the early period of the board, of selling goods largely by sample, factorymen had opportunities of examining their neighbors' products and comparing them with their own, without being considered inquisitive or trying to steal the trade. And I would say that these comparisons have been highly beneficial; for I well remember one factoryman who complained that he could not get as much for his cheese as his neighbor, and he imploringly appealed to the president for advice. Nor did he appeal in vain; for the president

quietly and kindly informed him that his cheese was not neat in its appearance; the bandage was put on in a haphazard manner, the box looked as if it was old enough to retire from service, and, to crown all, the cheese was dirty on the top and side. This factoryman was shown a few bright samples from other factories, and told to imitate them. He took the hint, and in a month could show as fine cheese as any one on the board, and he continues to do so to this day. He obtained better prices, and not infrequently sold his goods from a half cent to a cent higher than any other. It has been beneficial to those dairymen who make their milk into butter at home, by enabling them to obtain better prices for their goods than they could possibiy have done had not the board been organized. The establishment of the board has given manufacturers a market at home, and at as favorable prices as they could obtain elsewhere. It, in a measure, establishes the price of dairy products for all the country west of the Mississippi, and frequently New York quotations are not made until they get the returns from Elgin.

It seems to me that every producer of milk who lives within a convenient distance of Elgin should become a member of the board, and then they should attend its weekly meetings, and moreover I believe it would be to their interest if they would require the factorymen who make up their milk to sell the products on the board, instead of commissioning them, as has too often become case of late.

Perhaps the uninitiated may wonder what is meant by the "irregular sales" which they see reported from week to week, and which almost invariably outnumber the "regular sales." Well, these are the sales which have been made on commission, and are reported when the returns are made to the factorymen.

After the loss of our books, papers, etc., in January of the present year, the board organized under the state law, obtaining a charter, and became an incorporated body. We have by-laws and rules governing the members, and when one feels that he has been wronged he can appeal to the powers that be, and justice will be meted out to those who violate the law, if they can be detected. Since the organization of the board, there have been but three or four trials,

for violation of the laws or contracts, thus showing that we are quite a law-abiding set. This year we have a membership of one hundred and thirty-six, which is considerably more than we have ever had before, but we do not want it to stop here, but want all dairymen, all factorymen, and all dealers to join us, and, by so doing, aid in keeping Western, and especially Illinois products, in the first rank of the leading markets where they are sold.

Factorymen who deal on the board have opportunities of becoming posted as to the state of the markets in all the leading cities, save Chicago, which, however, is so remote from us that the quotations might become stale before they reach us, hence we do not post prices on our bulletin board from that town. We also receive a regular telegram every Tuesday from New York city, giving us the state of the market there for the previous day. Thus the board endeavors to inform the members of the state of trade in the different cities, but once in awhile factorymen become independent of these sources of information, and some "fly" dealer picks them up, and buys their product at figures below the market price. Being bitten once, they afterward try to steer clear of such breakers.

The meetings, as a rule, are quiet and orderly, and a stranger, unacquainted with our way of doing business, would imagine that we never get up a boom in butter and cheese; but it is said that still waters run deep, and the days we have the heaviest sales we have the least noise; in fact, when there is business on the board, there is no time for noise or idle talk.

It would require too much time to give the *personnel* of some of the more prominent members of the board, although I believe it would prove highly interesting to many, and perhaps at a future meeting I may give a pen picture of the bulls and bears of the Elgin board of trade, and thus complete the "acts and doings" of that now famous institution.

In conclusion, let me call your attention to a tabular statement of the sales, by months, during the year 1879, together with the average price of butter and cheese; the highest and the lowest price of each. To some these figures will be an important study, and, I believe, will be of interest to all:

MONTHS.	CHEESE.		AVERAGE PRICE.	BUTTER.	AVERAGE PRICE.	TOTAL SALES.
	BOXES.	POUNDS.		POUNDS.		
January	854	29,775	5¼	35,758	30½	$ 12,238 20
February	640	22,400	4⅞	16,606	26	6,165 66
March	1,300	47,900	5⅓	31,870	26	10,111 39
April	1,835	67,350	5¾	16,211	22½	8,096 49
May	5,660	214,346	5¼	51,325	16¾	20,122 71
June	8,860	324,525	5½	70,285	16	29,081 24
July	5,825	206,475	4¾	48,022	15¾	27,452 54
August	14,694	506,391	4¾	156,053	17½	50,133 50
September	13,121	462,704	8	196,348	22	73,474 16
October	9,892	373,785	10¾	88,362	28	68,371 21
November	16,404	689,276	11¾	133,321	37	115,153 91
December	19,561	704,387	10¾	141,280	34	109,742 56
Aggregate	98,836	3,648,314		977,879		$539,143 67

Lowest price for butter, 14¼c.; highest, 40c. Lowest price for cheese, 3c.; highest, 12¼c.

[Mr. McGlincy having kindly tabulated the sales for December, they are shown with the rest, thus giving an aggregate for the year.—SEC'Y D. A.]

J. R. McLEAN (called upon): Said that Mr. McGlincy had so completely covered the ground there was nothing left for him to say. He would illustrate in a different way, however, that might be more easily comprehended, the amount of business done by the board of trade. There had been 1,535 car-loads of cheese and 221 car-loads of butter sold on the board of trade and shipped from Elgin and vicinity since the organization of the board. These figures, he thought, might be remembered more easily than the other.

The question discussed during the afternoon—No. 4—was then brought up again, but no one responded to the president's invitation to speak upon it.

QUESTION No. 5—"What can be done to prevent the slaughter of dairy products during the summer months?" was next brought up.

McLEAN: Said there were two ways to prevent the slaughter of dairy products in summer. One was, to make a good article, that would sell quick; the other, was not to make any at all.

Several calls were then made for C. C. Buell, to which that gentleman responded as follows:

C. C. BUELL: He was not interested himself only in the manufacture of butter. Had learned by dear experience that making butter to keep for higher prices was not profitable. He thought butter might be made through the summer so that it could be kept sweet, but it can't be kept so that it will be as sweet as new butter. Had tried keeping some in air-tight boxes, and had kept it sweet. Had sold this for twenty-five cents per pound, in Chicago, but it had gotten a flavor which he didn't like. He preferred trying to keep butter rather than sell it for fourteen cents per pound, but he hadn't sold any the last summer for less than seventeen cents. However, he would rather make butter that would sell for eighteen cents than to make some to keep over. In regard to cheese he had had no experience. Had tried to become interested by reading some articles written by Prof. Arnold. Had received a letter from the professor describing his process, but he supposed all understood it well.

MR. STONE: Would like to ask Mr. Buell the price of other butter when he sold his for twenty-five cents.

BUELL: Twenty-seven and twenty-eight cents.

R. M. PATRICK: Would make but a few remarks. Thought the subject a very important one. One year ago the experiment of cold storage was tried in Chicago and

New York, and he considered it somewhat of a failure, because it had not been tried this season. The experiment of keeping cheese, as they are made now, must be a failure, or nearly so. Large amounts of cheese had been kept, however, and sold at good prices. This had also been true of butter. Thought if butter was properly made during July and August it might be stored at a good profit until fall; but it must be made in houses prepared for it. Many have done well at this, but all must not take it up. Large lots were ruined in this way in the year 1878. It is a well-known fact, though, that the article is never so good as just after being churned; the fine aroma is not preserved, and the buyers are getting so particular that if butter is two weeks old they want to get it for two cents less per pound. Cheese that is properly cured is in its best condition. Peoples' tastes have changed so much in the last few years, that old cheese is almost worthless; yet cheese can be stored so as to prevent this depreciation in summer months, but if all is stored the markets will be glutted in the fall. The best way was to market the greater part of both butter and cheese during the summer months; then a good profit could be realized during the summer.

Mr. Stone: Said he had heard how to keep cheese, and now he wanted to know how to make butter to keep. He had come to learn.

Mr. Buell: Said he would like to know how they made butter in Marengo; but in answer to question, however, would say he didn't believe butter could be made to keep, the temperature of which in making was too high—that was soft in making. If kept so cold that it was hard all the time—hard enough to work well during the whole process of making—he thought it would keep. Thought

the temperature never ought to be higher than from 60° to 62°. In summer not over 60°; in winter not over 64°. Would like to hear Mr. Baltz's ideas on the subject.

MARTIN SWITZER was then called on. Said he wasn't in the habit of making speeches and preferred to hear Mr. Buell; but if any one had any questions to ask he would be glad to answer them. His experience was, that if you heated cream over 60° or 65° you destroyed the aroma and destroyed the keeping qualities. He thought the greatest danger in making butter was when it was just coming. You may spoil it then in a few minutes. Thought Buell had set the temperature a little too high. He had churned and made butter at as high a temperature as 64° and 65°. This was in a cold room. He thought butter gathered in the churn would make better at 62° than at 64°. He had made it at a high temperature.

C. C. BUELL: Had attempted to get at a perfect process of churning butter, and had almost succeeded in getting it. He gathered his cream and commenced churning at 58°, and before he finished it would be up to 64°.

SWITZER: Thought, as a rule, that the temperature was not lowered soon enough. He thought the time to do this was just as soon as you could detect particles of butter. He would reduce the temperature then to 60° or 62°. The addition of ice was objectionable, but not of water cooled with ice. He believed that any substance once frozen or boiled would never regain its former condition. He had made but little butter out of milk; he made it out of cream. Cream at no time should be kept over 48°; he would rather have it less. He had kept it at 72°, but didn't think it was right. Never wanted his cream over 65°, to be good.

BUELL, in answer to a question asked him, said his experience was that cream should not be kept long after skimming. There was, he thought, no work so poorly done in the factories as the churning.

MRS. CHURCH was called upon, but she replied that she was not in the habit of making public speeches, and besides, it was a good while since she had made any butter and cheese; she would rather listen to others.

W. W. BINGHAM: Said it was useless to attempt to go by the thermometer, entirely, in the manufacture of butter; our observation would tell us when to churn. Thought the best quality of butter could not be made by rule. It had been said that any one can make butter and cheese, but he had found out differently. The longer you make it the less you think you know about it.

BUELL: In answer to a question asked him, Buell said that he set his milk in open setters, but was not so particular about that. Low temperature was the best, always. He kept his 54° in summer; in winter, if it kept below 60° he was satisfied.

W. W. BINGHAM: Said his experience in setting led him to the belief that setting in cold water in tanks, closely covered to keep out all foreign substances, was the proper way. The colder the water set in, the better the quality of cream, and the quicker it would rise. He had tried the Cooley process but didn't like it. In this process the milk was placed in the cooler warm from the cow. Necessarily the vapor condensed on the top of the can. It was well known, he said, that cream was one of the most sensitive substances to catch odors that existed, and would of course,

in the Cooley process, absorb all the animal odors arising from the milk. He said you could not always get same results from same experiments. By his plan of setting—the submerged plan—butter could be made that would keep, and by it cream would rise quicker and higher. He thought milk was one thing and butter another, and temperature separated them; and the lower the temperature the greater the difference. He thought we could not be governed wholly by the thermometer. He worked his butter but once. Salt is never thoroughly diffused through the particles until it is all dissolved. If he was making the amount of butter they make in factories, he would work it in a different manner. He washed his butter until the water came from it clear. He didn't know as it was any improvement to wash with brine.

BALTZ: Thought butter made by using the submerged process didn't keep so well. He thought there was no rule by which the details of butter-making could be followed. You must be governed by experience. The Cooley process of raising cream he didn't think was good, because you keep every thing in the can that should be allowed to go off. Butter made this way wouldn't keep. The great secret in butter-making was to take out this animal heat. He thought the best way was to set in open cans and let the animal heat pass off as it should, and then you can use your judgment about how to proceed after that. He had had butter come into his market that would keep for months, and some that wouldn't keep at all. Some that he got keept all right, and marketed all right in the fall. He wanted butter that he could ship any where. If butter was to sell in Europe, it must be of the best quality—made to keep. He thought we could not dwell too much on this making of butter.

BUELL: Thought a wrong impression had been created about the use of the thermometer. Thought good butter could not be made without the use of the thermometer. He would stick up for the thermometer, first and last. In winter we need it to know when to start our churn; you all know how it is. He had made good butter at 85° and 90°. When he knew how the mercury stood then he was all right to go ahead. He thought it a very important aid in butter-making.

BINGHAM: Said he wanted to make an explanation. He didn't mean that we should do without the thermometer, but that we needed experience as well.

BUELL: Had seen butter made without working, just as good as that made by working. His rule was, as soon as the cream began to slush, thus denoting that the butter had come, he put into the churn a pail of water. This helped the butter to gather quicker. As soon as the butter became fairly separated, and looked like granules of sugar, he quit churning. You spoil butter when you churn too much. Draw out in ordinary manner. He got the butter in lumps the right size, then drained the butter all it would drain. To a sixty-pound churning he then adds one pail of strong brine, turns it, and then puts in another lot of brine; and usually, if it is strong enough, you can pack the butter at once. He remembered one time that he thought he hadn't salt enough in, and found the fresh aroma destroyed. He used Hanson's coloring; others were good. Used Higgins' salt, because it was more easily dissolved than Onondago. He had used another brand. Wanted a salt that was easily dissolved. You could see by his mode of making butter that it must dissolve easily.

On motion, the convention then adjourned until nine o'clock Wednesday morning.

WEDNESDAY—MORNING SESSION.

The convention was called to order by the president at ten o'clock.

On motion, W. W. Bingham and Mr. Gilbert were added to the finance committee.

The president suggested that the finance committee, in taking the names of members, be careful to get the name and address plainly written so that there would be no mistakes. He also announced that he had in his possession a paper by I. H. Wanzer on the subject discussed the previous evening.

On motion, Mr. McGlincy was instructed to read Wanzer's paper, which he did, as follows:

I. H. WANZER'S PAPER.

Mr. President: "What shall be done to prevent the slaughter of our dairy goods in the summer months?" is a question that has been discussed from time to time, under different headings, in most of our dairymen's conventions ever since they were first organized, and we believe much good has resulted from the same. But never in the history of associated dairying has the necessity of some radical change been so forcibly impressed upon the minds of dairymen as in the past season. It has positively come to the point where we have got to do some things differently or abandon the business.

In this paper we will briefly call the attention of dairymen to some reforms that it would seem easy to put into successful operation. First, we mention the oft-admitted fact that we are making too many of our goods in the summer months. This over-production can, we believe, be

easily and profitably abandoned in the West. With the expensive feed and long winters of the East, they can never compete with us in the manufacture of butter and cheese in winter. And now, as the tastes of the world are for strictly fresh goods, we find, in order to supply this growing demand, we must milk more in the winter months; and when we consider the fact that the West must fill this demand for at least one-half of the year, we are insured a profitable outlet for all we can make. Our past experience in winter dairying is, we think, convincing enough that the winter months are the months to make the heft of our goods, thus helping to equalize the markets of the world. We believe that it is more from the force of habits inherited from the East than any thing else that the West, as a whole, is clinging so close to summer milking.

Second, we mention the oft-repeated fact that we must make our goods better. Much of our summer product is made worthless through the carelessness and incompetency of butter-makers and cheese-makers; and we think that, since the abandonment of buying milk at the factories, poor goods are on the increase. Manufacturers should be held strictly responsible for all goods made from milk entrusted to their care.

Our curing rooms for cheese, in the main, are greatly at fault. Most curing rooms are built by only siding up the outside and plastering the inside. These rooms neither resist heat nor cold. In two of the factories under our charge the curing rooms are built as follows: First, they are sheeted with good lumber on outside of studding; then furred out and sided; then furred out between studding on the inside and papered with good building paper; then furred out and lathed and plastered between studs; then lathed and plastered again outside of all, making four dead-air spaces. In these rooms cheese will keep their flavor, if well made, from four to six weeks longer than in rooms built in the old way. In a business of 5,000 pounds of milk daily these rooms will save the extra expense of building each month, for four of the summer months.

Our butter must be made better. There are many things in the summer months at war with us in our attempt to make good keeping butter. It requires the greatest vigilance to keep our factories in condition so that our cream may raise in a sweet atmosphere; and this is made

more difficult from its close proximity to the cheese-making room. Let us so control matters that our milk, whilst setting for cream, shall be in a clear, sweet room, and, when this is done, followed by all the requisites of good butter-making, we will have butter that will keep a reasonable length of time and still meet the requirements of the trade. When made, we should at once make up our minds whether we want to put it upon the market at the ruling prices, or hold it for better. If to be sold, get it into the market just as soon as possible. Sell at what you would consider a low figure, at home, rather than put it into a hot car to go a long distance to the place of your commission man, exposed to delays and heat between cars and store—"alll at your risk,"—and after being received in store not cared for in a proper manner,—for but few mortals will care for the goods of others as though they were their own. If we should think it better to hold for better prices, put it into the nearest cool, clean, dry cellar, with good strong brine covering top; preferring this to the damage incurred in transit and the expense of what, in many instances, proves to be worthles, damp, cold storage.

