FIFTY-SECOND ANNUAL REPORT ILLINOIS DAIRYMEN'S ASSOCIATION 1926

FIFTY-SECOND

Annual Convention

OF THE

Illinois State Dairymen's Association

Held at
Galesburg, Illinois,
January 26, 27 and 28,
1926

LETTER OF TRANSMITTAL

Office of Secretary,
Illinois State Dairymen's Association,
Chicago, Ill., 1926.

To His Excellency, Len Small, Governor of the State of Illinois:

I have the honor to submit the official report of the Illinois State Dairymen's Association, containing the addresses, papers and discussions at its fifty-second annual meeting, held at Galesburg, Illinois, January 26, 27 and 28, 1926.

Respectfully,

GEO. CAVEN, Secretary.

LIST OF OFFICERS

President—

W. S. O'HAIR, Paris, Ill.

Vice-President—

S. J. STANARD, Springfield, Ill.

Secretary—

GEORGE CAVEN, 136 W. Lake St., Chicago.

Treasurer—

CHARLES FOSS, Freeport.

Directors—

W. S. O'HAIR, Paris, Ill.

S. J. STANARD, Springfield, Ill.

T. P. SMITH, Danville, Ill.

C. M. FILSON, Salem, Ill.

J. P. PHILLIPS, Sesser, Ill.

CHAS. FOSS, Freeport, Ill.

HARLAN SEE, Paris, Ill.

JOHN STEELE, McLeansboro, Ill.

GEORGE CAVEN, Chicago, Ill.

CONSTITUTION AND BY-LAWS OF THE ILLINOIS STATE DAIRYMEN'S ASSOCIATION

Name and Purpose.

Section 1. The name of this Association shall be the "Illinois State Dairymen's Association." Its general purposes shall be to promote the dairy interests of the State of Illinois and to disseminate knowledge concerning the same, to bring about more economical production of dairy products, the production of a better quality of dairy products, and to increase the consumption of dairy products.

Membership.

Section 2. Any person who is a resident of the State of Illinois and who shall pay into the treasury of the association the sum of one dollar, shall be a member of the association until the first day of the opening of the next annual convention. Any person who is a resident of the State of Illinois and who shall pay into the treasury of the association the sum of four dollars shall be a member of the association for a period of five years from the first day of January preceding the date of said payment. Any person who is a resident of the State of Illinois and who shall pay into the treasury of the association the sum of ten dollars shall be a life member of the association and shall be exempt from payment of any dues with the exception of special assessments, which may be made by the Board of Directors on all members, which assessments shall not total more than fifty cents per member in any one year.

Honorary members may be elected by vote at any annual meeting of the association in recognition of services rendered to the dairy interests of the state, and such members shall be entitled to all privileges of membership with the exception of voting for officers, and shall be exempt from all dues and assessments.

Management.

Section 3. The full management of the affairs of the association shall be in the hands of the Board of Directors, which shall consist of a president, vice-president and five directors. Four members of the Board of Directors shall constitute a quorum to do business.

The Board of Directors may adopt such rules and regulations as they shall deem advisable for the government and conduct of the business of the association and may appoint such committees as they shall consider desirable.

They shall also make a biennial report to the Governor of the state of the expenditures of the moneys appropriated to the association and arrange the program and order of business for the same.

Elective Officers.

Section 4. The president, vice-president and Board of Directors shall be elected by ballot at the first annual meeting of the association. Only five-year or life members shall be eligible for election to the elective offices or Board of Directors. A plurality vote shall elect.

The elective officers and Board of Directors shall take office immediately following their election and shall hold office for one year or until relieved by successors who have been duly elected and qualified.

Any vacancy which may occur among the Board of Directors or officers may be filled by the Board of Directors for the unexpired term.

Appointive Officers.

Section 5. The Board of Directors shall appoint the secretary and treasurer who shall take office upon the first day of July following their appointment and shall hold office until relieved by duly appointed and qualified successors.

Headquarters.

Section .6 The headquarters of this Association shall be where the secretary has his place of business.

Annual Meeting.

Section 7. The association shall hold its annual meeting at such place and time as shall be determined by the Board of Directors, not less than thirty days in advance.

Duties of the President.

Section 8. The duties of the president shall be to preside at the meetings of the association and of the Board of Directors. It shall be his duty, together with the secretary, to arrange a program and the order of business for each regular annual meeting of the association and of each meeting of the Board of Directors and upon the request of five members of the association, it shall be his duty to call special meetings of the Board of Directors, or he may call meetings at such times as he deems advisable.