Then again, it seems to us that we have fallen into a system of marketing our butter and cheese which if persisted in will work ruin to this industry. Chicago is our natural distributing point, and its commission men, recognizing this fact, have taken advantage of it and entered into combinations compelling the manufacturers to commission their goods; and so well are these combinations held together that we can never sell outright unless there is more to be made for them. The time was when the keeper of the cows sold his milk to the manufacturer and the manufacturer sold his goods to the dealer, but now the producer of the milk commissions his product to the manufacturer, and the manufacturer commissions the goods to Chicago dealers, and Chicago dealers commission the goods to dealers in New York, and the dealers in New York commission them to parties in Liverpool or Glasgow; and all the breakage, leakage, shrinkage, freight, cartage, and the three or four commissions, come out of the producer of the milk—and no wonder small dividends follow. If we are to consign our goods, let us get just as near the consumer as possible. The time has come when any man of common intelligence can open a correspondence with good

men on the other side, and will find it just as easy to ascertain their financial worth as that of a Chicago or New York man; and unless we can get fair play from our men at home we can leave Chicago men out in the cold.

In conclusion, I would express a hope that the present session of the State Dairymen's Association may have its influence in favor of an increase of winter dairying, as well as for the making of better goods and a reformation in our ways of disposing of the same, thereby to encourage and foster the great industry of dairying.

QUESTION No. 6—"Will it be more profitable for the dairymen of Illinois to follow dairying exclusively for the next few years, or diversified farming?"—was then taken up.

C. C. BUELL read the following paper on this topic:

C. C. BUELL'S PAPER.

The apparent tendency of all industrial enterprise at the present period is toward specialties in production. It seems hardly necessary to take any time to prove this proposition, or even illustrate it. We see it in the spades we dig with, the hammers we pound with, the plows we use, the wagons we ride in, the clothes we wear, etc. The items of almost the entire list of manufactured products proceed from establishments which make specialties of some leading article or articles. So in merchandizing, and in professional pursuits as well, when we look for the causes of this, we find some of them in the increased use of improved machinery, by which the various cheap moter powers are made to take the place of skilled manual labor, thus turning out a greatly increased number of articles designed to meet human want, at greatly reduced cost, and in a style, as a rule, much better adapted to please the taste.

The cost of transportation has been made so small (as it should be with present facilities) that it matters little to the consumers whether an article is produced in Oregon or Maine. A general equalization of values has thus been produced so far as locality is concerned. The controlling elements in the problem of production have come to be,

technical skill and capital, coupled with natural facilities, such as climate, adaptation of soil, cheap power, presence of the raw material, etc. All these things are in the line of economical division of labor and are the mark of progress in civilization itself.

The question for discussion here is, do the various branches of the business of husbandry fall under the same law, and especially is the business of dairying in the immediate future and considered as to its rewards and profits, to be most advantageously pursued as a specialty, or otherwise in connection with diversified farming? I do not hesitate to take the position that the law referred to does apply, with proper limitations, to the various branches of agricultural industry and to dairying in particular.

It will be noted here that the question is not whether dairy farming will be profitable the next few years. That is an entirely different and separate question. But assuming that there will be any profit at all in the business, I believe it will be greater if pursued under favorable circumstances as a specialty; and further, this special attention to it may make all the difference there is between a losing and a profitable business. The day is past when the dairy of five cows, in connection with mixed farming, can compete economically with the dairy of fifty cows, the natural facilities being the same; and the question is by no means settled that the dairy of fifty cows, operated distinct and alone, can compete economically with associated dairies of five hundred or a thousand cows, the same skill in the various details being brought to bear in both. The same principles apply here that apply to other branches of industry. The consumer of dairy products has advanced in this direction as he has in others. He demands a more finished product —a product of greater artistic skill. And his demands are inexorable. He is able to pay for it and he will have it. The manufacturer who is able to meet this want "takes first money," and is likely to reap the greatest profits.

Skill and capital are brought into use advantageously here as in other branches of industry. Capital is required to procure the facilities for producing the best product as well as a given quantity of it at the least cost. Skill is acquired by careful study and practice on the part of a capable individual, and this becomes economically possible only when operations are large and the products consider-

able in amount. Compare the product of milk strained into six-quart crocks or pans, set on the bottom of a cellar, churned by hand in five to fifteen pound batches, either by the housewife, milkmaid, or the proprietor himself, worked with a paddle or ladle, put into rolls of one to five pounds and neatly marked, rolled up in a napkin or piece of old cotton garment, and taken to market along with a few eggs and vegetables, perhaps—compare, I say, this product, both as to quality and cost in labor, with the product of an associated dairy enterprise, and you have the extremes of the economic view I would like to bring before you, so far as quality and cost are concerned. Now consider the relative rewards probably received, and the contrast is complete. Now every small dairy approaches more or less near the unfavorable extreme I have described, *as to the cost of the product in labor.* The quality of the product may be, and sometimes is, equal to and even superior to the product of the large dairy or the associated dairy; but this is not usually so, and is liable to be so only at the cost of greater expenditure in valuable labor. Circumstances may and sometimes do warrant this; but this is the exception and not the rule.

I have no doubt, therefore, that dairying as a specialty is far the most profitable form in which this business can be engaged in. Of course, it is better to market the butter produced on any farm, over and above home wants, rather than waste it; but not much profit for labor is likely to come from this source.

The above conclusion, however, does not imply certain things, and it does imply certain other things. It does not imply that any kind of a farmer, on any kind of a farm, with any kind of cows, with any kind of management, can, by making dairying a specialty, "pay off the mortgage" and achieve success. It does not imply that the man, who thinks he knows it all to begin with and who does not master his business, will make dairying profitable. It does not imply that the farmer, with land especially adapted to grain raising and not to grass, with water scanty or poor, will succeed.

It does imply that the dairyman shall have a liking for his business and shall master it in its details. He shall not be afraid to roll up his sleeves and go to work himself. He shall take the dairy papers, attend the dairy conventions,

impart and receive knowledge, learn to distinguish a good and profitable cow, know the comfort of a seat on a milking stool, and not get mad if butter from the same churning don't take both first and second prizes in the same class. "The wind bloweth where it listeth," etc. He should know enough not to put colts and steers and cows into the same pasture and yards and expect a profit from the cows. He should have eyes to see that by letting a lot of hungry hogs run with his cows, in order to save the droppings, he does not give his cows a minute's rest for turning feed into milk. It implies that the dairyman has a farm which is either excellent for grass or otherwise adapted to produce both grass and grain. In the first case he may profitably, as a rule, buy more or less grain to supplement his grass, and in the latter case he would probably feed the grain he raises. It implies that the dairyman does not live either in Alaska or Florida, if I am rightly informed about the climate of these two localities. In short, it implies that there is a general and intelligent adaption of means to the end to be accomplished.

As to the future, I never considered the foresight of the person, who claimed to see far into it, established. He sometimes pretends to see a long way, but usually, like the cross-eyed girl, acts as if looking somewhere else. There undoubtedly will be *ups* and *downs*—mostly *downs*, probably, as it will appear to each one with respect to his own business. There is no more prospect of free trade in money than of free trade in general. Money will not be allowed to become in fact as practically in law a commodity as well as money, nor will it be permitted to perform the simple duty of exchange, useful for currency, but comparatively useless as a commodity merely. The banking function, so called, would be interfered with. A whole class of money *issuers* would thereby lose their occupation.

There is no probability of another war to send butter up to fifty cents per pound and more. The Boises, the Wanzers and the Elginites are not going to sell their butter for ten cents a pound more than the rest of us can get. *They will have to ride in the omnibus.* We doubt whether the dollar-a-pound customers are to increase, but the consumers of good butter will, and there will be more of it. The dairyman's dish will not probably be always right side up; but if he be neither fickle nor foolish, he may catch

his proportion of the shower. Yes, dairying to succeed is to dairy persistently, to dairy intelligently and three hundred and sixty-five days in a year, and one day more in leap-years, and *to dairy as a special business.*

W. W. BINGHAM: Said the question had been discussed in a little different light from what he had thought. He believed no business should be followed, if not followed thoroughly. The question was, Is it going to be profitable if followed the next few years? He thought the experience of the past few years had taught us a lesson. The business was but in its infancy. Many were classed as dairymen who were nothing but milk-producers, who did not profess to know how to make butter and cheese. These, of course, followed the co-operative plan. The profits to be derived from any business are from what you have above cost of production. He thought the dividend plan of making butter and cheese had a tendency to decrease prices. He thought if this plan was followed out it would always glut the markets as it had in the past. This glutting had a tendency to diminish prices. It was putting the profits of the business into another's pocket. Thought in a few years this business would get down to where the dairymen would either sell their milk outright, or make it up themselves, and learn to sell it out and out and not put it into the hands of commission merchants. He thought if we would do away with this dividend system of making up our products, our profits would be increased, because of the quality made, and less of it. We could judge of the future only by the past, and he thought he could say, without being successfully contradicted, that those who have been getting rid of their milk by the dividend plan hadn't made a cent in the past few years. The dividends had been down to forty and fifty cents, which didn't pay expenses. He

thought this dividend question was one which should receive the careful attention of every dairyman and others interested in the matter. Dairying in the future would be formed upon a good, sound basis. He thought, however, that diversified farming was the best, from the fact that you were the least liable to failure, because you had two or three things to fall back on in case of an emergency.

KINGSLEY: Thought diversified farming was the best. Some bought their cows, and others raised them; this varied much in different localities. He thought if a man had a small farm he ought to keep to dairying exclusively. He thought, however, for the sake of the land, he ought to change. He had been a dairyman a good while.

MR. SEWARD: Said the question should not pass without more talk. Diversified farming was the question which had to come, sooner or later. He was satisfied that we mowed and pastured our land too long. Manuring land would not produce the quality of grass that you could get if you broke it up. Our land seemed very well adapted to raising clover. He had seen pastures that had never been broken up, and he thought from them you could get a larger crop than from older land. Foreign grasses would come in. About it being more profitable, he thought the dairymen of Illinois should follow mixed farming. He thought if every farmer would try and raise some stock and raise more grain than he needed he would be better off. He thought exclusive farming not so profitable. Thought farmers should raise a few calves and keep up their dairies. He thought one good breeder kept on the farm was a good thing, and unless we raised some stock like this, every little while, we must go to others and buy stock and pay big prices. He thought, too, that we should raise root crops;

the larger the better. He thought farmers should raise a little of every thing. You could get more out of your land this way than could those who made dairying a specialty.

CALVIN GILBERT: (On being called upon)—Said he would rather let his friend McGlincy talk; he could interest an audience better than himself. He thought the question was of much importance. Had been in the dairy business for 15 years and he didn't know as he had gotten very rich out of it; but he believed he had done as well at that as he could at any thing else—any other kind of business. He had been traveling in the West and had not seen the wealth he saw at home. Compared with the South, also, we were much better off. He wished to digress a little. His idea of the dividend plan was, that it was the right plan if run rightly; but, as all knew, the making up of milk had been in a way not at all satisfactory to our dairymen. Our milk and money had gone out and we had received so many cents per hundred. This plan had been run too loosely to give satisfaction. When he was receiving thirty-five and forty cents per hundred for his milk he thought he was throwing it away and he had made a private creamery. The factories, though, were at present paying good dividends. He had a contract for butter, made in his own dairy, for thirty cents per pound, clear, in Chicago. Thought dairying was the business if you could keep your cows up all right, though you must have your ups and downs. He knew that this skim cheese was ruining the trade. This part of the state, he thought, was adapted to dairying. Further south there was no water and it made it impossible to dairy good in the southern part of the state. If you were in the business, to keep at it, and you would come out all right.

In answer to a question: He made one pound of butter from twenty-five and a quarter pounds of milk. He had heard of more being made, but he would like to see it. He had been told by a dairyman in Chicago that he was making four pounds of butter from one hundred pounds of milk. He fed corn and oats, and thought it was better to grind all together. He set his milk in pools in deep setters for forty hours; in warm weather, twenty-four hours. Let it get a little sour before skimming, but usually skimmed just as the milk was changing. When he started it took twenty-seven pounds of milk to make one pound of butter. He had found it took just one and three-quarters pounds more of milk in June than in October to make a pound of butter.

BARTLETT: Found a little over one pound difference between summer and October milk. He had always found a good deal of difference in these two seasons, but it was probably in the feed. He let his milk stand thirty-eight or forty hours; about the same at all times of the year. Was getting at this time of the year about four and one-half pounds of butter to one hundred of milk. He had gotten from fifteen to thirty-three cents for his butter. Weighed it as soon as it came out of the churn. He shipped to Chicago.

J. H. FOOTE was then called upon: He set his milk in warm weather by putting in pans. He had made in October a little less than four pounds of butter to one hundred pounds of milk. In November he made one pound of butter from twenty-one of milk. He had fed bran, corn-meal and corn in the shock.

O. S. MCALLISTER: Thought the dairy business needed experience and close attention. He thought if a

man went into dairying he needed to do that exclusively. If you got to raising other things you couldn't give dairying the attention it needed to make it profitable.

On motion of Mr. Baker a committee consisting of Dr. Tefft, R. M. Patrick and C. C. Buell was appointed to meet Governor Cullom, who was expected on the noon train. L. Bartlett was later added to this committee in place of C. C. Buell, who was unable to serve.

QUESTION No. 7—"Is it advisable for dairymen to continue in the business?"—was then taken up.

The president called on J. R. McLean, who was down on the programme for a talk on this subject.

J. R. MCLEAN: Said the former question had so completely used this one up that there was nothing left for him to say. He would have prepared a paper on the subject had he not known that the former qustion would necessarily cover the ground. He remembered, in connection, the old maxim—"Every body gives advice and few take it." He thought this question must be left to each man who was in the business. Every man knew whether he had been doing well the past year and whether it would be profitable for him to remain in the business. If a man had a factory close by, run on honest principles, it would probably be a good plan to keep at it. He had talked with quite a number of well-known dairymen on this subject and had concluded that if it was not for the recent boom dairymen in general would have had to sell their dairies to buy bread for their families; but things are better now. He was satisfied with what he was getting for milk; but if he had not had something else to fall back upon he would not have been there, nor would he have been able to raise

the dollar necessary to become a member of this society. He thought, while McGlincy was reading of the immense amount of dairy products that had been sold on the board of trade, he would like to ask where the the money had all gone. If we had received it, what had we to show for it? Providence and the prosperity attending business had made times a little better. God had sent dry weather the past year that we might get good prices for our products. And the president had read how our exports to Europe had increased; all of which has had a tendency to better the markets; but would we dare to depend on these next year? He would digress a little: He believed in diversified farming. His idea had been for years that a man could make it the most successful. He kept twenty cows on one hundred acres of land. Beside these he could raise a few calves and a few colts. He supposed that was called diversified farming. Kept a few turkeys and chickens and other fowls. He knew a man named Rohlston, who lived on Henry Sherman's farm, near Elgin, who sold $1,800 worth of sweet corn the past year, and spent every cent of it in buying feed to keep his dairy of seventy-five cows. His neighbor, Larkin, had made money in the dairy business—he could make money at any thing. He would advise dairymen to go slow. It had been suggested that the business would get down to a solid basis before long, but if ever the business got lower down than it had been, God help us! Some one had spoken about home consumption of dairy products. The trouble there had been that the dividends paid by the factories had been so low that the patrons couldn't get money enough to buy cheese. It wasn't all in skim cheese. It wasn't all in under-consumption. What was to be done? Go into mixed farming? He would advise again to go slow. Raise some calves, raise some pork, and if your cheese spoiled before you sold you had something to fall

back upon; but to draw your own conclusions whether it was better to keep it up.

On motion of C. C. Buell the following greeting, signed by the president and secretary, was ordered sent by telegraph to the president of the International Dairy Fair, then in session in New York:

F. B. Thurber, President International Dairy Fair, N. Y.: Illinois State Dairymen's Association, now holding annual convention at Marengo, Ills., sends greeting, with best wishes for success of Second Annual Dairy Fair.

The committee appointed to draft resolutions relative to the death of Dr. Woodworth, then reported the following, which were unanimously adopted:

TRIBUTE OF RESPECT.

WHEREAS, This association learns with deep regret that the All-wise Creator and Ruler of this universe has in His Providence removed from our membership, since our last meeting, our esteemed co-laborer, Dr. J. Woodworth, a gentleman who, by his many good qualities of heart and mind, endeared himself to his family and friends, and to strangers as well; and one who in all his intercourse with his fellows exhibited the true spirit which should ever characterize man in all his dealings; as a dairyman he occupied a position in the front rank of his profession and was ever ready to impart information to others, believing in the injunction "Let your light shine" so as to benefit others: Therefore, be it

Resolved, That we deeply deplore the death of Dr. Woodworth, but recognizing the hand of Him "who doeth all things well," we bow in humble submission to the divine will; and, be it

Resolved, That the association extends its heartfelt sympathy to the bereaved family in this hour of their deep

and bitter affliction, and consolingly points them to Him who "tempers the wind to the shorn lamb" and careth for the sparrows; and, be it

Resolved, That a copy of these resolutions, signed by the president and secretary of this association be sent to the family of the deceased, and that they be printed in the journal of proceedings.

JOHN R. MCLEAN,
THOS. MCD. RICHARDS.

The president announced that he had just received a telegram from Gov. Cullom, which he read as follows:

SPRINGFIELD, ILL., DEC. 10, 1879.

Dr. Joseph Tefft:

I have not been able to leave home to attend your convention. Hope you will have a pleasant and profitable session. I regret that I cannot be with you to-day.

S. M. CULLOM.

QUESTION No. 7 was brought up again, but as nothing was said on the subject, it was passed, and

QUESTION No. 8—"The defects in the management of the dairy business in this state; what are they, and how can they be remedied?"—taken up. The following paper by Israel Boies, on this subject, was then read by the secretary:

I. BOIES' PAPER.

Gentlemen: I feel that I have not brains enough to do justice to this subject, and were it not that you have selected three other men to address you on this question—able men,—I would think the subject would fare slim. It would be like offering skim cheese in a full-cream cheese market. But to the subject. First—a want of system, too much slip-shod work, cows neglected, irregularity in feeding, irregularity in milking. I say that half of the cows that

are milked in the Northwest (let a good business man make the figures) are milked at a loss; one-half the balance pay no profit; the other quarter pay, why?—because they are in the hands of men that never do business by the halves. If they keep cows, they know every month, yea, every week, whether they pay or not. Such men don't ask their cows to pay without feed, and the best kind at that. Their cows are always milked regularly; they are provided with good, warm stables, protected from all cold storms, always treated kindly; they use no dogs, but soft, kind words. There is too much guess work with farmers, generally. When you ask one man how his cows are doing, he will answer promptly: "Average twenty-five pounds per day; I get $1.25 per hundred for my milk; I get thirty-one and one-fourth cents per day per cow—cost, twenty cents per day for keep; and at that figure my hay and grain is sold for a good price at home. I have the manure for my farm; my farm is growing better every year and my bank account stronger." This is so with but few. Three-fourths of the dairymen in the West cannot say they do as above. Take, for instance, the report of Professor Wilson, at Elgin, in 1874, of the best dairy in 36,000 cows kept in New York State. That season the best dairy produced $92.50 worth of milk, the poorest, $13.50. Both these men carried to same factory and received same price for their milk. I presume, if we knew the product of the entire 36,000 cows, we would find not more than 9,000 of the 36,000 gave over $40 worth of milk. I judge by what I know; it is not guess work. How much is lost every year by bad management in the manufacture of butter and cheese? Why do dairymen keep and milk cows and carry milk to a factory where the proprietor or manufacturer does not understand his business? Why is it that there is eight cents a pound difference in the price of creamery butter? Why is it that there is from two to four cents per pound difference in the price of full-cream cheese? Is there not five cents per pound difference now in skim cheese? Why do dairymen carry their milk to a factory that never turns out any thing but second-class goods? Is it not the fault of you, dairymen? I think if dairymen first guaranteed to the factoryman good, pure milk, then bound the manufacturer to produce "A No. 1" goods or pay the difference, and then carried this rule into effect and lived up to it

strictly, I believe it would make twenty-five per cent. in favor of the dairymen. Gentlemen, it is your own fault if you don't remedy this evil. I dislike long epistles, yet a volume can be written on this subject; but I have only touched two points—the production of milk and the manufacture of the same. I have not said one quarter that might in truth be said on these two points, but enough at this time.

On motion the chair appointed a committee of five, consisting of S. W. Kingsley, J. R. McLean, C. C. Buell, L. Sheldon and W. W. Bingham, to nominate officers for the ensuing year.

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

AFTERNOON SESSION.

WEDNESDAY, DEC. 10.

The convention was called to order by the president at 1:45, and

QUESTION No. 8 was resumed.

B. CADY: Said he would make a few suggestions. In the first place, those who were running the factories should run them in a cleanly manner. In the next place, those who brought milk to the factory should be obliged to bring it in good order. Have plenty of water at the factory and have it good. Factorymen didn't let the patrons know what they were getting for their milk. His idea was, to let the patrons know all about it. The business depended upon the patrons and the makers. There were many who didn't understand any thing about the business, but would after a while. He had been to some trouble to collect figures in the matter, and had found a great difference in many cases between dividends paid by factories in this section, for same month. Wanted to know how this could be accounted for.

IRA THOMPSON was called upon, but said he had not come to be heard, but to learn.

T. McD. RICHARDS: Said good butter and good cheese could not be made from unclean milk.

MR. S. K. BARTHOLOMEW (called upon): Said he thought the ground had been pretty well covered by the previous speakers, but he would repeat, for the more our

errors were brought before us the more apt we were to correct them. The main point to consider was the stock from which we got our milk. One trouble was that we kept too many cows that did not pay, that ate up the profits of the good ones. The average cow gives about 3,000 pounds of milk per annum. It should be from 5,000 to 8,000. The worth of the animal was measured by what it produced over and above what it cost to keep it. The way to get good stock was to raise it. A few years since he thought he was losing money by raising calves because he could buy them cheaper than he could raise them, and so concluded to buy; but he soon found he was paying much more for the cheap animals—they proved to be the dearer. He selected his cows from choice stock—both dam and sire. He could raise good cows this way. When he had bought them he never got as good ones as he could raise. You didn't notice the expense of raising them. There was another defect—we were putting on the market goods that did not get sold. There was just one of two remedies that must be adopted for this: One-half of us must go out of the business, or we must produce only half of the year. Let the Eastern people manufacture the dairy goods in summer, and we would make in winter. Those were the most important of our failures. We asked the cow merchant to fill up the gaps in our cow ranks, and lost by it. Another trouble:—But few of us were educated to the business. We started out here thinking we could make and sell produce as cheaply as the Eastern people, but we found that to get high prices we had to make goods that would bring them. We were improving, though; we fed cattle better. A few years ago it was not an extraordinary thing to see hides stretched on farmers' fences; but we have got past that. The average farmer can now, without a shudder, throw to his cattle an extra peck of

feed. However, one class of bad men might spoil the good effects of many good ones. He had found out that dividing the milk in his factory, putting the milk of big producers in one place and that of small ones in another, resulted good. He had found in doing this that by the other way half of his patrons were robbing the other half. The small patrons were robbing the big ones. We must bear in mind that it took good milk to make good butter, and it took good butter to find buyers.

W. PATTEN: Had had but little experience in butter-making. Was running a small private dairy. He had married a woman who, in her own estimation, knew how to make butter better than he did. He wanted to run the butter-making, but his wife would not let him. But he had a chance once: His wife was called away to the home of his son, last fall, by one of those unfortunate accidents which frequently occur to newly-married couples, and he tried his hand at it. He made a good batch of butter and sent it to Chicago. He didn't hear any thing about it until he called at the commission house on his way to the convention, and found, as the merchant told him, that the butter kept well—very well. He didn't want his wife to know any thing about it, and told the man to bill it at thirty-five cents per pound in returns and he would make up the difference. If he had thought any of the women present would ever see his wife he would not have told of it.

MRS. GEO. SANDS: Had made butter a good while, but lately her "lord and master" had learned how, and now he knew it all. He attended the State Dairymen's Convention at Elgin for a few hours, and he knew much more than she did. He did well, however. The last month

he had made one pound of butter from twenty-two pounds of milk. She had made good butter, but didn't feel competent to give any instructions.

MR. SANDS: Said his wife gave him more credit than he thought she would. She found a great deal of fault with him at home. Said he was not neat.

O. S. CAHOON: Thought the first place to start a reform in this matter was in the stable, with all. He never had carried milk to factory, but thought the greatest mistake made was in not requiring more cleanliness. We should be more careful. Suppose we began at the beginning—dressing the cow right and keeping her in a good place.

J. H. FOOTE: Would add to Mr. Cahoon's remarks. He hired much help and he allowed no man to speak a loud word in his barn; nothing louder than a whisper. You must keep the cows quiet. It didn't matter so much about the feed.

T. McD. RICHARDS: Said that was all well enough in theory, but he hadn't seen the man yet who wouldn't speak out loud, if he was raised by a kicker.

CAHOON: You should get good, quiet milkers from a quiet class of people. Set the pail right under the cows. Clean off the teats, brush them clean. He had to instruct all of his men in the matter of milking.

D. C. SCOFIELD: Thought it was of great importance to keep cows quiet; it was very important, also, that they be kept clean. About keeping cows quiet: He had a man manage his dairy once who had a very quick temper,

but he was always good with the cows—always kind. His next man was always yelling at the cows, and he always had trouble. He soon had a number of kicking cows. The cows fell off in their milk. These two facts keep in mind: Keep the cows quiet and keep them clean. A cow should never be milked until every thing is brushed off the udder, and there should be no talking. He had had men who would sing a nice little song when they were milking. It was necessary to keep the animals quiet when you milk. It always affects the milk to make a noise. Remember when you milk, that this question came up at the convention.

McLean: Would like to ask if any of them ever hired a man who could sing. Said he had had cows that could kick a man into the middle of next week, and he had an Irish girl working for him at that time who would sing those old Irish ditties, and could milk the cows he dare not touch. Had a son who belonged to what they called a quartette, he believed, and who was getting to be quite a singer. He always sung while milking, and could get more milk from the cows than his father could, every time. His advice was to hire singers for milkers.

Geo. Sands: Had a fine cow once that would come up regularly every milking time to be milked; was as gentle as a lamb. He built a cow barn and got this cow in the first time to milk her, and found, to his sorrow, that she had what was termed back-action. He told his boys that they might experiment with her and see if they could break her of kicking, by force; but they made a failure of it. This was one of the best cows he ever had. He was in for kind usage.

Patten: Believed in what they called animal mag-

netism, and its results upon animals. He believed that some men would make a kicker out of any cow they would attempt to milk. He had two sons; one was a good milker, the other, he believed, honestly wanted to make one, but could not.

BARTHOLOMEW: Thought there was something in this singing while milking. The best milker he ever had he had kept for twelve years. He never milked a cow that he knew of without singing, and never sung but the one song, and that was "The Sword of Bunker Hill." He didn't believe there was another song that could bring the milk that one could.

DR. TEFFT: Thought the factorymen were in error in their way of running the factories. They should visit each one of their patrons and see how, and in what condition, they got their milk. The Illinois Condensing Co., of Elgin, had a rule, that their patrons' barns should be visited once each week or oftener, and examined. A little sour milk in the milk pail might spoil the whole batch that came to the factory. The manufacturer had not the interest he ought to have in this matter. It was not out of his pocket so much as it was out of ours. It should not be allowed for one man to spoil all. The Illinois Condensing Co. never let milk come into the factory until it was examined by an expert. It was impossible to make good cheese if you didn't examine your patrons' cow stables and appurtenances. If you wish to manufacture a good article you should examine your patrons' barns and find out how your milk came to you. Then again, were our factories clean and nice? Were they run on a clean principle? If all this was done we would not have so much fault found with our cheese in the future as we had now. He knew of Mr.

Borden, president of the Illinois Condesing Co., going to the stable of one of his patrons and examining the milk-strainer. As soon as he smelled it he threw it as far as he could. Of course the patron was provoked, but Mr. Borden told him that he would get him a new one. After that the man brought good, clean milk, for he knew Borden to be a man of his word, and he had told him that if he brought impure milk again he would get rid of him. If all our milk was so handled we could make good cheese. He would never allow a man to take a particle of cream off the milk. If he bought the milk, he bought the whole. If he found a man watering his milk he would cut him off mighty quick.

The committee appointed to select judges to examine the butter and award premiums reported the following:

JUDGES TO EXAMINE BUTTER:—N. C. Skelton, Boston; E. C. Ellis, Boston, and Geo. Hawthorne, Elgin, Ills. Committee to draw the butter and take it to the judges: D. C. Wolverton, Belvidere, and O. W. Butts, Chicago.

They were instructed to retire to a close room, away from where the butter was stored, and allow the butter to be brought to them by the drawers.

The nominating committee then gave the following report which on motion was accepted and the nominees declared elected.

REPORT OF COM. ON NOMINATIONS:

For president, Dr. Joseph Tefft, Elgin, Ill.; secretary, W. J. Anderson, Elgin, Ill.; treasurer, R. M. Patrick, Marengo, Ill.; vice-presidents, C. C. Buell, Rock Falls; Hon. W. Patten, Sandwich; S. W. Kingsley, Barrington; E. H.

Seward, Marengo; J. R. McLean, Elgin; I. Boies, Davis Junction; Luther Bartlett, Bartlett; Prof. F. Hall, Sugar Grove; I. H. Wanzer, Oneida; Chas. Boone, Winnebago; John Smallwood, Freeport; L. B. Parsons, Flora; Capt. W. H. Stewart, Woodstock; H. W. Mead, Hebron; N. Eldred, Gilman, Illinois.

S. W. KINGSLEY, Chairman Com.

QUESTION No. 9—"The effects of drainage on different soils, and the best system employed"—was taken up. Upon this topic, R. M. Patrick read the following paper:

R. M. PATRICK'S PAPER.

Mr. President, and Gentlemen of the Illinois State Dairymen's Association: In giving my views upon the subject of drainage, I will state they are the result of some twelve years of practical experience upon a farm of 480 acres—which has rapidly increased in productiveness, and, more recently, owing much to more perfect drainage.

The lands which most need draining in this country are low lands, made rich by alluvial deposits left upon them by the overflow of streams, or the wash from higher lands surrounding them, and the decayed rank growth of coarse vegetation. These lands, being of an alluvial character mixed with rich vegetable growth, form the richest land known, and when thoroughly drained are capable of producing the most luxuriant crops, and in this climate in a succession of years prove more productive and more valuable than much of the higher and dryer land. The natural growth of grass upon these low, undrained lands is coarse, sour and almost valueless for dairy purposes. Without drainage it is impossible to cultivate these lands successfully, or to raise the sweet cultivated grasses which are so necessary for producing a fine article of butter or cheese. So these lands—the richest known—when undrained remain of little value.

There is another class of lands, situated higher, which seem dry upon the surface, but the water line is so very little below the surface that the season is far advanced before the water gets well out of the tillable soil, and the crops of grain or cultivated grasses on such lands are

uncertain and unsatisfactory. Drainage of such lands immediately changes their character, making a profitable and reliable soil, which dries easily and can be worked early in the season—a necessity which yearly becomes more apparent in raising and ripening the corn crop. There is also in these soils great fertility which heretofore was locked up but which by drainage becomes liberated, through the action of the warm rains and air now penetrating the whole mass.

Soils which heretofore paid little or no profit are by drainage made to pay large profits, and to pay the entire expense of drainage in one to three crops of grain or cultivated grasses.

Drainage, to be effective, must be deep. Lands adjoining ditches are always saturated with water just as high or near the surface as the water-line in the ditch. On lands quite level the water often stands in ordinary shallow ditches within a few inches of the surface, while in a two and a half or three foot ditch it would stand much below the surface, leaving the adjoining land for one and a half to two feet below the surface free from water, in a condition to be worked early, and almost certain of producing a fair crop of grain or grass.

My former practice in draining was to employ men with spades or ditching machines; either plan always leaving an unsightly bank of earth on one side of the ditch to prevent the surface water from flowing in on that side, and making an excellent place to raise foul seeds to be distributed over the adjoining fields. Recently I find I can dig wider, deeper and better ditches with a team and road scraper, and cheaper than by any other method. My plan is to plow the ground one furrow deep, the width of the scraper, the entire length of the field to be ditched; then scrape this plowing out the entire length, commencing at one end, carrying the dirt back several rods and spreading it evenly on the land. The team continually travels in a circle, carrying out a scraper full each time round. Then again plow and scrape as before, and so on until the ditch is from two and one-half to three feet deep, about three feet wide at the bottom and five feet wide at the top, with sloping sides, and the ground leveled on both sides, so that it can be cultivated to the edge and that the surface water is not prevented from running in. A man and team will

make from eight to ten rods of such ditch a day; making the cost within twenty-five cents per rod. On lands where little but surface water is to be carried off a shallow ditch of this character will do, and it can be seeded to grass.

If the lands adjoining the deep ditch are springy and need further draining I then use tile drains, laying them never less than two and one-half to three feet deep, and at nearly right angles with the main drain, from five to ten rods apart, as the lands are more or less wet and springy.

The first field of ten acres drained with tile by me was favorably located for draining, and was done at an expense of $5 per acre. The tile was laid in the spring and the field plowed and sown to oats and seeded to timothy and clover. The crop of oats was one of the largest ever raised by me, and was so badly lodged that fully one-half of the field was cut with a mower; yet the additional value of this crop over any heretofore raised on this field more than paid the entire cost of draining it. The next crop of hay yielded over two tons per acre; and the portion of the field which was heretofore wettest, and almost worthless, yielded fully one and one-half tons of fine timothy and clover hay per acre.

The second field, drained with open drain and tile, not so favorably located for draining as the first, cost $10 per acre to drain, but was more perfectly drained than the first. The drains were laid in the fall and the field plowed ready for spring. The crop first raised on this after draining was oats, and yielded over forty bushels to the acre, of good quality. Two such crops would fully pay the cost of draining over the value of any crops heretofore raised on this land.

Tile drains laid with two-inch and three-inch tile cost me as follows:

16x2-inch tile, at $12.50 per m. here, cost per rod	.20c
Digging tile drain 2½ to 3 feet deep, " "	10c
Cost of 2-inch tiles and digging drain, per rod	30c
16x3-inch tile, at $22.50 per m. here, cost per rod	36c
Digging tile drain 2½ to 3 feet deep, " "	10c
Cost of 3-inch tiles and digging drain, per rod	46c

The laying of the tile, after the drain was ready, and the filling of the drain, was done very rapidly by my own men, the filling being done with team and plow, and the expense of laying tile and filling drain would be from five to eight cents per rod.