During the first day of the annual meeting of the association, the president shall appoint in open meeting a committee consisting of three members of the association, which committee shall place before the convention nominations for officers and directors of the association for the ensuing year, their report to be made not less than three hours after their appointment. The president shall at the time of the appointment of the nominating committee indicate in open meeting when the election of officers shall take place.

The president may, at this meeting, appoint whatever other committees that to him may seem advisable.

The president shall be a member ex-officio of all committees either appointed by him of by the Board of Directors, with the exception of the nominating committee.

Duties of the Vice-President.

Section 9. In the absence of the president, his duties shall devolve upon the vice-president.

Duties of the Secretary.

Section 10. The secretary shall record the proceedings of the association and of the Board of Directors. He shall keep a list of the members, collect all the moneys due the association and shall record the amount with the name and postoffice address of the person so paying, in a book to be kept for that purpose. He shall pay over all moneys to the treasurer, taking his receipt therefor. It shall also be his duty to assist in making the program for the annual meeting and at the close of the said meeting compile and prepare for publication all papers, essays, discussions and other matter worthy of publication and cause to be published and distributed to members at the earliest day possible and shall perform all such other duties pertaining to his office as shall be necessary. Any compensation for the services of the secretary shall be established by the Board of Directors.

Duties of the Treasurer.

Section 11. The treasurer shall before entering upon the duties of his office, give good and sufficient bond to the directors of the association with one or more sureties to be approved by the Board of Directors, which bond shall be conditioned for the faithful performance of the duties of his office. He shall account to the association for all moneys received by him by virtue of said office and pay over the same as he shall be directed by the Board of Directors. No moneys shall be paid out by the treasurer except upon order signed by the president and countersigned by the secretary. The books or accounts of the treasurer shall at all times be open to the inspection of the members of the Board of Directors, and he shall at the expiration of his term of office, make a report to the association of the condition of its finances and deliver to his successor the books of account, together with all moneys and other property of the association in his possession or custody. The treasurer's bonding fee, if there be any, shall be paid by the association.

Quorum.

Section 12. Seven members of the assocition shall constitute a quorum for the transaction of business, but a lesser number may adjourn.

Amendments.

Section 13. This constitution and by-laws may be amended at any annual meeting by a vote of not less than two-thirds of the members present. Notice of the proposed amendment or amendments must be given in writing and at a public meeting of the association at least one day before any election can be taken thereon. This constitution and by-laws may also be amended by unanimous vote of the Board of Directors present at a meeting called for that purpose, written notice stating purpose of meeting having been sent to all members of the Board not less than ten days preceding date of meeting.

TUESDAY, JANUARY 26, 1926

Galesburg was the scene of the fifty-ninth annual convention of Illinois State Dairymen's Ass'n. The men responsible for locating this meeting in Galesburg were Louis Nielsen, president of the Pioneer Creamery Company and Henry G. Hawkinson, head of the Cottage Ice Cream Company. They enlisted the help of members of the Chamber of Commerce and the different clubs of the city and succeeded in having the week of the meeting declared a "dairy week" during which persons attending the convention were guests of the clubs at their luncheons and at which dairy talks were given.

To further add interest and instruction to dairy week, arrangements had been made with the National Dairy Council for two of their workers, Miss Chinn and Miss Coon, and these ladies gave health demonstration talks before the different clubs, schools etc., setting forth general health rules and the value of milk and its products in the human diet. These ladies furnished one of the best features of the convention.

The meeting opened Tuesday, Jan. 26 at 1 p. m. with cattle judging. There was individual and team judging under the direction of Prof. C. S. Rhodes, University of Illinois. In the cattle exhibit were about 60 head and the judging included not only the cattle entered in the show but Knox County herds owned by F. F. Packingham, Charles R. Rowan and the Swanson Dairy Farm.

The judging took all of Tuesday afternoon except a short session at which Henry Hawkinson of Galesburg presided. He introduced Rev. G. Van Buskirk, who led those assembled in the singing of America. Following this Rev. Van Buskirk asked the invocation. Mayor E. W. Mureen was then introduced; he warmly welcomed the delegates and visitors of the convention to Galesburg. Mr. Mureen also congratulated the dairymen on their interest in their field and the work the association is doing. W. S. O'Hair,

president of the association who was the next speaker, spoke of Illinois as being the leading dairy state of the union and stated that the dairy cow is the backbone of the farmers' finances today. Mr. O'Hair then outlined the program of the convention and stressed the importance of attending all the meetings of the convention. He also spoke a word of the benefits to be derived from membership in the State Dairymen's association and urged all dairymen, who were not members, to join.