Many are deterred from undertaking the drainage of their lands because of the expense; but every farmer can drain a few acres of land each year at a trifling addition to his yearly expenses, and the small capital invested immediately becomes productive—lands which before were nearly valueless paying for draining with one or two crops, and paying large yearly profits thereafter.

The time has arrived in this part of the West when farmers must produce more from their lands to make farming profitable. Cheap lands are becoming scarce, and the tillable portions of old farms have by long cultivation become, in too many cases, so exhausted as to produce unprofitable crops, and the necessity is now fairly upon us for draining and opening up for successful cultivation these rich undrained lands.

PATTEN (called upon): He could give no rule in this matter, nor lay down any law to follow. He didn't want to take up the time of the convention. We had many farmers who were using drainage, some one kind and some another. He would recommend the tiles. If a man was rich he could afford to let his land go without drainage; but if he was poor he couldn't afford to let a foot go undrained. He would lay down no rule, either in regard to size of tile or the depth needed. You must be governed entirely by the land. He had made mistakes in draining, but he had found it profitable. Had used too small a tile. Had used from two to six inch tile at the depth of from two and one-half to nine feet. Your grade should be even, and at the mouth of the tile well protected. You would find that the cattle got at the mouth of the drain and destroyed it. Take a two-inch plank and level it off; the cattle will let it alone if level. It didn't answer to let the line sag, for, if you let it get out at the start, a fine sand would run through and clog them up. Make the grade two inches to each 100 feet; you may need more of a grade if you run near a hedge. The fine fibrous roots of the hedge

would fill up the tile. If you run under a hedge you would have to take up the tile every few months.

SCOFIELD: Would tile laid three feet below the surface be protected from frost?

PATTEN: Yes, he thought so, but no water should be allowed to stand in the tile. The better way was to lay it lower than three feet. He had found by experience that drained land was profitable—he knew it was. He had tried some very poor looking lands. He had had a pond of about two acres in area from which he had raised, after draining, seventy-five bushels of corn to the acre. His soil was the loose, porous soil, but thought that as good results could be had in all soils. One error was, we had too small tiles. His tile was round and large. Some of his neighbors had used tile sixteen inches. He had tried to get tile laid solid, and that was a great point. One advantage of round tile was, you could lay it evenly and well. Never to get an experienced drainer to do your work. He had been fooled that way once. He had got a man to lay the tile for so much per rod, and found that he was more particular about the rods than the tile. They should be left level; that was the great point. He could give no rule about size of tile, because there was a great difference in soil. He had run some ditches in peat bog and did not succeed; below the peat was a quicksand. He believed in some places you could run ditches shallow. In his part of the country they set their tiling deep. After the rain in the spring you would see that the first dry land was over your ditches. In covering joints of tile he would get clay soil. He had laid tile when they filled as he went along, but the first heavy rain after they were laid cleaned them out. In making his ditch he used what was called a "goose-neck." In

laying he didn't allow his men in the ditch after leveling; it must be level bottom. In laying the tile he used a stick and dropped them into the ditch. In very wet spots he used his judgment as to how many feet apart to lay tiles. He had raised seventy-five bushels of corn per acre where it had been slough land. Most of the farms in Illinois were three-fourths good land. Sometimes you could put corn for first crop on drained land; on most land it would not do at first, however.

JUDGE LAWRENCE: Thought the question of drainage was one of the most important. He had drained land that was more rolling than that in this part of the state, where, owing to the peculiar distribution of the soil strata, the water ran out on the surface of the ground. The trouble in drainage was that the water that came into the tiles was was from the bottom of the ditch. Round tiles were the best. He knew something about the grounds of the Illinois Industrial school at Champaign. There had been many ponds on those grounds; now there were none. Tiling there did not cost more than one-eighth of what it did here. He had found it unsatisfactory to use small tiles. About the number he would say, you must have enough to drain well. His son had raised eighty bushels of corn per acre from ground that was once a pond. He thought all rolling ground could be benefited by the use of the drain tile. We thought we could not get tile because they were too dear, but when we got to wanting them very much then we would make them. In laying, the first thing to be done was to set your stakes; an inch to the rod was enough of a grade—but to be careful or it would fill up. Have it level. Make the fall a little more if any thing going down a grade; to walk backwards as you laid the tile, and not to get into the ditch after the tiles were laid. You wanted

clay for the bottom of the ditch to cover them. But you might get it all layed out for you, though you could never do any thing until you learned by experience. An open ditch would not drain the land as well as tile. It filled up, and then you couldn't get the water from the bottom; still, you should use an open ditch in draining peat beds.

PATRICK: Thought if all farmers had plenty of money to use, they should have large tile, but as they hadn't, they must take the matter gradually. He had found no trouble in keeping open his open ditches.

LAWRENCE: Had seen open ditches used and knew they cost double what tiles did, to keep them open.

REV. WREN: Thought there was much difference in open drains. He would like to hear Mr. Patrick explain what kind of an open ditch he used.

PATRICK: His ditch was two and one-half or three feet deep, and cost him twenty-two and one-half cents per rod to dig. He had had no trouble with its being filled up so far, but if it did fill it could easily be opened again. He thought it was surely the cheapest ditch.

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

EVENING SESSION.

WEDNESDAY, DEC. 10.

The assembly was called to order at 7:30 by the president.

On motion, the chair appointed a committee, consisting of J. M. Frink, L. Bartlett and J. H. Foote, to examine the dairy implements exhibited.

The judges selected to examine the butter on exhibition then reported the following

AWARDS.

ELGIN BOARD OF TRADE SWEEPSTAKES.

	Points.
Premium of $50 in gold to L. C. Ward, St. Charles,	47⅔

THURBER OR HIGGINS SALT PREMIUMS.

Munn & McAdam, Belvidere, 1st, (gold medal), -	47⅔
C. C. Buell, Rock Falls, 2nd, (silver medal), -	47⅓
W. A. Boies, Marengo (Home factory), 3d, (bronze medal), - - - - - - - -	47

MOULTON OR ASHTON SALT PREMIUMS.

W. A. Boies, Marengo (Union factory), 1st, ($25.00).	46⅔
Munn & McAdam, Belvidere, - 2d, ($15.00),	45⅔
Geo. Sands, Belvidere, - - - 3d, ($10.00),	45⅓

The awards were made on the basis of fifty points for perfect butter, divided as follows: Flavor, 10; make, 10; texture, 10; keeping, 10; color, 5; salt, 5—total, 50. Further on will be found a tabular statement of the points registered on all the butter exhibited. Instead of the name of the exhibitor will be his number, opposite the scale of

points registered. As all knew what their numbers were, each exhibitor will be able to see at once wherein his butter failed.

The president called upon Mr. Wheeler, a representative of the Chicago Linseed Oil Co., who occupied a short time in explaining the usefulness of the linseed meal as a feed for dairies.

Mrs. F. G. Hackley, of Marengo, then read the following paper on "The homes of dairymen and what they should be:"

MRS. HACKLEY'S PAPER.

Mr. President, Ladies and Gentlemen: I quite agree with you. What presumption! What am I that I should have superior knowledge of dairymen's homes, and the conceit to even attempt to shadow forth their future? I confess to being intimately acquainted with one dairyman, possessing to a high degree interest in his home and surroundings, and out of supreme respect for him, and for most reasonable objections on his part, I know comparatively little of other men of like pursuit. I have viewed their homes, in holiday attire, occasionally in undress uniform and actual service. From my own experience and a glimpse of those traveling in the "milky way," it is a safe conclusion to arrive at, the homes in question must necessarily be exceedingly busy ones. Else should they differ materially from the homes of "the butcher, the baker or the candlestick-maker"? Are the dairymen considered a peculiar people in the land? Undoubtedly they are recognized by their dress of overalls and coarse boots with a broadway cut, which they wear with such an air as "smells to heaven." But what will not one endure with butter in the neighborhood of forty cents per pound?

Let the consumer felicitate himself upon his past good fortune, obtaining something for comparatively nothing, dairy goods being below the actual cost of production. "General average" has a word to say, and the late ruling prices bring sunshine and plenty into the dairyman's home.

Once more is heard the merry jingle of the "almighty dollar" in his pocket, with the comforting assurance that the dairy industry is second to none. Little did our Puritan ancestors look forward to the day and generation when the mother country would stretch forth her hands in want to her exiled children, who are to-day proud to send her food and raiment. How providential in her straightened circumstances, that they can supply her every need from their abundance. Our depression for the last three years forced us to great exertions. We must make wonderful improvement to be able to sell our wares.

Over-production of inferior articles made them a drug upon our hands. With this mortifying result before us, and, to be second to none in the merit of our goods, are the reasons that to-day we find a ready and remunerative market. In the flush of our success we must not rest upon our laurels, but press forward to higher aims in this direction, and gain greater achievements. And this industry is complete and separate from the ordinary house-keeping, which, when combined, serve to make one's life a constant round of duties. It is a nice point, and no ordinary study and exertion is required to mingle with the world socially or religiously. True, where the milk is carried to a factory, there is less work for the house than where there is a home dairy. Yet the utensils (which are many) must be purified with exquisite care. Eyes, nose and hands of the housekeeper are brought into requisition. Eyes to see that every point is reached, nose to assure herself all is perfectly sweet, and hands to accomplish the whole. Possibly the tongue, with suggestions in reference to cleanliness, manner of milking and care of apartments occupied by "Brindle" and "Snowflake."

Milking is an accomplishment I would earnestly advise the dairyman's wife not to cultivate. She would not be, like Mrs. Toodle's eccentricities, "so handy to have in the house," but so handy to have in the stables on occasions. But friendly relations with the calves is to prolong their existence, and a financial success. Patient, exceeding patient, tender care. The little creatures are too often considered obstinate because they do not readily do that which nature has never required of them—drink some sour mixture that mortal is pleased to expect them to thrive upon. The circumlocution and gymnastic exercise necessary, and

adjectives unnecessarily employed in teaching the infant bovine to drink, when undertaken by a man, would beggar description and fill books. Would we could read the other side of the story, bound in calf.

You may justly say, what has this to do with the "homes of the dairymen?" Much, we assure you. Cotton was king until corn waved its tasseled scepter. Now, the cow and her progeny are absolute sovereigns, usurping unlimited power. Every effort must bend towards their well-being and comfort, else they will refuse to yield munificent returns, which gives prosperity and comfort to the household. What busy homes they are, too, "from early morn' till dewy eve"! The dairyman's home. The name is suggestive of a comfortable degree of wealth. If that wealth is acquired by the present owner, it means that the day of good, strong, brave tusseling with poverty is over; that the foe he had wrestled with so long and stoutly, is vanquished. Yet to keep the vantage ground so valiantly gained, requires busy hands, notwithstanding he can give his family many comforts and luxuries heretofore unattainable. "No man has a better right to kill himself by overwork than he has to do it by over-drinking. If suicide be a crime, he who dies by putting too great a task upon his strength, is as truly a criminal as he who dies by putting a bullet through his brain. If a certain amount of rest and recreation is necessary to a man's health and life, the omission to take it is as great an offense against God's law in nature as would be the omission to take food, and death by willful starvation is no more an act of self-destruction than is death by willful fatigue." One can not but be struck with the force and truthfulness of these remarks. Where is the remedy? Unquestionably the housekeeper in the dairyman's home is too often over-taxed—"The tireless service of willing hands, the strength of swift feet * * *." It is useless to enumerate the duties that pile themselves Alps high upon the weary shoulders, and more than useless to suggest a servant to lighten the labor. We remark here, emphatically, there are no servants in this progressive, enlightened, civilized nineteenth century, that know how to work. Then is it any wonder that the brow becomes ruffled and the voice takes on a hard, monotonous sound, directly in the face of duty, when the body is overweary? We know full well, to be happy ourselves and to

make others happy, our countenances should be placid and our cheerfulness assured by our vocal organs.

> "Fie, fie! unknit that threatening unkind brow,
> And dart not scornful glances from those eyes,
> To wound thy lord, thy king, thy governor:
> It blots thy beauty as frosts bite the meads,
> Confounds thy fame as whirlwinds shake fair buds,
> And in no sense is meet or amiable.
> A woman moved is like a fountain troubled—
> Muddy, ill-seeming, thick, bereft of beauty;
> And while it is so, none so dry or thirsty
> Will deign to sip or touch one drop of it.
> Thy husband is thy lord, thy life, thy keeper,
> Thy head, thy sovereign, one that cares for thee
> And for thy maintenance: Commits his body
> To painful labor, both by sea and land,
> To watch the night in storms, the day in cold,
> While thou liest warm at home, secure and safe,—
> And craves no other tribute at thy hands
> But love, fair looks, and true obedience."

That reads and sounds very well, Mr. Shakespeare; but the women of our time are doing their full share of keeping the home "warm, secure and safe." The world and women have made great progress in three centuries. Could we have stepped into the modest, unpretending home of the "Bard of Avon," where happiness seemed to dwell, and looked our surprise and pleasure, how surely he would have uttered these talismanic words: "Anne Hath-a-way!" An unknown author, in a poetic way, has sought to give us sympathy in some verses styled "Kitchen Consolation." Allow me to extend this sympathy:

> "Oh! this baking and brewing,
> This boiling and stewing,
> And washing of dishes three times a day;
> The griddle-cakes turning,
> The skimming for churning,
> The setting of tables and clearing away?
>
> "What is it but weariness,
> Work without cheerfulness—
> The same round of labor day after day?
> I'd rather be painting,
> Or sewing or braiding,
> Or spending my time in a pleasanter way."

Thus my fancy kept dreaming,
O'er the hot dishes steaming,
And wondering why I must a kitchen fire tend,
Till an angel's low whispering
Compelled me to listening,
And taught me these household discomforts to mend.
"Is your work not the oldest,
The usefulest, the noblest—
In ministering daily to the life God has given?
If the work is unceasing
Of washing and sweeping—
Remember that order's the first law of heaven!
"Pray what gives more pleasure
Than a well-seasoned dinner
When tastefully served on the family board?
Thank God you can labor,
Can knead, mix an' flavor,
And draw pleasant meals from a farmer's rich hoard—
"That heartsome delight
At morn, noon and night,
When the family gathers for chat and good cheer!
Then should you be complaining
Of work unavailing,
That brings joy to the loved ones each day of the year?"

Strategic movements occasionally have a most happy effect in the home field. Let the lord of the manor but imagine he has his own way, how sweetly he will consider himself the originator of your feats of generalship, and the household ship in its swan-like progress is a pleasing sight to behold. In all homes one or the other rule, and may no discord ever mar the beautiful harmony of that life. Without domestic happiness nothing on earth is to be desired; and with it, no withholding of earthly goods is to be dreaded. But the domestic machinery does not always run smoothly: sometimes it is on the center and doesn't run at all. There are examples of placid, lovely people often before our mental vision, "Oh! world look on and wonder," yet if we were to live the round of the seasons in their home-life, we would say the "half has not been told." Actually so like their neighbors, with a good bit of the common humanity flesh is heir to, with which to spice their everyday life, we heartily condemn their faults and ways, because they are out of our possession. How ours must appear to them.

"Home is where the heart is," I once heard an old gentleman remark, and I thought how true, for if the heart isn't there, what a frail structure. To make it an attractive place, a happy refuge from the world, a pleasant abiding place, adorned and cozy, the heart must be interested. Whatever our vocation, we must be thoroughly alive and interested to be successful; and, our lives are what we make them. Yes, in a measure, and as truly, our lives often make us. We hit upon many sharp corners as we battle along, and wonder why,—almost forgetting "there is a divinity that shapes our ends, rough hew them as we will." If we could only remember, in the toil and anxieties of our every-day life, we are weaving like the workers on tapestry, among the tangled ends and innumerable colors on the wrong side of the pattern. In our after life it will be presented to us in all its perfection and beauty, the threads even and beautiful, the colors fair to see.

It was a blessed mother that gave to a child these lines, to quell a turbulent, restless spirit:

"Be quiet, take things as they come,
Each hour will draw out some surprise;
With blessings let thy days go home,
Though shalt have thanks from evening skies."

And may these words of wisdom descend and cover us like a beautiful benediction through our lives, and—

"Let us gather up the sunbeams,
Lying all around our path,
Let us keep the wheat and roses,
Casting out the thorns and chaff.
Let us find our sweetest comfort
In the blessings of to-day,
With a patient hand removing
All the briers from our way."

After a short recess, in which the finance committee were allowed to press their claims, Dr. Tefft talked for a short time upon the subject of "Milk and its Uses," as follows:

Dr. Tefft: "Ladies and gentlemen—while waiting a few moments for an essay you will please alow me to

invite your attention to some of the uses of milk, which are as follows:

"1st—In its normal state it is one of the best of foods for young mammals. It is also good food for those further advanced in life.

"2d—Milk may be condensed, with or without sugar, for use in the human family: if with sugar (called preserved milk), it will keep good for years.

"3d—The caseine of milk may be made into cheese, for food.

"4th—The caseine may be made into lactine, largely used for stamping or printing calico.

"5th—The serum, or whey, of milk may be mixed with cereal caseine and made into a nutritious food for man in the form of cheese.

"6th—Full-cream cheese—a thing that is but rarely found—yet good food for the human family.

"7th—Milk is frequently made into koumiss, much used as a mild, nutritive stimulant in sickness. It contains about one per cent. of alcohol.

"8th—The whey of milk may be evaporated and lactine, or sugar of milk, obtained, which we trust will be largely used some future day for culinary purposes.

"9th—Sour milk is largely used in the United States to make jewelry called American coral, celluloid, and jet.

"10th—The cream, or fatty part, of milk is usually made into butter. Butter contains—

	Summer.	Winter.
Margarine	40	65
Butter oil	60	35
	100	100

"May butter frequently contains—margarine, 68 per cent.; butter oil, 30 per cent., and butzric, caproic and capric acids, 2 per cent.

"A compound is supposed to exist in margarine consisting of three atoms of carbon united to 2 of hydrogen,

which is named lipzle. This unites with an atom of oxygen, forming oxide of lipzle—$C_3H_2O_1$. Now margarine consists of—

1 of margaric acid ..... $C_{34}H_{34}O_4$
1 of oxide lipzle 3 2 1

Gives ..... 1 margarine—$C_{37}H_{36}O_5$

"Butter oil consists of—

1 of oleic acid of butter ..... $C_{34}H_{31}O_5$
1 of oxide of lipzle 3 2 1

Gives ..... 1 of butter oil—$C_{37}H_{33}O_6$

"Now, when the oxide of lipzle is separated from the fatty acids, it unites with water and forms glycerine, or oil sugar—

2 of oxide of lipzle ..... $C_6H_4O_2$
3 of water 3 3

Gives ..... 1 of glycerine—$C_6H_7O_5$

"If we add this glycerine to a mixture of sulphuric and fumigating nitric acids, pouring it into water and washing upon a filter, we have glonoin, or nitro-glycerine, a substance which holds in reserve power sufficient to level mountain ranges."

The following paper by Stephen Patrick, of Truxton, N. Y., on "The Origin of Soils, their Formation and Distribution: Explaining the soils and climates best adapted to dairying and the method of increasing their adaptation," was read by R. M. Patrick, of Marengo:

STEPHEN PATRICK'S PAPER.

Gentlemen of the Illinois State Dairymen's Association: In compliance with a request of a member of your association I write a brief essay upon "The origin of soils, their formation and distributions; explaining the soils and climates best adapted to dairying and the method of increasing their adaptation."

1st. The origin of soils; their formation. In giving my views of the origin of soils and their formation I will give briefly a synopsis of the combined theories of modern geologists, who substantially agree that all soils have their

origin in the destruction of ancient rocks; which, in the early geological period, covered the earth's surface. The granite formed the first stratum or platform, on which all other formations are rested. At the commencement of the first geological period all rocks lay in a horizontal position. During the early and middle geological periods, the whole of the earth's surface was subject to great and intense disturbance, caused by the action of intense subterranean heat and volcanic action; continents and islands were by the process of upheaval, elevated above the surface of the ocean. During the violent throes and convulsions which occurred at these periods in the elevation of continents and islands above the surface of the ocean, in many parts of the earth, their stratas of rocks were twisted, bent, tilted, or thrown out of place, and often lay with a heavy dip; or in a vertical position, in mountain ranges, hills and elevated plains. During these geological periods intense heat prevailed on the earth's surface, causing dense vapors and a great amount of rainfall on mountains, hills and plains, then elevated above the ocean's surface; forming rivers and streams, with rapid currents, plunging down mountain and hill-sides with great force, scooping out canyons, gorges, ravines and deep valleys on mountains and hill-sides, disintegrating rocks from their beds, grinding, decomposing and pulverizing them to atoms while drifting their debris to oceans, seas, bays and lakes, which were continually receding by the process of elevation of land above their surface, forming large tracts of diluvial soils, on both continents. During the long succession of ages in which these diluvial or drift-soils were forming, the great heat and immense rainfall which prevailed during the receding of waters of oceans and seas and the formation of diluvial soils, caused an immense and luxuriant growth of vegetation on the earth's surface. The decayed matter of this vegetation intermixing with the materials of these diluvial soils or drift-formations, in most parts of both continents, formed soils of great fertility. The greater portion of the great basin drained by the Mississippi, Missouri and Ohio rivers and their branches, and the lake system of North America, are soils of this character; formed mainly by the decomposition and pulverization of rocks underlying these diluvial deposits, drifted from a distance. These formations are wonderfully rich in calcareous, saline and alkaline matter, and mineral

infiltrations; which belong respectively to the geological periods of their formations, and are soils of great fertility and productiveness where there is sufficient rainfall during the summer and fall months.

2nd. The formation of alluvial soils. These soils are formed and deposited in river valleys by the annual overflow of rivers, by the removal of diluvial soils already formed, and the decomposition of rocks on the mountains and hillsides of the river sources drifting their debris or sediment, intermixed with vegetable matter, and depositing them in their valleys and in deltas at the mouths of rivers where they discharge their waters into oceans, bays, seas and lakes. These soils partake in character of all the geological formations from which these soils were formed, and are generally rich in organic matter and mineral infiltrations, and are the most fertile and self-sustaining of all soils known; as in the valley of the Nile, Ganges, Rhine and valleys of rivers in North America. All taken together cover large tracts of country.

3rd. Soils of volcanic origin. The soils derived from volcanic action are of much less extent than either of the former ones. They have their origin wholly by the melting of the primitive rocks by intense subterranean heat and volcanic action. These melted rocks form lava, ashes and pumice, which are raised and forced through the craters of volcanoes during their eruptions, running down their mountain sides into the valleys and plains below them, and forming soils partaking of the character of all the rocks forming these soils. Volcanoes were more numerous and eruptions more frequent in early periods than at present. The soils derived by volcanic action are generally, where there is sufficient rainfall, moderately fertile, as attested by the magnificent forests grown on these soils in Oregon, Washington Territory and British Columbia.

The intrinsic value of volcanic action during past ages, in contributing means for the advancement of modern civilization cannot be fully estimated. By its action mountain ranges have been elevated. Their rocks have been tilted, bent, twisted and displaced, and their precious metals and mineral treasures have been revealed and made accessible to the ingenuity of men and used for the purpose of commerce and mechanical arts. All this in addition to the formation of valuable soils for agricultural purposes.

Having given a brief outline of the origin and formation of soils, I will, as I understand, give the order of their distribution, explaining the soils and climates best adapted to dairying. A sufficient and equal rainfall through the spring, summer and fall months, and an equable climate not subject to the extremes of heat or cold, are as essential to successful dairying as a fertile soil. The soils formed from the primitive rocks, even before the existence of organic life, being mostly volcanic and mineral-bearing as surface rocks, are, with sufficient rainfall with a mild and equable climate, well adapted for dairying; as in Oregon, Washington, British Columbia and Montana. These countries and Great Britain, Belgium, Holland and Denmark, owing to their mild and equable climate, are in my opinion the best adapted of any countries known for dairying. All of these countries are situated between 45° and 50° of north latitude. The equatorial currents of the Pacific ocean, flowing with their warming influences northeasterly to the shores of California, Oregon, Washington Teritory and British Columbia, passing through the valley of the Sacramento and the valley of the Columbia river, and through the great gap in the Coast Range of mountains, 150 miles in width at Vancouver's, their currents of warm atmosphere, passing northeasterly through Oregon, Washington and British Columbia, till they meet the polar currents; then their course veering southeasterly through Montana, give these countries a mild and equable climate and sufficient rainfall, similar to the climate of England, Belgium and Holland—caused by the equatorial currents passing through the gulf stream across the Atlantic northeasterly to the shores of Western Europe.

The soils next in their order of formation are derived from the decomposition of carboniferous rocks, which were first elevated during the early part of the middle portion of geological periods. Elevation and subsidence continued through all ages of this formation with that portion of the earth covered by these rocks. Stratum upon stratum of coal was formed, with layers of rocks between each stratum of coal. Often the central portions of these coal basins were covered with drift, to the depth of 2,000 or 3,000 feet; while the outside rim of these coal basins came to the surface. The distribution of soils derived from these rocks, west of the Alleghanies and north of 37° of latitude and

east of the Rocky mountains, is very extensive, and now ascertained to cover not less than 200,000 square miles—being distributed among all the states and teritories drained by the Mississippi and its branches, covering half the state of Illinois and some 20,000 square miles in Montana—taken as a whole, the most fertile of any class of soils on this continent. Most of these soils are well adapted for dairy production. The soils next in the order of their formation are magnesia limestone of Illinois, Wisconsin, Iowa, Missouri, Kansas, Nebraska, Minnesota, Dakota and Montana. They are cotemporaneous with the Trenton, Black, and Hudson river limestones of New York. The rocks which underlie these are in the Mississippi valley the same as in New York. The soils derived from the decomposition of these rocks are of great fertility and productiveness, and with sufficient rainfall during the summer and fall months and an equable climate, cannot be equalled on the continent for their adaptability to dairying. The next formation in its order is the Devonian. The Chemung sandstones of New York, New England, and Northern Pennsylvania are of the series of this formation. They occupy the greater portion of the water-shed from Nova Scotia to Ohio, when their waters discharge into the great lakes and St. Lawrence, on the north, and into the Atlantic on the south; being on an average about 1,600 feet above tide-water; the same elevation as the water-shed where rivers at the head-waters of the Mississippi flow south, and the Red and Makenzie rivers flow north. The soils of this formation are mainly derived from decomposition of the sandstones and slate rocks, and are not as fertile as the latter or "the magnesian limestone formation," but their climate, owing to their elevation and the general equal distribution of rainfall through the summer and fall months, makes these soils the most reliable of any known on this continent for dairying. The other rock formations of the Devonian system are the Onondaga and Niagara limestones of New York, Cincinnati limestones of Ohio and Kentucky, Cedar Valley limestones of Iowa and Minnesota. All the states east of the Mississippi have large tracts of land of this formation which, as a general rule, have a soil but little inferior to the magnesian limestone formation of Iowa, Illinois and Wisconsin—and with a larger amount of carbonate of lime and organic matter than any other class of soils and

of great fertility—but better adapted for the production of grain than for dairying. The reasons for the general abundant supply of rainfall during the summer and fall months on the great water-shed of the Chemung sandstone formation, may be explained by the fact that lands elevated 15,000 to 18,000 feet above tide-water, attract the moisture of the atmosphere, and produce a greater amount of rainfall and a more equal distribution than those regions situated much lower or much higher than this elevation. The sources of supply of moisture are the Atlantic on the south, and the great lakes on the north and west; their atmospheric currents meet on this water-shed and cause, as a general rule, an abundant rainfall. The same influences operate in part in causing rainfall in Illinois, Wisconsin, Minnesota and Iowa. The moisture of the upper atmospheric currents is supplied by the great lakes, and flows southwesterly, and returns in the lower atmospheric currents attended with rainfall—flowing from the south-west to the north-east, as established by a long series of observations made by the signal department at Washington.

On the subject of the best means to increase the adaptation of soils for dairying, I will mention one of the most practical manners of doing it. On all dairy farms it should be a standing rule with the owner of the farm to make all the manure possible from the produce of the farm, and judiciously apply it where most needed. It is a well-established fact that the liquid manure of an animal is worth quite as much yearly, if properly applied, as the solid manure is. Every stable should be so constructed as to save the liquid as well as the solid manures of all animals. All portions of a dairy farm that are too wet to produce the best qualities of cultivated grasses should be thoroughly drained and cultivated, till fit to raise cultivated grasses in the highest degree of perfection. Low, wet, sour lands produce an inferior quality of grass, but illy adapted to the production of milk for butter and cheese; but when thorougly reclaimed, by perfect drainage, are often the most valuable portions of farms for grazing purposes. As a rule there is no class of investments that pays better than thorough drainage of wet lands. For dairy purposes grass for hay should be cut while green, and never allowed to fully ripen. When grass is cut before it is fully ripe the quality of the hay is much more valuable than when left to ripen, and a

second crop speedily starts; and then, also, is the proper time to apply liquid manure by filtering on grass lands.

In this country a 100-acre farm that will keep thirty cows is considered a good one. On the alluvial soils of England, Belgium and Holland, farms under thorough culture by a system of soiling and a judicious application of manure—solid and liquid—often keep two or three cows to the acre, and two or three crops of grass are often cut yearly. Heretofore the butter and cheese made in these countries were far superior to American manufacture, owing chiefly to their favorable climate, their practical knowledge of farming, and the superiority of their cultivated grasses and dairy stock. Recently America has made great strides in the manufacture of dairy products, and now American cheese competes fairly side by side with the best English-made cheese in its own markets. The progress made in the Western States during the last few years in the manufacture of butter has been wonderful. Twenty years ago Illinois was not considered capable of producing even a fair quality of butter. To-day she not only produces more wheat than any other state in the Union—being for the last year 45,000,000 bushels, to Iowa 40,000,000, Nebraska 37,000,000, Minnesota 36,000,000 and Kansas 30,000,000—but she has taken the front rank among the butter-producing states; and the butter now made in the creameries of northern Illinois and in your own immediate neighborhood stands higher in quality and sells for more in the great markets of this country, than the butter made in any other state in this great nation.

A suggestion was made by one member that the president call upon those who had received premiums on their butter to give a description of their modes of making the premium butter. As all present seemed to favor the suggestion, the president called upon Mr. C. C. Buell, who gave the following description of his plan:

C. C. Buell's Method: The milk was set in ordinary setters in a cool room—not in water. It was skimmed in twenty-four hours, and skimmed the second time twelve hours later. The cream was kept twenty-four to forty-

eight hours, or until a marked acidity appeared. It was churned in a revolving churn known as "Stark's Churn and Butter Worker." The churn was started (cream being at a temperature of 64°)—made twenty-five to thirty-five revolutions in a minute, and butter appeared in from one hour to an hour and one-half. As the butter granules began to appear distinctly about three gallons of cold water was added to a churning of say sixty pounds. After a few revolutions the buttermilk was withdrawn clean—the churn being stopped as soon as it was practicable to do this. Then about three or four gallons of strong brine was poured into the churn and the churn carefully revolved so as to keep the butter disintegrated as much as possible and at the same time thoroughly to wash it. Afterwards a brine of, say two gallons of water and sixty ounces of salt, was added and the churn revolved three or four times, and the same repeated three or four times during, say half an hour or more. The butter was then put into a tub used for this purpose, allowed to stand one to three hours, then placed on the butter-worker and very lightly worked and packed for market. If there was an apparent lack of salt at the time of working, more was added, according to taste.

Geo. Sands' Method: Being next called upon, he said his process was very simple, and he had taken no extra pains with the butter which received the premium. Used the iron-clad pan. Set milk in winter forty-eight hours; first heated it to about 90°, then cooled it off as rapidly as possible—the colder, the better. Kept the room where he churned at about 60°, and cream at about 62°. When the butter collected to lumps about the size of hickory-nuts, he stopped churning and rinsed the butter clean, after first drawing off the buttermilk. He then salted the butter—about three-fourths of an ounce of salt to one pound of

butter. He used what was called the Marengo churn. He let the butter stand about twenty-four hours after the first salting, then added a little more salt. Used coloring that he made himself from anatine and curcuma root. His cows were of the Durham breed, and he had made through the month of November one pound of butter from each twenty-two pounds of milk.

On motion it was decided that the manufacturers not present, who had received premiums on their butter, be asked to give the secretary a statement of how they made their butter; the same to appear in the proceedings of the association. In accordance with this resolution the following statements were received from L. C. Ward, Munn & McAdam and W. A. Boies:

L. C. WARD'S METHOD: The milk was received once a day at his St. Charles creamery, and set in deep pails in cold pools of water. The skimming was done while the milk was sweet; the cream was left to acquire a slight acidity before putting in the churn. It was churned in a square-box revolving churn with a capacity of about 350 pounds of butter at a churning. Time taken to churn, one to one and a half hours, usually. Before the butter was taken from the churn it was washed with the necessary quantity of fresh water to wash out the most of the buttermilk; it was then taken out, slightly worked and salted with three-fourths of an ounce of Higgins' "Eureka" salt to the pound, and set away for twenty-four hours,—when it was worked again sufficient for the final packing. The working was done with a butter-worker run by steam power. Had made 150,000 pounds of butter at his creamery each year for the past two years.

MUNN & MCADAM'S METHOD: Were very particular to get their acid right, as they considered it of great importance, and then brought the cream to a temperature of 63°. Run the churns so as to bring the butter in one hour. Care was taken to stop the churning while the butter was in a granulated state. The buttermilk was then drawn and water the same temperature put into the churn and the butter thoroughly washed, the water drawn off, and more water added. The butter was then taken from the churn and but slightly worked, when the salt was added at the rate of one pound of salt to twenty of butter, and thoroughly worked. Then the butter was placed in a warm room and allowed to stand twenty-four hours, when it was worked as little as possible and packed.

W. A. BOIES' METHOD: His was very simple. Set his milk in open setters; let it stand about twenty-four hours. Always allowed it to get a little acid before churning. Before putting in churn raised the temperature to 64°, and churned until the butter appeared in lumps about the size of peas. He washed the butter twice—until water came from it clear. Kept it cool enough to be firm while working. The butter upon which he received Higgins' salt premium was all from the same churning.