Mr. O'Hair then introduced Prof. Rhodes, who spoke on "The Dairy Cow—Its Type and Conformation." He opened by saying that in the production and marketing of dairy products, efficiency was necessary and proceeded to tell how the farmer could build up an efficient and profitable herd. He described the dairy type and told how she must be fed and cared for and the returns good feeding and care would surely give.

Local Entertainment

Tuesday evening's entertainment was furnished by Galesburg High School boys, The Exchange, Lions, Kiwanis and Rotary clubs of Galesburg.

"The Scrub Bull," was the title of a mock trial put on by Galesburg high school agricultural department. This sketch was not only humorous but the "evidence" presented pointed out the value of thoroughbred cattle. A good "line" was, however, presented by the defense of farmer Jake Corntossel.

The cast of players consisted of the following:

Judge—Clarence Deal.

Defense Attorneys—Virgil Odean and Charles Nelson.

Prosecuting Attorneys—Neil Rich and Charles Meekem.

Witnesses—Raymond Anderson, Forrest Moberg, Halsey Miles, Robert Giddings, Lester Gale and Conrad Nelson.

Jury—Stephen Junk, Paul Carlson, Willard Anderson, William Driffel, Roy Nelson and Cecil Deal.

The Exchange club contribution was a short sketch entitled, "Geraldine." The title character was played by

M. Velander who was cleverly disguised as 'Geraldine.' "Sam" played by M. L. Craft, and "Swede" impersonated by Dr. M. W. Olson, kept the audience in an uproar.

The clever sketch, "The Medicine Man," performed by Wilfred Arnold as the Medicine Fakir, Pliny Allen, as "Hi Grass," and Stanley Oberg, as the blackface assistant and comedian, "Smudge," brought a storm of applause for the Kiwanis club group.

The Lions club also had an original stunt with Charles McDonald and Bert Linrothe as blackface comedians. In their songs they brought in names of dairymen delegates and also told clever stories about the visitors. "Yes, Sir, That's My Baby," sung by McDonald as a calf was led across the stage, brought an outburst of applause.

Mrs. B. C. Linrothe played the musical scores at the piano.

The "Practice Night of the Stunt Committee of the Kilchrennan Rotary Club," put on by local kilted Rotarians was a classic. Dr. J. M. Tilden was forced to put on his terpsichorean act twice at the demand of the spectators.

The Rotary cast follows:

Time and Place—Mac's house in Kilchrennan, County Argyle, Scotland, at 11 p. m. Patron Saint, Rotarian Harry Lauder.

Thomas Roderick McKittrick (Tam)—Tom McSpadden.

Andrew Duncan Stewart (Andy)—Andy Hamilton.

Douglas MacKenzie Cameron (Dug)—Ray Arnold.

James Stewart MacGowan (Jamie)—Everett Hinchliff.

Malcolm Alexander MacKenzie (Mac)—Sam Harrington.

Alexander Stewart MacPherson (Sandy)—Joe Tilden.

Robert John MacDuff (Jock)—Bob Woolsey.

Donald Stewart Murdoch (Donald)—Lee Murdoch.

Before and after the shows, the several exhibits at the Plaza were inspected by the crowd.

Dairy Cattle Judging

The Galesburg high school cattle judging team, consisting of Clarence Deal, Forrest Moberg and Halsey Miles, won first place in the cattle judging contest. The team's rating was 669 or 53 points above the nearest competitor.

Galesburg high school boys also captured the high ratings in individual judging, as follows: First, Raymond Nelson; second, Halsey Miles, and third, Forrest Moberg. Floyd Johnson of Geneseo, and Rulof May of La Moille, tied for fourth and fifth places.

The Team Judging

Prof. C. S. Rhodes, assisted by Frank Makepeace, state supervisor of vocational education.

The scoring follows:

First, Galesburg, 669.
Second, Oneida, 616.
Third, Elmwood, 573.
Fourth, Walnut, 562.
Fifth, Decatur, 524.
Sixth, La Moille, 485.
Seventh, Geneseo, 449.
Eighth, Aledo, 423.

All of the teams and individuals engaged in the judging contest showed a large knowledge of cattle judging, it was stated, and a creditable showing was made.

The awards were announced for the first time at the "stunt night" performance at the Plaza theater on Tuesday evening. The announcement was made by W. S. O'Hair, president of the association.

Cattle Prizes Awarded

Holstein: Dale Griffith, Oneida, Ill. Heifer Calf under 1 year, 1st, $7.

Guernseys, Lester Larson, Galesburg, Calf under 1 year, 1st, $7. Louis Buckley, Calf under 1 year, 2nd, $5. Dean Buckley, Calf under 1 year, 3rd $3.

Jerseys: Howard Simmons, Avon, Ill., Heifer 1 year

and under 2, $5. Martha Simmons, Avon, Ill., Heifer 1 year and under 2, $3. Charles Mitchell, Oneida, Ill., Calf under 1 year, 1st, $7. Sam Erickson, Oneida, Ill., Heifer Calf under 1 year, 2nd, $3.

Holsteins: Zina Crane, Oneida, Bull 2 and over, 1st, $5. Cow 2 and over 1st, $5. Heifer under 1 year, $3.

Ayrshires: Walter Ray, Abingdon, Cow 2 years and over, 1st, $5. Cow 2 years and over, 2nd, $5. Heifer 1 year and under 2, 1st, $3. Heifer calf under 1 year, 1st, $3. Bull 2 years and over, 1st, $5.

Guernseys: Adcock and Ratcliffe, Galesburg, Bull 2 years and over, 1st, $5. Cow 2 years and over, 1st, $5.

Jerseys: J. E. Simmons Jr., Avon, Ill., Heifer 1 year old and under 2, 1st, $3. Heifer 1 year and under 2, 2nd, $2.

Jerseys: Nielson and Erickson, Heifer Calf under 1 year, 3rd, $7. Cow 2 years and over, 1st, $5. Bull 2 years and over, 1st, $5.

WEDNESDAY MORNING SESSION

January 27, 1926, 10 A. M.

President O'Hair: Now the crowd is not so large, but if you were all bad men Galesburg would be in bad shape, but I will take it that everybody is good—but you don't milk cows. Down at our place if we milk cows at four o'clock we begin milking at four. That means four, it doesn't mean ten minutes past, and if I had a hand working for me that would come in as slow as you fellows are coming in here this morning, I would fire him before he got down to the barn. (Laughter.)

Don't forget the banquet that is going to be given tonight. It will be given in the club rooms of the Galesburg Club. The club rooms are a wonderful place to hold a banquet, and the committee is doing everything that can be done to give us a good time and the cooks are working hard to give us good eats. There can't a man of us afford to miss it. You will get three dollars' worth for a dollar and a half, and you will get seven dollars and fifty cents' worth of fun—ten dollars' worth of value. If you don't get that much worth of fun I will just say this, that Charley Filson will return you your money back, but our banquet is one of the best features always. You will not go over there to hear lengthy speeches, that is not what it will be. You will hear speeches, but it will all be foolishness and fun and there will be plenty of it.

You are all invited to come. That is the only thing that costs any more while you are here. At any rate they have been feeding me for nothing, most of them. (Laughter.)

Now there has been a great deal said about sometimes a man who is counted one of the biggest men in the country, is late, and I'll bet he doesn't milk on time when he is

home (laughter). Mr. Van Pelt, of Waterloo, Iowa, who was going to speak to you this morning, on the subject, "The Dairy Cow," has lost his place because of the lateness of the hour in getting together, I am sorry to say, but if he had been here he would have had a lot of empty seats to speak to, so maybe it is better that we hear him later.

I just want to say this: Today in Illinois the dairy cow is the backbone of the farmers' finances, and if these fellows that are running around over the country trying to get shut of their corn at more than it is worth would have come here and attended this meeting instead of going up to Iowa today, they would have known when they got through how to solve that question, because the dairy cow is the backbone of the farmers of the State of Illinois, and before we get through here we will see you are.

In these times they try to do everything to people; last summer they tried to make monkeys out of nature, and now they are trying to make hogs out of them and feed their corn to them. I don't know whether they are going to do it or not, but if they do they won't get much for their corn, because the kind of hogs I think those people would make want to sell it at fourteen cents a pound; but if you just had a few good dairy cows, before we get through this meeting you will know that is the only thing that will keep the farmers up.

At a meeting in a county adjoining this county last week a man said if it hadn't been for his seven Jersey cows he would have broke last year. He said "those seven cows paid the bills that would have sent me to the wall." You know sometimes you can sue a man for forty or fifty dollars and put him in bankruptcy if he didn't have it then; and the dairy cow is cash property.