During the evening Rev. Hutchinson, of Marengo, was called upon to speak. He responded in a few well-timed remarks, in which he expressed himself pleased with the evident advancement of the dairy interests in this country. He was glad, he said to see so many of the younger class attending the meetings of the association. It rested with them to advance the business they were engaged in. He was pleased to see them take so much interest in the discussions on the various questions. The point of taking

good care of cattle, he was glad to hear discussed. He thought the more care we gave cattle the more we would get out of them. Kindness to them would bring its reward. He was pleased to see the ladies out. This subject of home was a good one to discuss. We must not forget as we were traveling through this world that we had a social nature as well as a physical nature that needed cultivation.

The secretary then read the following paper on "The Food Value of the Milk Product of the United States," prepared by G. P. Lord, of Elgin:

G. P. LORD'S PAPER.

"Three and one-half pounds of milk possess the same amount of nutrition that is contained in one pound of boneless beef."—*Willard's Dairy Husbandry, p. 13.*

"Every fat ox gives 57.7 per cent. of butcher's meat, including bones, to every 100 pounds live weight."—*Encyclopedia Britannica, 8th ed., vol. 9, p. 762.* "About 12½ per cent. of such meat is bone."—*Same work, p. 762.* Consequently 50 per eent. of a fat steer is boneless beef.

"The average annual product of milk in 1860 in thirteen states was 446 gallons per cow."—*Willard's Dairy Husbandry, p. 20.*

Assuming this as the average annual product per cow, the 13,000,000 milch cows in the United States will produce annually 5,798,000,000 gallons of milk, weighing 50,732,500,000 pounds, containing nutrition equal to 14,495,000,000 pounds of boneless beef; which is equal to the boneless meat in 20,650,000 fat steers, of the gross weight of 1,400 pounds each, or 700 pounds each of boneless meat.

If we desire to find the money value of that amount of nutritive food we have only to ascertain the value of such cattle in our commercial markets. Estimating it at $4.50 per hundred pounds, live weight, it amounts to $63 per head.

20,650,000 steers, at $63 per head, equal	$1,300,950,000
Deduct one-fifth for hide and tallow	260,190,000
	$1,040,760,000

This is the food value of the annual milk product of the United States, compared with the same amount of nutrition in beef.

STATEMENT SHOWING THE ANNUAL LOSS OF MILK SUGAR IN MAKING BUTTER AND CHEESE IN THE UNITED STATES.

Milk contains 4 1-5 per cent. of milk sugar.—*Am. Cyclopedia, vol. 11, p. 543, sample 8.*

Milk contains 4½ per cent. of milk sugar.—*Willard's Dairy Husbandry, p. 500.*

Skimmed milk contains 4.66 per cent. of milk sugar. —*Willard's D. H., p. 500.*

Buttermilk contains 4.61 per cent. of milk sugar.—*Willard's D. H., p. 500.*

Whey contains 4.57 per cent. of milk sugar.—*Willard's D. H., p. 319.* (Average of 15 samples).

Butter contains 0.70 per cent. of milk sugar.—*Willard's D. H., p. 500.*

Cheese contains lactic acid but no milk sugar.—*Willards D. H., pp. 340, 341 and 342.*

Estimated quantity of butter produced annually, 1,000,000,000 pounds.—*Dpt. of Agr. Report for 1877, p. 343.* Estimate of cheese, 350,000,000 pounds.

To produce this quantity of butter and cheese (estimating 27 pounds of milk for one pound of butter, and 9¾ pounds of milk for one pound of cheese,) will require 29,950,000,000 pounds of milk. Estimating 4¼ per cent. of milk sugar and we find that quantity of milk contains 1,272,875,000 pounds of milk sugar. From this deduct milk sugar found in butter—7,000,000 pounds, and it appears that 1,265,875,000 of milk sugar is run off into the buttermilk and whey and lost.

We find that the New York wholesale price of milk sugar in 1879 was 40 to 50 cents a pound.—*McKessens & Robbins' Wholesale Druggist List.*

1,265,875,000 pounds of milk sugar at 40 cents per pound	$506,350,000
" " if valued at 20 cents "	$253,175,000
" " " 10 cents "	$126,587,500
" " " 5 cents "	$63,298,750

Here we have the startling fact before us that the annual waste of milk sugar in the United States—a valuable constituent of milk—if valued at one-eighth of the New

York wholesale market price amounts to a sum greater than the entire annual sugar crop of Cuba.

On motion the convention adjourned to nine o'clock Thursday morning.

MORNING SESSION.

THURSDAY, DEC. 11.

The assembly was called to order at 9:45, the president, Dr. Tefft, occupying the chair.

TOPIC NO. 10—"Manures—Natural and Artificial—the best manner of application to the different soils"—was taken up first. Upon this question L. W. Sheldon read the following paper:

L. W. SHELDON'S PAPER.

Mr. President, Ladies and Gentlemen; In discussing this question I have not much to offer that is new. The question has been discussed at our gatherings until it is familiar to all.

What is manure? Any substance that enriches the soil. The waste at the farm yard of vegetable and animal substances, in a decaying condition, is manure or plant food. He that can make two blades of grass grow where but one grew is a public benefactor. This can be done by a judicious use of fertilizers.

As a rule, all manures should be applied to the surface soil, as fast as they accumulate. Where it is practicable, draw daily, and spread direct from the load. If for meadows or pastures, apply in fall or early winter; harrow in spring with a smoothing harrow. For corn land, apply upon fall plowing in fall and early winter. If the manure is coarse, do not hesitate to apply liberally and cultivate in in the spring. The above has proved a success with repeated trials upon sandy prairie soil. Where a three years' rotation is practicable, clover and timothy make the best of fertilizers. Land will increase in fertility by repeated heavy seeding and plowing the sod under. Clover is the farmer's friend. Sow liberally. It is a good investment to sow clover with all small grain: it is worth many times its cost as a fertilizer if not wanted for meadow or pasture.

Commercial fertilizers can be used to profit in the absence of barnyard manure. I have used bone superphosphate upon oat and corn land. With a four-years' trial it increased the yield fully forty per cent. It was applied to the surface and cultivated in. Common salt gave equally good results. In many individual cases salt has increased the wheat crop from fifty to seventy-five per cent. The profits of the farm are in what you have to sell, instead of that you buy. If we practice that which we preach, we will have to buy less and have more to sell. Let me repeat it: sow clover, and sow it liberally.

PATTEN: Was troubled with his oats lodging. It generally cost him more to have them harvested than they were worth. He would like to know how to obviate it.

SHELDON: Thought salt could be used to good advantage on all soils. It would strengthen the straw.

JUDGE LAWRENCE: Wanted to say a word against the use of artificial fertilizers. He had lately been traveling and visiting farms in New York. He inquired of some of the farmers how they kept up their soils, and he found that they were paying more for artificial manures than they got out of the land. He raised about two bushels of grain to his neighbor's one. He had a piece of soil that was naturally strong soil. It was what was called sub-soil. He ploughed that up in 1837, and, without exception, it had borne a crop of grain every year from then until 1876, when he raised a crop of clover on it. He had tried to plow the clover under, but it was so rank he could not. So far as he could see, that land was just as strong now as it was forty years ago, and the only manure it ever had was the vegetation he had ploughed under. He always spread manure on the surface, and he drew it from the barnyard as soon as made. Yet this rule would not always work. He remembered a few years ago he had a number

of straw-piles, and he spread these on twenty acres of land, and planted this to corn and made 3,000 bushels of corn. The result was, next season it was better yet. Make all the manure you can. If you have any weeds on the farm, don't burn them, but pile them up and make manure. He wanted his land full of clover all the time; it was good for everything. No matter if there were some clouds, cure it as best you could; put it in the barn, if there was no water in it, and it would come out all right. He spread his manure in winter as he drew it out. He never had any trouble about corn ripening in rich land.

SCOFIELD: Would like to know if corn would ripen as early on manured land as on poorer.

BISHOP: Yes, sir.

LAWRENCE: Knew of a man in the state of New York who took poor clay land and manured it until he finally could raise fifty bushels of wheat to the acre. When asked how he did it, he answered, "With manure, and a little more of it."

CAHOON: Told of a man who raised cattle. Some one asked him how he kept his pastures in so good a condition. He said he didn't go and buy more steers every time a fresh blade of grass appeared. Thought that was a good point. Not to skin your pastures too close.

THOS. BISHOP: Thought the aim of manure was to make the land produce more. He knew but little about it, but what manuring he did was on the surface. He sometimes ploughed it in. He never kept a field in grass very long. He was always breaking up and always seeding down. He knew but little about artificial manure. Had

seen some experiments with patent manures but didn't consider them a success. He found in manuring that it didn't cost him any more to produce forty and fifty bushels of corn than to produce thirty and forty. He used to fatten a great many cattle, and found that corn raised on land that would produce 120 and 125 bushels was much better than corn raised where the yield was less. The meal was always worth more. It was the same with pasture land. He kept account of every thing in his business. He knew just what his expenses were. He had found that in buying cows for thirty and forty dollars he had made a hundred dollars. He thought this was on account of rich pasture. Had found in pasturing that a forty-acre field, where it was well manured, would keep much more stock than if it was poorly manured. It paid to keep your land manured well. This year he had raised some corn on surface-manured land and got 120 bushels to the acre, and thought that this corn was worth more than any raised on poorer land.

PATTEN: Would differ a little from Bishop. He thought that manure drawn out in piles served as a mulch and kept land from drying out.

CAHOON: His agricultural paper said that good tillage was manure, and he agreed with it.

LAWRENCE: Thought if we could get our manure on before it heated we would derive the greater benefit from it.

BISHOP: Raised a good deal of grain. His barnyard had been covered very deep with manure. He drew out when the summer work was over, and it heated in the fall. He would just as lief have a load of such as that which came from the stable.

Question No. 10 was then passed, having been pretty well discussed, and the next question, that of legislation, taken up.

M. H. THOMPSON: Said he would like to ask if the duties of the legislative committee, appointed at the last annual meeting, were considered at an end, or would the committee hold over another year.

On motion, it was decided that the same committee should hold over another year.

J. R. MCLEAN: Said we needed help from the legislature to enable us to publish our proceedings and statistics. In the Southern States they knew but little about the business, and we must enlighten them by our publications. When he was down south he met a man who was in the dairy business on a small scale, who asked him if we milked our cows in this country more than once each day.

W. PATTEN: Had little faith in this matter of legislation in behalf of the association. He was, as an individual member, able to take care of himself. All he wanted was a guarantee of protection to himself and property. We wanted laws that would be a benefit to us. We could get very little out of it. Had very little confidence in these matters. Was not in favor of monopolies. If he could set no other objection to the matter, he would bring up that—objection to monopolies.

MCLEAN: Said Patten didn't understand what we wanted. We were paying taxes to publish and circulate proceedings of the State Horticultural Society, which was of no more importance than the State Dairymen's Association. We wanted an appropriation to enable us to print our proceedings, and send them south, where they needed instruction.

PATTEN: Could not be hired for fifty dollars to wade through one of those lengthy state society reports, and he had seen printed reports that had cost the state $28,000, that he wouldn't give ten cents for.

MCLEAN: Knew that these reports were, as a rule, uninteresting, but he was in favor of getting up some that were readable.

DR. TEFFT: Said it was a well-known fact that they had better agriculturists on the other side of the water than we had here, and there they had their schools and gave them instruction in the matter. Our state had attempted such a school at the state institution. The dairymen of this state paid large taxes. All their property was taxed. Now, if we could get any privileges as dairymen we should get them. It was well known that we couldn't keep up a board, and we must have a station of investigation. The legislators did their work and got their pay, but didn't look to our interest. If we could, in any way, advance or improve by such, the standard of our products, we would make much. The butter product of Illinois for the year was 42,000,000 pounds. If we, by means of help, could make butter that would bring us one cent per pound more than it does, we would realize a nice little amount from it.

PATTEN: Said if you got any thing like a state board established by law you simply gave another chance for a certain class of men to get office. He agreed with Dr, Tefft fully, but he didn't want a government such as they had over the water to rule over him. He wanted to see this matter kept separate from the state. It only opened a chance for the governor to favor a few more of his friends by giving them offices. We were making good progress and got along well any way, and ought not to complain.

LAWRENCE: Would like to ask Mr. Patten if he was opposed to printing state auditor's reports. Because the masses did not read them, was it any reason that they should not be printed?

PATTEN: We got all the information needed on these subjects from the papers. He didn't need these reports.

LAWRENCE: Was acquainted with many men in the south who were in the business. Thought there were some good dairymen there who were good butter-makers. His friend, John M. Pearson, could make as good butter as could be made in this section. He thought no appropriation would ever be gotten from the state until men were sent to the legislature who had some back-bone in this matter. Then you must send those who could get their votes. Look at the industrial institute at Champaign! The officers of that institution, at one time, were practical farmers; the present ones were politicians and theorists.

M. H. THOMPSON: Said he would like to ask Patten how they were going to pay the expenses of the association and get the proceedings printed with forty-five dollars —the amount in the treasury.

PATTEN: Would say again that he thought we got all the report of such proceedings we needed from the papers. If it got to be a state institution it would soon be like the Champaign school; it would get into other hands very soon.

THOMPSON: Said the idea was this: The state votes to expend so much for the support of other organizations. We, as dairymen and farmers, pay a large portion of this tax and ought to reap a benefit ourselves.

After some scattering remarks by other members of the association the subject of legislation was dropped.

DR. TEFFT suggested that the association fix a place and time for the next annual meeting.

E. H. SEWARD, in behalf of the people of Marengo and the Kishwaukee Farmers' club, extended an invitation to the association to meet in Marengo.

On motion this invitation was accepted.

A suggestion was made that those who had received premiums on their butter be asked to donate part of their premiums to the society.

PROF. FRANK HALL, of Sugar Grove, was then introduced and read the following paper on "What will Education do for the Farmer?":

PROF. HALL'S PAPER.

A well-known Illinois educator remarks in substance as follows:

"The average Western farmer toils hard early and late, often depriving him of needed rest and sleep,—for what? to raise corn. For what? to feed hogs. For what? to get money with which to buy more land. For what? to raise more corn. For what? to feed more hogs. For what? to buy more land. And what does he want of more land? Why, he wishes to raise more corn,—to feed more hogs,—to buy more land,—to raise more corn,—to feed more hogs,—and in this circle he moves until God Almighty stops his hoggish work!"

Whether or not this is a fair criticism of the Western farmer, it is an undeniable fact, that too many of us are slow to perceive utility in any thing except that which will at once add to our material wealth.

You can measure the genius and guess the occupation

of the man, who, after viewing for a moment the great Niagara casting its two millions of tons of water per minute into the chasm below, while beholding this most wonderful, this most stupendous work of nature, could exclaim "What a fine chance to wash sheep, boys!"

People are numerous who can see no value in a magnificent cataract, with all its sublimity and grandeur, unless it can be made to assist in the accumulation of material wealth—unless it can be made to turn the grindstone, water the garden, grind grain, saw wood, pump, or churn! To such persons a picture of Niagara or of Yosemite, even though executed by a Bierstadt, would be utterly useless. Their farms, their homes, their houses, their cattle, and I had almost said their wives and their children, are valued only in so far as they will aid them in making money.

I value the dollar. It is mighty, but not almighty. Under certain circumstances it is the desirable thing for a man to possess. But when a man has more dollars than he needs to satisfy his physical and intellectual wants—more money than he needs to buy food, clothes, a home and such mental privileges as he is able to appreciate, it were far wiser for him to spend his time in increasing his capacity for intellectual enjoyments, rather than in the accumulation of property which he can never use.

There is a man in Kane county who has a mania for collecting whips. Every scrap of leather is by him transformed into a whip-lash; every suitable piece of wood into a whip-stock. When I last saw him he had one thousand whip-stocks and fourteen bushels of lashes! and he was very anxious to complete another whip that day. Such a man is scarcely more foolish than he who has a mania to accumulate money beyond the amount which he has the ability to use for his own enjoyment and for the comfort and welfare of his friends and of humanity.

Intellectual development—knowledge—increases our desires, and our capacity, for enjoyment. The fool is easily satisfied. Beyond the food and clothes which are an absolute necessity, his wants can be as easily supplied with a few dollars as with millions. The more one knows the more will it take to gratify his reasonable desires.

What will education do for the farmer? It will increase his capacity for enjoyment. I speak now more especially to our wealthy farmers—men who are worth

from ten to fifty thousand dollars. Among my acquaintances are such individuals; men whose annual income would be ample to provide for every want, even if they should refuse henceforth to perform physical labor. They have enough, as the saying is, "to carry them through;" and then there would be sufficient left for the heirs, to ruin a family of six children after giving the lawyers half! In their homes you will find no libraries, no pictures, no musical instruments, few carpets. They seldom attend lectures, or concerts, or even dairymen's conventions. They can't afford it. They are saving their money—for what? to buy more hogs! They have never heard of Whittier, or Longfellow, or Herbert Spencer, or Huxley. They don't know whether Shakespeare is living or dead. They are interested in European wars, because these raise the price of hogs. Almost their only enjoyments are eating drinking, sleeping, and accumulating.

What will education do for such?