Now this morning we have with us a man whom we are mighty glad to have here. He is a man of wide reputation, his paper is the largest paper in the world in the dairy line—Mr. A. J. Glover, the editor of Hoard's Dairyman, and I know you will all enjoy hearing him talk. (Applause.)

THE DAIRY INDUSTRY

A. J. Glover, Ft. Atkinson, Wis.

Mr. A. J. Glover: Mr. Chairman, ladies and gentlemen: When I return to Illinois, it seems like I come home, for I worked for you people twenty-five years ago.

Someone said to me this morning, "Is this your first trip to Galesburg?" I said, "No, I was here about twenty-five years ago, attending a dairy meeting." Someone said to me last night on the way here, "How does it happen, that you never come back to Illinois and attend any of the dairy meetings?" "Well," I said, "I thought I was doing my share by Illinois, because this was the twentieth meeting that I had attended since the National Dairy Show, and I couldn't very well see how I could attend more and take care of my work on the paper."

Now, folks, I have no surprises for you this morning; what I shall have to say has been said many times. I am not like the old farmer who had been wearing clothes that were rather shabby for a long time, and his good wife had taken him to task because he didn't buy some better clothes; and so after urging him for some months he made up his mind that he would surprise his wife. So he went down to the village store and bought a complete new outfit: shirt, trousers, coat, vest, and had them all wrapped in a package and put in the back end of his wagon. Before he reached home he drew up to the banks of a little creek and started to disrobe. He dropped his coat and vest into the stream, and then the trousers, his shoes and stockings, and shirt. Then he went back to the back end of the wagon to get the new outfit, and somebody had "lifted" them! He got up in the seat again, picked up the lines, and said, "Get up Mary, get up Tom; we'll surprise the old girl yet." (Laughter.) But I haven't any surprises for you.

In this section of the state which is so largely devoted to the raising of corn, hogs and cattle, the farmers are apt

to look upon the dairy industry as being a very small and insignificant part of our agriculture.

In 1923 the total agricultural returns was something like eleven billions of dollars. The dairy industry returned close to three billions including milk and all its by-products, the cows sold for beef, calves, and the values of the skim milk, and the whey, etc., showing at this time that the value of the dairy industry represents about one-fourth of the total agricultural income of this country.

Put it the other way. In 1924 we produced one hundred and twenty-four billion pounds of milk. There isn't anybody here can conceive of a billion pounds, but if we were to put that one hundred and twenty-four billion pounds of milk into eight gallon cans, if set side by side they would span the world—yes, they will go around the world nearly sixteen times. That gives you a little bit of conception, visualizes, if you please, the meaning of this great industry.

It required nearly twenty-six millions of cows to produce that milk; it took a good many of these to get that number of cans of milk that would go around the world nearly sixteen times. When we view the dairy industry from that standpoint it is tremendously large, but when we turn around and begin to measure what the average cow is doing it is disappointing. She produces around four thousand pounds of milk containing about one hundred and sixty pounds of fat.

The thing then immediately comes to our mind, what can be done to increase the production of our great herd of cows, twenty-six million? A great many years ago when one of the leaders of dairying in Wisconsin was speaking to an audience someone arose and asked him this question: "Uncle Hiram, how shall a man go into the dairy business?" He reflected for a moment, and then said, "Go and buy a bull." That looked like a facetious answer but there is more to it than a person would at first think, because if we are going to improve these twenty-six millions of cows it must be done through the bull.

Now, what kind of a bull? Why, a bull bred for dairy

purposes. And what kind of a bull is that? Why, it is the bull that has been trained, or his ancestors have, on both sides, for years, to take the feeds of the farm and convert them into milk economically. That is the function of the dairy cow. Her function is not speed, her function is not graft, her function is not to accept hardships, but her function is to take the feeds grown on the farm, supplemented with by-products from the mills, and convert them into the most refined product in all the world—milk, a product not only important to the human race but essential to its existence.

Herbert Hoover has said the white race cannot exist without milk, but a lot of people feel there is nothing to dairy breeding. They try to get the two-purpose cow, try to build both milk and beef in the same animal, and where that has been done we have never seen any great dairy progress. Wisconsin didn't make her tremendous progress in dairying until she set aside the idea that you could create in one animal outstanding products of milk as well as beef, but devoted themselves to the breeding of cows for the purpose of conveying the feeds of the farm into milk.