I repeat, it will increase their capacity for enjoyments, and will check them in their avaricious, inordinate accumulations.

This latter is desirable. The accumulation of excessively large fortunes is oftener a curse to the heirs, and to a community than a blessing. To borrow a figure: The snow, when evenly distributed over the land, becomes a source of pleasure and profit; but when piled in drifts mountain high, it impedes travel and becomes a source of great annoyance. So with wealth; when evenly distributed, its benefits can scarcely be over-estimated; but when it "drifts" it becomes a hindrance rather than a help in the onward march of civilization. The Creator evidently so understands it; for he seldom fails to give to avaricious, grasping parents, spendthrift children who quickly scatter (with the help of the lawyers) what has been so injudiciously piled up. Indeed, I sometimes think this is why God permits lawyers to exist. (If you have a fortune which you want leveled off, for the good of humanity, employ a lawyer.)

What will education do for the farmer? It will enable him to spend more money for his own real enjoyment and for the promotion of the genuine happiness of his family and friends. It will convert hovels with bare walls and bare floors into beautiful homes with pictures and carpets

and books and periodicals and musical instruments. It will give us more of those comforts and intellectual enjoyments by which civilized man may be distinguished from the barbarian, By it will our lives become more musical, more poetical—less sensual, less groveling. Creamery butter and Cheddar cheese are good for the stomach, but the mind cannot feed upon them.

What will education do for the farmer? 'Twill force him to pay ten dollars for railroad fare where he pays but one now;—to attend lectures, the theatre, expositions, agricultural fairs, farmers' institutes, and dairymen's associations. 'Twill induce him to buy a library of 200, 400, 500, or even 1,000 volumes, and a three-hundred-dollar case in which to put it. 'Twill coax him to take a longer rest at noon that he may have time to listen to the "Tales of a Wayside Inn," or a chapter from "David Copperfield." 'Twill force him to leave off work earlier at night that he may have time to read the president's message or the "Tribune's" comments thereon. 'Twill teach him oftener to leave the pig-pen and seek the parlor; not because he loves Berkshire music less,—but because he loves piano music more. 'Twill double his annual expenditure for clothing; for the old frock and old over-alls will be considered unsuitable in which to appear in the lecture room or even upon the cars. More ribbons must be bought and the dresses must be made in style, that Mrs. A. and the daughters may not be ashamed to appear in the society of cultured people. More than this,—napkins must be purchased and napkin-rings and China and silver ware, that the table may be appropriately furnished and adorned; for the educated farmer will often desire to entertain ministers, editors, and intelligent men of all classes, who are accustomed to such things. More boot-blacking will be needed, more yellow lace, more kid gloves, more red mittens, more embroidered bal-briggans, more puffs and curls and Saratoga waves, more stove polish, more pomatum, more German cologne, more paper, more postage stamps, more tooth-brushes, more scrub-brushes, more brooms, more soap and water.

I tell you, my farmer friends, this education is an expensive thing. Beware! beware! For every dollar you expend in educating your sons and your daughters beyond what is absolutely necessary in the performance of their

every-day duties, you may some day be forced to pay ten dollars to satisfy the wants that the dollar's worth of education will have created!

But there is another side to this argument; not only does education increase our wants, but if a due proportion of it be of the practical kind, it, in nearly or quite the same ratio, increases our ability to earn.

It makes us of more value to the world, for which the world will cheerfully pay us. We may thus earn more, spend more, enjoy more. We may elevate ourselves, by so much, above the level of the brute. A symmetrical education simply increases a man's capacity for doing and enjoying. It doubles him, quadruples him; enables him to give more to the world and receive more from the world; makes him occupy a larger place in the universe.

If the education is truly symmetrical—if there is physical development, brain development, and heart development, it lifts him away from the brute and up towards God.

But in all this I speak of that education which is best adapted to a man's wants, ever keeping in mind the occupation or profession by which he proposes to serve humanity and gain a livelihood.

It must be borne in mind while discussing this subject that the educational field is immense. A life-time may be devoted to a survey of the merest corner of it. Zoology, botany, chemistry, astronomy, mathematics, language,—either of these subjects, the average mind cannot *master* in three score years and ten. Therefore, let it be granted that an education is desirable for all, and still the question remains: In what corner of the broad field shall the farmer, the merchant, the lawyer, labor? Shall they, hand in hand, laboriously travel over that part of the field where Greek roots once grew, and then, turning to the barnyard, together snuff the gases arising from the manure heap in the effort to detect the presence of escaping ammonia? Or shall the lawyer devote his early years to the study of those branches best adapted to the development of linguistic powers, while the farmer devotes his time, for the most part, to the acquirement of such knowledge as will be of practical utility to him in *his* life-work? How much time shall the farmer devote to language? How much time shall the lawyer devote to agricultural science? How much time can the

farmer devote to the study of poetry and music, and how much time can the poet-musician afford to devote to the science and practice of agriculture? These are questions that force themselves upon us.

To return to the question assigned to me to answer: "What will education do for the *farmer?*"

If you mean by education such mental culture as is obtained in the average high school, I can answer, unhesitatingly, it will make him a lawyer or a doctor, or a minister or an editor. Or, if by chance circumstances force him to become a farmer, he does it under protest.

Teach a man German to prepare him to travel in France, and when he arrives at Paris he will realize that there is a mistake somewhere. Show a young farmer all the advantages and attractions of a mercantile or professional life, and none of those which are peculiar to agricultural and horticultural pursuits, and the chances are that he will soon abandon the country and seek the city. The farmer may love music; but if while he is still a farmer, he devotes an undue amount of time to the science of music, and utterly neglects the science of agriculture, the probabilities are that his farm will soon cease to be sufficiently remunerative to enable him to gratify his love of song.

A young man enters the high school. Immediately, he commences a course of training exactly calculated to fit him for professional or mercantile life.

Those branches of study which lawyers and doctors and editors and ministers have ever found advantageous to them in their spheres of labor, are made most prominent in the school. But not one branch of study is found which is especially adapted to the wants of the agriculturist!

Does the pupil study chemistry? He is taught that part of the science which the druggist or physician especially needs. Or he is lead to view in a most superficial manner, the science as a whole, from the standpoint of some great investigator. Of its application to agriculture he learns little or nothing. He learns the names of the elementary substances and their atomic weights, but of the compounds of which ordinary soils are composed he knows nothing. He can represent upon the black-board many of the most complicated chemical reactions, but of the effect of mixing wood-ashes and animal manures he is ignorant.

The chemistry of food (especially of the food of the

herbivorous animals) is the subject of brief mention, or, perhaps is entirely neglected.

Does the pupil study botany? He will learn to define a few score of technical terms; he will become somewhat familiar with the binomial system of nomenclature; he will perhaps, analyze a few flowers and learn to speak their botanical names. All this is useful information, and very proper in its place; but why omit that part of botany which would be of most value to the agriculturist? The student is brought face to face with pretty wild flowers. He learns to recognize fifty or sixty of them, and—he has "completed botany," and triumphantly passes his "first examination" in the study. (Indeed, this is much more than is done in many schools.)

He has finished the study, but he cannot tell "a red oak from a white oak," "a hard maple from a soft maple," "a hickory from a bitternut," "a black walnut from a butternut," "a bass-wood from an ash," unless he learned it at home on the farm. The pupil has completed the study, but his attention has never been directed to the different species of weeds in the garden, or to the different kinds of grasses that are used for forage. He cannot tell a red clover leaf from a white clover leaf if they are alike in respect to size, nor does he know whether red clover is a biennial or a perennial.

As with chemistry or botany, so with other studies.

"Professional men" have, for the most part, arranged our text-books and our courses of study, and it is by no means surprising that we find therein just those branches and methods which are best calculated to fit the student for professional life.

What will modern high school education do for the farmer? I repeat, it will make a "professional man" of him; and the figures are not wanting to prove this assertion.

Of the twelve and one-half millions of people in the United States engaged in gainful and reputable occupations, not far from 3 per cent. are engaged in professional services.

Perhaps it is safe to say that the lawyers, the physicians, the teachers, the clergymen, the journalists, the artists, and the land surveyors, constitute something less

than 3 per cent. of those whose vocations are remunerative and reputable.

Nearly 50 per cent. are engaged in agriculture, while the combined industries give employment to upwards of 80 per cent. of all those who, by their own labor, either mental or physical, add to the wealth and prosperity of this great republic.

Now, if it be true, as is claimed by many, that the course of study in our high schools is equally well adapted to the needs of all classes, it would be expected that not over 3 per cent. of the graduates would attempt to gain a livelihood by professional services. Either this must be true or else there is a demand for a greater proportion of professional men, which no one believes.

What are thefacts?

More than 60 per cent. of the male graduates become professional men. The vocations, present and prospective, of the male graduates of several high schools which are believed to represent fairly the high schools of Illinois, are as follows: Ministers, 14 per cent.; teachers, 24 per cent.; lawyers, 14 per cent.; mechanics, 10 per cent.; physicians, 11 per cent.; merchants and mercantile clerks, 14 per cent.; undecided, 10 per cent.; farmers, 3 per cent.

One high school in Northern Illinois, than which few rank higher, numbers among its graduates during the past twelve years, 128 persons, of whom thirty-two are males; of these, three are mechanics, and one is a farmer. And yet they tell us that the course of study in our high schools is equally well adapted to the needs of the farmer, the mechanic, or the lawyer.

Another school, which, in point of popularity, has no superior, boasts of 29 male graduates; of this number three are farmers, and one is a mechanic.

Of the male graduates of either of these schools, not 14 per cent become handicraftsmen!

Send a young man into one of these schools in order to make an intelligent farmer of him, and before the course is half completed he will tell you he wishes to study law.

The tendency of our high school system is away from the farm, away from the workshop, and towards the pulpit and the bar.

Our present system of public education is a long and costly stairway, near the bottom of which may be found the

plow, the anvil, the saw and the loom; a little higher the yard-stick and the ledger; at the top, the editor's chair, the bar, the pulpit, and the rostrum. This stairway is broad and cheap at the base, but its upper portion is narrow and expensive. It should be made throughout *as broad as at the bottom*, and should reach to the farthest height to which the would-be farmer, mechanic, and lawyer can, hand in hand, advantageously climb. Let us, as farmers, demand that if Greek and Latin and German and French and algebra and geometry and trigonometry are to be taught in the public schools, and at the public expense, that the "Elements of Agriculture" shall also be taught; this latter term to include the chemistry of soils and manures, farm botany, farm entomology, the science of breeding, the philosophy and chemistry of cream raising and of butter and cheese making, the chemistry of food, the history and peculiarities of the various breeds of cattle, hogs, horses, and sheep. More than this: let us demand that for every *three dollars* expended in the teaching of those studies, the tendency of which is *towards the professions*, fifty dollars shall be expended in teaching those subjects, the tendency of which is *towards the farm.*

This is but fair when we remember that but 3 per cent. of the twelve and one-half millions of earnest workers are professional men, while 50 per cent. are farmers.

However much we may delight in poetry and music, in painting, sculpture, history and philosophy, in culture, this fact remains: people will not, as a rule, devote years to hard intellectual toil, except they believe that in some way, and at some time, the knowledge thus acquired will become the "*basis for action.*"

And, too, to some considerable extent, at least, it must be made the basis of such action as will have a money value. Be it otherwise, and the man will have increased his desires without a corresponding increase in the means of gratifying them.

Let the education of a young man be chiefly of that practical kind which he can use in his chosen life-work, and you give him the ability to earn more dollars with which he can gratify his love for that higher education, which, although it may have little or no money value, is *invaluable.* Reverse this process: let him become enamored with poetry and philosophy and music, to the neglect of the practical

education which he might use in his chosen occupation, and you have increased his expenditures and diminished his receipts. You have made him of all beings the most miserable. Hungry and thirsty, you tantalize him by showing him luscious fruit and sparkling wine just beyond his reach. Ignorance to him would, indeed, be bliss.

What will education do for the farmer? If it be that kind of education, that its results, in part, at least, may appear in his well-filled corn-cribs, in his heaped up potato bins, in better shelter for his cattle, in a more judicious selection of animals for breeding purposes, in the more perfect adaptation of food to the necessities of the animal, in better butter and more of it,—such an education he may be induced to acquire; and, having thus built a substantial educational edifice—an edifice of which the foundation stone and the frame are the "common English branches;" the siding, the roof-boards and the shingles—those branches that are especially adapted to the necessities of a farmer, he will then desire to put on a cornice of poetry, with musical modillions; an astronomical cupola, with philosophic minarets; historic balconies and fanciful arcades. Let him do it. Induce him to do it. He is as much entitled to an educational palace as the lawyer. These palaces may be equally attractive, equally spacious, but not alike. The foundation stones and frames may be similar, but *Latin roof-boards and Greek shingles will hardly keep out the rain over the head of the farmer.*

To the lawyer and minister great skill in the use of language is a necessity; to the farmer it is, at most, only a convenience. To the farmer, a knowledge of the chemistry of soils and foods and manures is a necessity; to the lawyer it is secondary in importance. Poetry and history are suitable ornaments for the farmer's educational palace—for the minister's they are substantial covering. In conclusion, permit me to say to any who may be connected with our educational system, either as teachers or school directors, if you really desire to see the industrial classes of this country brought to a higher intellectual plane, *first*, give to them these branches of study, a knowledge of which will have, to them, a money value; knowledge that they can make the "basis for action;" knowledge that will enable them to succeed financially in their chosen vocation, that they may not be burdens upon society, but that they may

possess the dollars necessary to provide for the physical and intellectual wants of themselves, and of those that may be dependent upon them.

Last in order, but by no means least in importance, let us give them that knowledge which will enable them to engage, during the leisure moments of life, in such intellectual and artistic pursuits as will be gratifying to them, a benefit to humanity, and will entitle them to a high position in the social scale.

On motion, it was decided to hold the next annual meeting one week later in the month.

The committee appointed to examine the dairy implements then handed in the following report, which was read by the secretary.

THE COMMITTEE'S REPORT.

Clark's Improved Revolution Pan, we consider a very good pan for deep setting, and worthy of recommendation. It is manufactured by Conger Brothers, Manchester, Iowa.

Hawkeye Submerged Milk Pan, exhibited by J. G. Cherry, Cedar Rapids, Iowa, we would recommend as worthy of trial and use; the best we have seen for the submerged process of raising cream, and would particularly recommend it for those raising cream for factories.

Cherry's Transportation Can is an improvement on the large carrying can, and worthy of adoption.

J. F. Lester's Square Churn is so wide and favorably known that it needs no recommendation from us.

J. M. Frink,
L. Bartlett, } Committee.
J. H. Foote,

On motion of J. R. McLean, a vote of thanks was tendered to the people of Marengo for their hospitality to the visiting dairymen.

On motion, the association then adjourned to Wednesday, Dec. 15, 1880.

SECRETARY'S REPORT.

The following is the report of M. H. Thompson, retiring secretary, for the year ending December 10, 1879:

To balance on hand from last year	$ 3 04
" cash for report	25
June 11, to cash of R. M. Patrick, Treasurer	75 50
	$78 79

CONTRA.

June 11, by cash paid for printing reports	$60 00
" " sundry items, printing, express, telegrams, etc	3 40
Cash on hand to balance	15 39
	$78 79

Marengo, Ill., Dec. 11, 1879.

REPORT OF COMMITTEE ON LEGISLATION.

The following report of the committee on legislation was handed to the secretary since the meeting of the association:

Dr. Joseph Tefft, President of the Illinois State Dairymen's Association—SIR: The committee of your association, charged with the duty of presenting to the legislature the interests of the dairy industry, for the purpose of obtaining such aid from the state as its necessities demand, would respectfully report that in the month of March last they went to Springfield and presented to a committee of both branches of the legislature the following statement:

First, The importance of the dairy industry.

The following statement will show the magnitude and value of this branch of industry in the state of Illinois:

From the census returns of 1870 (the last actual data) it appears that the number of milch cows then in the state was 640,321. Estimating the increase at 25 per cent. during the last eight years (and this increase in number is not equal to the increase in the dairy product during that time), and we now have 840,421 cows in this state. We adopt 800,000 as the basis of our estimate.

Without taking into account the men and horses required for distributing milk to families in our cities, and the men engaged in the manufacture of butter and cheese, we find that it requires the labor and care of at least one man for every twenty cows, a span of horses for every

thirty cows, and about four acres of land for the support of one cow; so that 800,000 cows require the care and labor of 40,000 men, the work of 60,000 horses, and the product of 3,200,000 acres of land.

VALUE OF COWS, HORSES AND LANDS.

800,000 cows, at $30 each	$24,000,000
60,000 horses, at $80 each	4,800,000
3,200,000 acres of land at, $30	96,000,000
Total value	$124,800,000

FEEDING.

It is understood by the dairymen of Illinois that the quantity and quality of the feed (other things being equal) is the measure of the quantity and quality of the milk of the cow, and so they have adopted a liberal system of feeding. Eight quarts of oat and corn meal mixed, fed daily for 240 days in the year, and, in addition, one-quarter ton of bran and two tons of hay to each cow (or feed equivalent to it), would not be above the average feed for cows in the dairy district.

FEED REQUIRED.