But, someone will say, there is nothing to breed. It is all in the corn crib. My chief, ex-Governor Hoard, was one time speaking in Vermont when an old farmer got up and said, "Hoard, there is nothing to this breeding." Hoard said, "Is that so, young man? In my state there is a little horse by the name of 'JIC' that can trot a mile in 2:10 when fed two quarts of oats. That is the speed product of two quarts of oats when fed to JIC. You have horses in your barn that won't trot a mile in five minutes if they were fed five tons of oats—all in the corn crib."

South of here they hunt quail in the fall. I presume that you hunt some prairie chickens here in the fall. Have you ever seen a man taking a bulldog to go to hunt for prairie chickens or quail? You take a bulldog if you want to win a fight, but if you go to hunt quail you take a dog bred for that purpose, trained for it, but we find people chasing for butter fat with bulls no more accomplished in the production of butter fat than the bulldog is in hunting prairie

chickens or quail. And there is nothing mysterious about a pure-bred animal. It just simply means that for years and years they have been trained to do a particular thing and their ancestors have been recorded.

There is a great difference, however, between pure-bred animals. Unfortunately, we havent made the close selection in the breeding of pure-breds that we should. We have incapable pure-breds. We have pure-bred bulls that breed down instead of up, and we have low-producing pure-bred cows. Now the cows are not all to blame; the men may be to blame the way they feed and take care of them. Nevertheless, the breeders of pure-bred cattle to the present time have not eliminated all of the low-producing animals.

Why, you can pick up any farmer's record, almost, in our cow testing association and you can find where pure-bred bulls have decreased the production to one hundred, one hundred and fifty and sometimes two hundred pounds of fat a year. On the other hand you can turn over the pages and find records of the cow herds that have been increased from one hundred and fifty or two hundred pounds average per cow per herd, where the bull has brought up the average to three, four, and in some cases close to five hundred pounds of fat.

It takes a great deal of skill to get a herd that will average even four hundred pounds. We read of the records of cows like some of the champions that produce one thousand pounds of fat a year, and some of them even fifteen hundred pounds a year, and in certain cases have produced 36,000 pounds or better, of milk. Think of it! Better than eighteen tons in a year. And we say, "Well, I think we ought to have all our cows do that well." We haven't any of us yet fully appreciated the skill it requires on the part of the farmer to breed, feed and develop a herd that will average four hundred pounds of fat per cow per year, and until we do appreciate that we are not going to make the progress that we ought to in the breeding of our dairy cattle.

We have twenty-six millions of cows, and we could

take thirteen millions of cows that are averaging three hundred and twenty pounds of fat in a year, and produce all the products necessary for this nation. Can any one here stand up and give good reasons for keeping thirteen million more cows than is necessary to produce the dairy products that we need?

I was in Washington recently, attempting to get an increased appropriation for tubercular eradication, and I drifted into the Dairy Division where they have got thousands of records of herds. I found one herd of four cows, just four cows, that had returned above the cost of feeding, over $531. I found another herd of twelve cows that returned $150 less than that. Why was that man keeping twelve cows that weren't returning him as much above the cost to feed as the neighbor with four cows? It is the problem that confronts the dairy industry, and we hear this said, it comes to you constantly: "Why, if you get all cows capable of producing three hundred and twenty pounds of fat in a year there will be such an over-production that dairy products will not be worth anything. We can't get the cost of production." There was never a greater fallacy uttered by anyone than that.

Let us look at this for a moment. The man with the four cows placed on the market not quite 38,000 pounds of milk in a year, and the man with twelve cows placed upon the market 48,000 pounds of milk in a year. In other words the man that made a profit of one hundred and fifty dollars more with four cows, placed on the market ten thousand pounds less milk.

Friends, efficient production doesn't mean over-production, but when men begin to be efficient in production they are not going to produce more than the market will demand and will pay a fair price for. It is the low-producing cow, the cow that does not pay for feed consumed is the one that is producing the surplus, and it is the surplus very largely that determines the price of all our dairy products. Let us get that firmly fixed in our mind.

One of the most outstanding examples of how surplus affects the market and how low-producing cows produce a

surplus was found in a cow testing association in Virginia, near Richmond. The farmers were selling their whole milk to Richmond, and they were complaining of the prices that they were getting for it. They said they were not fair, that in comparison with the cost of production they ought to have more. They were right, but how to get more was quite another question when they were putting more fluid milk into that market than it would absorb.

A cow testing association came in among them and at the end of the year it was found that the man who was complaining so much about the price of milk had thirty-six cows, eighteen of those cows didn't pay for feed consumed, and the eighteen good cows that paid for feed consumed had to take some of the money received by them to pay the board of the other eighteen cows, producing seventy-one thousand pounds of milk, when he wasn't getting the price he should for his product.

What was that dairyman's problem? Was it to go and ask the government to build an export corporation or to buy the milk and dump it into the ocean as some have suggested, or was it to let the eighteen cows that didn't pay for the feed consumed march to the butcher? There is only one answer if you think about it; let the eighteen cows march to the butcher. Place seventy-one thousand pounds of milk less on the market so the price will be kept up to a reasonable profit. The farmers of this country must have that or agriculture will go bankrupt, and when agriculture goes bankrupt, I tremble for the welfare of this nation. The people that live on the farm must have an income in proportion to what they contribute to society, in proportion to the man that lives in the city. We must not be carried away by all the things we read about. We read about this fixing of prices and the government entering into our business, but we want to direct ourselves to our own institutions; because if we don't save ourselves nobody else is going to save us.

I have lived long enough to know this: that I have never found any political party giving direct help to the development of agriculture. What we want to look to the

government to do is to pass laws that give agriculture the same opportunity to develop that all other industries have, and that Uncle Sam should see to it that we all play this game square. That is the duty of government. It isn't to market our products, it isnt to save us from our foolishness. I don't want to live in America or any other nation that doesn't permit me to make a fool of myself. We can't save ourselves by trying to lift ourselves with our boot straps.

The dairy men of this country have been more sensible, Mr. Chairman, allow me to say, down here among the corn and the hog fellows, than any other branch of agriculture, because we have gone through this period of depression better. We haven't got the money we would like to have gotten for our product. We never will. I have never gotten as much out of Hoard's Dairyman as I would like to have gotten, but there is a limit to what the industry can pay a man; there is a limit to what the consumer can pay for products. As we view the agricultural situation, the dairy situation, here is what we find: besides the poor cows that I have spoken of, we have neglected to grow legumes for the cattle.

I make up thousands of feeding rations every year; not hundreds, thousands, and right today they are quoting corn down in Virginia at forty-two dollars a ton. The people around here would be glad and would make a profit if they could sell their corn at forty-two dollars a ton. Why doesn't the Virginia farmer grow some more corn? He can; also alfalfa hay. With ground alfalfa around thirty-six dollars a ton all the time, he will have to pay thirty dollars a ton throughout the south when his land will grow from three to four tons of alfalfa hay per year.

Out in Iowa not a month ago I made a ration for a man that was feeding corn silage and old oats and not getting any returns. It was costing him one dollar a bushel. If butter had been worth a dollar a pound that man couldn't have made any money, and if it went to a dollar a pound tell me who is going to buy it outside of the few rich? Was that man's solution to his problem of feeding corn silage and old oats to turn to any better agency than himself?

No, because if we study experiments that have been carried on, if you feed old oats to a cow twenty-five per cent of them passes through her undigested. Moreover, oats and corn will not make a balanced ration. You have got to go into the market and buy some feed rich in proteins: oil meal, cottonseed meal, blood meal, in order to provide protein that cows must have to produce profitable flows of milk.

Why not grow some alfalfa hay in these corn sections? We are selling it from our barn today at twenty-two dollars a ton. Instead of Virginia or the southern farmer paying twenty-five to thirty dollars a ton, why are not they growing some legumes? They can.

It reminds me of a little incident I ran on to in Minnesota. It was when people were very much excited about building an export corporation. This farmer raised barley. He lives in Goodhue County. I went out to his farm; he had sold barley the year before at $22.50. And he said to me, "there is no money in raising grain at that PRICE. We are going to the bad." I said to him, "You are a good farmer to raise barley at fifty cents a bushel, aren't you?" He showed me three carloads of alfalfa hay that he had brought in at the station, from out west, in Idaho, which was costing him laid down at his station twenty-five dollars a ton. I said, "Why are you buying this alfalfa hay, bringing it in from the west at twenty-five dollars a ton when the experiment station has planted some plats on your land and without treatment your soil the first crop produced one and a half tons of hay, and on treatment with lime it produced two tons, and when treated with phosphate it had grown still more? You can produce four tons or better this year, on these plats of twenty acres." He said that he could. "Then," I said, "you go out into Idaho and buy alfalfa and pay twenty-five dollars a ton for hay, when you can grow four tons of it to the acre, or get one hundred dollars an acre, bringing you an income from your land?" "Sure." "Then why don't you raise your three carloads of alfalfa instead of buying it?"