If so fed, the 800,000 cows would require 24,000,000 bushels each of corn and oats, 200,000 tons of bran, and 1,600,000 tons of hay. And the horses, fed eight quarts of oats and corn daily (or its equivalent), with two tons of hay each per annum, would require, for the 60,000 horses, 2,700,000 bushels each of corn and oats, and 120,000 tons of hay. Thus making a total of 26,700,000 bushels each of corn and oats, 200,000 tons of bran, and 1,720,000 tons of hay, or feed equivalent to it, for the annual supply of the cows and horses.

VALUE OF THE FEED.

26,700,000 bushels of corn, at 30 cents	$8,010,000
26,700,000 bushels of oats, at 20 cents	5,340,000
200,000 tons of bran, at $9	1,800,000
1,720,000 tons of hay, at $5	8,600,000
Grinding 48,000,000 bushels of oats and corn for cows, at 4 cents	1,920,000
Value of feed used annually	$25,670,000

VALUE OF LABOR.

40,000 men, at $200 per annum	$8,000,000

COST OF DAIRYING.

Value of feed used annually	$25,670,000
Value of labor of men	8,000,000
Depreciation and loss on stock, 5 per cent. on $28,800,000	1,440,900
Total value of feed and labor and loss on stock	$35,110,000
An average, per cow, of	$43.88

To this amount should be added a sum equal to the

value of the work of 60,000 horses, the annual outlay for necessary repairs, and the amount of insurance and taxes on the property used in dairying, as also the value of the summer pasturage for the stock. Having no exact data for these items, they do not enter into our estimate of the cost of dairying.

Second, Attention was called to the food value of the annual milk product of the United States.

Assuming that there are now in the United States 13,000,000 milch cows, and estimating their average annual yield of milk at 446 gallons each, this being the average yield of milk in thirteen states in 1860 (Willard's "Dairy Husbandry," p. 20), and we find the annual milk product in the United states amounts to 5,798,000,000 gallons, weighing 50,732,500,000 pounds.

Willard in his "Practical Dairy Husbandry," p. 13, states that "three and one-half pounds of milk" has a nutritive value "equal to one pound of boneless beef." That being true, makes the food or nutritive value of the annual milk product of the United States equal to 14,495,000,000 pounds of beef, free of bone.

We also find that every 100 pounds of a fat ox gives 57.7 per cent. of butchers' meat.—*Encyclopedia Britannica, 8th ad., vol. 9, p. 762.*

About 12½ per cent. of such meat is bone.—*Same work, p. 765.*

We find therefore that 50 per cent. of the gross weight of a fat steer is boneless meat. It will therefore require 20,650,000 fat steers, weighing 1,400 pounds gross, to produce 14,455,000,000 pounds of boneless beef, and that this only equals the food or nutritive value of the annual milk product of this country. The present market value of such fat steers would not be less than $4.50 per 100 pounds live weight. The market value of that number of fat steers would amount to $1,300,950,000. To ascertain the value of the meat, we deduct one-fifth for hides and tallow, $260,190,000; which leaves $1,040,760,000 as the market value of the beef that would be required to furnish an amount of nutrition that is only equal to that of the annual milk product of this country.

Third, Your committee further called attention to the loss of milk sugar—one of the most valuable constituents of milk—in the process of making butter and

cheese. In order to do this we must ascertain the percentage of milk sugar contained in milk.

Milk contains 4.20 per cent. of milk sugar.—*New American Cyclopedia, vol. 11, p. 543, sample 8.*

Milk contains 4.50 per cent. of milk sugar.—*Willard's Practical Dairy Husbandry, p. 500.*

Skimmed milk contains 4.66 per cent. of milk sugar. —*Same work and page.*

Buttermilk contains 4.66 per cent. of milk sugar.—*Same work and page.*

Whey contains 4.61 per cent. of milk sugar.—*Same work, p. 319 (average of 15 samples).*

Butter contains 0.70 per cent. of milk sugar.—*Same work, p. 500.*

Cheese contains lactic acid, or but little milk sugar.

The wholesale market price for milk sugar in the spring of 1879 was forty to fifty cents per pound, as appears from the price-list of McKesson & Robbins, wholesale druggists in New York city.

1,265,875,000 pounds of milk sugar,	at 40 cents, amounts to	.....	$506,350,000
do do	at 20 cents, amounts to	.....	253,175,000
do do	at 10 cents, amounts to	.....	126,587,500

Here we have the startling fact that the annual loss on milk sugar in this country, if valued at one-fourth the lowest New York market quotations, amounts to more than double the value of the entire sugar crop of the Island of Cuba.

Fourth, Your committee further stated that while our creamery butter, when first made, is of superior quality and flavor, and, therefore, commanded the highest market price, we have already learned from experience that it is very soon off flavor, and unless marketed and used within a limited time it deteriorates in value. For this reason it must necessarily be confined to home markets, as it is not safe to ship it abroad with the expectation that it will retain its flavor so as to compare favorably with the best shipping grades of butter that may be found in the London markets.

Willard's D. H., pp. 340, 341, 342.

From all these analyses it appears that all, or nearly all, of the milk sugar is "run off" in the buttermilk and whey, and lost.

In manufacturing butter and cheese 59 per cent. of the milk product is used, and 41 per cent. is consumed in families—as stated in "Willard's Dairy Husbandry," page 20.

Chemical tests show 4 pounds of butter in 100 pounds of good milk; but as there is some loss in churning, we estimate that it will require an average of at least 27 pounds of milk to produce one pound of butter.

From the department of agriculture report for 1877, p. 343, it appears that we make 1,000,000,000 pounds of butter annually, requiring for its product 27,000,000,000 pounds of milk.

It requires an average of 9¾ pounds of milk to produce one pound of cheese. *Willard's D. H., pp. 524, 525, 526, 527.*

The department of agriculture, in their report for 1877, p. 343, place the annual product of cheese at 300,000,000 pounds, requiring for its production 2,950,000,000 pounds of milk. The milk used in manufacturing butter and cheese contains 1,272,875,000 pounds of milk sugar. From this deduct for amount in the butter, 7,000,000, which leaves 1,265,875,000, run off annually in the buttermilk and whey.

Fifth, Your committee further stated that, while it is true that the dairy farmers feed their milch cows corn meal, oat meal and bran in liberal quantities; and while it is admitted that this is the best food for producing a superior quality of milk, the truth is that the cheese we produce does not rank as good in quality or bring as high prices as cheese produced in other countries, even while the analysis shows them to be as rich in butter, and that, therefore, there is no legitimate reason for that difference in quality.

In view of these facts, your committee feel justified in asking the legislature to appropriate a sum sufficient to enable the Illinois State Dairymen's Association to establish an experimental station for the purpose of ascertaining, by actual tests,

1st, How to improve the keeping quality of our creamery butter, so that it may be transported, with its flavor unimpaired, to the best markets of the world.

2d, How we can improve the quality of our cheese, so that it will sell at as high prices in the English markets as cheese produced in other countries.

3d, To ascertain the best method of saving the sugar of milk which is now run off into the buttermilk and whey.

In conducting such a station it seemed desirable to ascertain, as far as practicable, the best and most reliable

breeds of milch cows—or those best adapted to the American system of dairying.

While the legislature of this state makes liberal appropriations to the agricultural and horticultural societies, and regularly appropriates about $12,000 per annum for county fairs, we regret to state that though they could not controvert the arguments, and were surprised to learn the facts, and could not but recognize the needs of the dairy industry, they did not feel justified in making the appropriation. The whole thing was so new to them as almost to take them by surprise.

The experiences of the dairy farmer during the year now drawing to a close have been such as to show the absolute necessity of making more strenuousefforts in this direction, if they are to continue in this business.

At the request of the committee, C. H. Larkin and J. R. McLean accompanied them to Springfield, and, therefore, join in this report.

G. P. Lord,
M. H. Thompson,
Joseph Tefft,
C. H. Larkin,
John R. McLean, } Committee.

JUDGES' REPORT.

The following tables show the number of points credited to each exhibitor of butter, for the different premiums, offered at the sixth annual meeting of the Illinois State Dairymen's Association, held at Marengo in December, 1879. Instead of the exhibitor's name, his number is given. This will enable each one to see in just what particular his butter failed, or was perfect:

BOARD OF TRADE SWEEPSTAKES PREMIUM.

[Owing to some oversight the report on the other numbers entered for this premium was not handed to the secretary.]

Entry No.	Flavor.	Make.	Texture.	Keeping	Color.	Salt.	*Total.
133	8	8⅔	9⅓	7⅔	4	5	42⅔
31	8⅔	8⅓	9⅓	8⅔	4	4⅔	43⅔
44	9⅔	9⅔	9⅔	9⅓	5	5	48⅓
112	8⅔	9⅔	9⅓	9	4⅔	5	46⅓
36	9	9	9⅓	8⅔	4⅔	4⅓	45
116	8⅓	9	8⅓	8	4⅓	5	43
115	8⅔	9⅔	9⅓	9⅓	4⅔	5	46⅔
120	9	9	8⅔	8⅓	4⅓	4⅔	44
118	8⅓	8⅔	8⅓	7⅓	5	4⅔	42⅓
145	9	9⅔	9⅔	9⅔	4⅔	5	47⅔
42	9	9⅔	9⅔	10	4	4	46⅓

HIGGIN SALT COMPANY'S PREMIUM.

Entry No.	Flavor.	Make.	Texture.	Keeping.	Color.	Salt.	Total.
129	8⅓	8⅔	8	7⅔	4⅔	4⅓	41⅔
26	8	8⅓	7⅔	8⅔	4⅔	4	41⅓
125	9	9	8⅔	8⅓	5	3⅔	43⅔
2	8⅔	8⅓	8	8⅓	5	4⅓	42⅔
48	8⅓	9	9⅓	8⅓	4⅔	4⅓	44
22	8⅔	9⅓	9⅔	8⅓	4⅓	4⅔	45
52	7⅓	8⅓	8⅓	8⅔	4⅔	2⅔	40
127	7⅔	8⅓	8	7⅔	4⅔	4⅔	41
43	9⅓	7⅔	9⅓	8⅔	4⅓	4⅔	44
142	8⅔	8	8⅔	8⅔	4⅔	4⅔	43⅓
70	8⅓	8⅓	8⅔	8⅓	4⅔	4⅓	42⅔
144	9	9⅔	9⅓	9⅓	4⅔	5	47
66	7⅔	8⅓	8	8	4	4⅓	40⅓
10	8⅔	9⅔	9⅓	8⅓	4⅔	4⅔	45⅓
63	8⅔	9⅔	9	8⅔	4⅔	4⅓	45
40	9⅔	8	8	8	4	3⅓	41
59	7⅔	8	7⅔	7⅔	4	4⅓	39⅓
90	9	9	8⅔	8	3⅔	3⅔	42
119	9	8⅔	8⅓	8⅓	4⅓	5	42⅔
93	8⅔	8⅔	7⅔	7⅔	4⅓	5	42
30	9⅓	8⅔	9	8	4⅓	5	42⅓
95	8⅓	9	9	8⅓	4⅓	5	44
114	8	7⅔	8⅔	8⅓	4⅔	5	42⅓
97	9⅓	9⅓	9⅓	9	4⅔	5	46⅔
117	8	8⅔	8	8	5	4	41⅔
108	8⅔	8	8	7⅓	4	4⅔	40⅔
122	8⅓	8⅓	8	7⅓	4	4⅔	40⅔
104	9⅓	8⅓	8⅔	8⅓	5	4⅔	43⅓
34	8	7⅓	7⅔	7⅔	4⅓	4⅓	39⅓
100	8⅓	7⅔	7⅔	7⅔	4⅓	4⅔	40⅓
111	9	9⅓	9⅔	8⅔	5	5	46⅔
18	9⅓	9⅔	9⅓	8⅔	5	5	47
86	9⅔	9⅔	9⅓	9⅓	5	4⅔	47⅔
37	7⅓	8⅓	7⅓	8	4⅔	4⅓	41
82	7⅓	8⅔	8	7⅔	5	4⅔	41⅓
14	6	7	7⅓	7⅓	4⅓	4⅓	36⅓
79	8⅔	8⅔	8⅔	7⅓	4⅔	4⅔	42⅔
139	8⅓	8⅓	8⅓	7⅔	5	4⅓	42
76	8⅔	9⅔	9⅓	9	4⅔	5	46⅓
135	9⅔	9⅔	9	9	4⅓	4⅔	46⅓
56	8	8⅓	8	8	4⅔	4⅓	41⅓
137	8	8⅔	8⅓	8	4	5	42
132	9⅓	9⅓	9	8	4⅔	4⅔	45

*Scale of points—flavor, 10; make, 10; texture, 10; keeping, 10; color, 5; salt, 5—50.

ASHTON SALT COMPANY'S PREMIUM.

Entry No.	Flavor.	Make.	Texture.	Keeping.	Color.	Salt.	Total.
47	6⅔	6⅓	7⅔	6⅔	4	3⅔	35
131	6⅔	6	6⅔	4	2⅔	4⅓	30⅓
61	6⅔	8⅓	8	7⅔	4⅔	4⅓	39⅔
113	7	6⅔	6⅓	5⅓	4	4	33
51	6⅓	7⅓	8	6⅓	4⅔	3⅔	36⅓
33	8⅓	8⅔	8	8⅓	4⅓	4⅔	42⅓
65	6	5⅓	5⅓	5	4	4	29⅔
121	6⅓	6	5⅓	5⅓	3⅔	4	30⅔
69	9	8⅓	9	7⅓	4⅔	5	43⅓
107	7⅔	8	7⅔	7⅓	4⅓	4⅔	39⅔
55	8⅓	8	7⅔	7⅓	4⅔	4⅔	40⅔
49	7⅓	7⅓	7⅓	7	4⅔	4⅔	38⅓
73	8	8⅔	9	8	5	4⅔	43⅓
103	7⅓	7⅓	6⅔	7	4	4	36⅓
75	8	8⅓	8⅔	8⅓	4⅔	4⅔	42⅔
45.	9	8	9⅓	8⅔	4⅔	4⅔	44⅓
81	8⅔	8	8⅓	8	4⅓	4⅔	42
89	8⅓	8⅓	8⅓	7⅔	4⅓	4⅔	41⅔
85	9	9	9⅔	8⅔	5	4⅔	46
39	9⅓	8	8	8	4	4⅔	42
141	7	8	7⅓	7	4⅔	4⅓	38⅓
146	9	9⅔	9⅓	9	4⅔	4	45⅔
13	9	9	9	8⅓	4⅓	4⅔	44⅓
9	9⅔	8⅓	9⅓	8⅔	4⅓	4⅔	45
17	9⅔	8⅔	8⅔	9	4⅓	4	44⅓
21	9⅔	9⅓	9	8⅔	4⅔	4⅔	46
25	7⅔	8⅔	8	7⅔	4⅓	4	40⅓
1	9⅓	9	9	8⅓	4⅓	4⅔	44⅔

STANDARD QUANTITY AND QUALITY OF MILK.

QUANTITY.— Borden's standard — of eight and five-eighths pounds per gallon — is now taken and accepted as the standard for milk, not only in our own country, but in all Europe.

QUALITY.— The executive committee of the State Dairymen's Association, after many experiments carefully made, have decided that hereafter the following shall be considered by them as the standard quality of milk in Illinois: Water, 87.5; solids, 12.5 — in a scale of 100 parts.

—THE ATTENTION OF—

DAIRYMEN and STOCK FEEDERS

—IS DIRECTED TO THE—

New Process Linseed Meal!

The Greatest Flesh Former, Milk and Butter Producer in use.

ANALYSIS:

MOISTURE	6.37
OIL	1.50
ALBUMINOUS COMPOUNDS, (Flesh-Forming Substances,)	38.67
MUCILAGE, SUGAR and DIGESTIBLE FIBRE	39.19
CRUSKY FIBRE	8.40
MINERAL MATTER (Ash)	5.87
	100.00

M. Bonssiugault, the Prominent Agricultural Chemist, estimates the nutriment of 100 pounds of Linseed Meal as equal to 309 pounds of oats, or to 318 pounds of corn, or to 767 pounds of wheat bran.

LINSEED MEAL

Has long been recognized as preeminently valuable, but owing to the large percentage of oil necessarily left in the old manufacture in the old way it could be used only sparingly. But by the New Process this difficulty has been overcome and at the same time much larger amount of Mucilage, Sugar, Albumen, etc., remains.

Meal made from oil cake which has been subjected to extreme pressure, will show but about 27 per cent of albuminous matter, which is a loss of over 25 per cent. This is lost to the meal and is found in the oil in the form of foots or sediment, of which our oil contains none.

TO FARMERS it is especially valuable, as the *manurial value* of a ton of Linseed Meal after passing through the cattle, is estimated by the Leading Agricultural Society of England as being worth $[illegible]50. A result that would justify the sale of corn and feeding Linseed Meal in its place.

This meal can be fed in any quantity without making the milk and butter taste.

We guarantee it perfectly pure Linseed Meal.

Manufactured only in Chicago, by the Chicago Linseed Oil Co., office No. 1 Wabash Avenue.

FOR SALE IN MARENGO BY R. M. & F. W. PATRICK & CO.,
IN ELGIN BY D. H. BUTLER & SON.
IN DUNDEE BY M. A. BARROWS & CO.