I can take you up and down this whole United States

and find you not one example along that line, but literally thousands. I fully appreciate, as any sensible man must, that agriculture has been going through a period of depression. The farmer's dollar has not been as big as the dollar in the city, so to speak, but we have got things that are encouraging. The farmer's dollar went down to 67 cents at its low ebb, it has now gone up to 87 cents. It did reach 93. We are on the way, and if we can keep the men away who would tinker and administer medicine to our industry just a little while longer, we will be back on the same basis as other industries, and if we direct ourselves to the consideration of those things within our own power to correct, we will bring it about much faster than we can today. Instead of looking elsewhere to save ourselves, let us look strictly to ourselves, and ask the government to give us laws that will take care of our industry on the same basis that all others are taken care of.

What the land needs in this country is more legumes. What our dairy cattle in particular need is more legume hay, more protein. The by-products of the mills in comparison with the amount of feed used on the farm is a mere bagatelle. It fills in places here and there where there is a shortage, where crops may be poor or where a man has not made quite calculation enough to carry his herd through the winter. It comes in in making better balanced rations during all the years, but if we, the dairymen of this country, were to go out and ask for by-products to balance our rations, the old cow would hardly know she was getting any by-products. It is that little in comparison with the millions of tons needed to feed her properly.

Some people think that the price of dairy products are not high enough, and instead of looking to the increase in production of their cows, making them more efficient, as I pointed out, that they have got to get more money. I think myself, when you consider the food value of milk, that it has never brought as much money as it should, or the food value of cheese or butter, but we have got to get in the mind of the consumer that our products are worth more to him than he now holds them to be.

Let us go back into the history of the past few months. In October butter reached a price of fifty-two cents a pound on the New York market, wholesale. Immediately the retail price went up to sixty and sixty-five cents. It was a good price for butter, it placed the dairyman on an equal basis with other industries; his dollar had the same purchasing power, but what took place? A great many consumers said, "I cannot afford to eat butter at sixty and sixty-five cents a pound." They turned to a so-called substitute and ate that. By the price of butter going to fifty-two cents a pound it stimulated production, so we produced in the fall of 1925 a little more butter than we did in the fall of 1924, not much but some. That little stimulation brought more butter on the market; the consumer, saying that sixty-five cents a pound was too much, quit eating it, and the substitute came on the tables of the consumer. It ran twenty-two million pounds more than it did in 1924. Butter fell to around forty-two to forty-four cents a pound in New York.

Now the question comes before the dairy farmer, how can we get the consumer to put that butter down his throat at sixty-five cents a pound? We have no surplus of butter today. I use butter because it is the stabilizing force of all dairy products at fifty-five, but we do get a surplus at sixty-five. Now if somebody will tell me how to get that consumer to buy the butter at sixty-five in he same quantities that he buys it at fifty-five, the dairyman's problem is solved, even though he keeps a lot of cows, only producing three thousands pounds of milk a year. But we find the dairy farmer going out and buying oleomargarine. Shame on them! There was never a cow so stupid as to feed her calf oleomargarine. What right has the farmer to "cuss" about the price of dairy products when he himself says in substance not to use them, "They have gone too high in price for me to buy them." He hasn't any reason for complaining, and yet you find them everywhere, in all communities, buying a so-called substitute for butter.

We have got to eat our own product. We must set the good example before the consumer of the city. We

have got to work for efficiency in production, so I will say in closing—I have gone over my time now—that the problem before the dairy farmers of this country is to eliminate the low-producing cow, the cow that is producing the surplus, and the surplus determines very largely the price of all dairy products.

We must get better cows by the use of pure-bred bulls capable of producing or getting better producing animals than the cows are bred to. We must turn our attention to the growing of more legume hay, because the dairy cow of this country is being starved for protein. We are not feeding our cows enough of that element, and their low milk production in a great many cases can be attributed to the fact that they are starved for the proteins. The dutch cheese, for example, is very largely protein, and you can't make that from a carbohydrate, it must come from the protein of the plants. The soils of this country are crying out for legumes because they have the power of gathering nitrogen from the air by organic matter, and in the decomposition of organic matter plant power is eliminated.

Then we have got to advertise our product, give publicity to its food value and its necessity in the diets of our people, so that they will pay us a price in keeping with its value as a food and in keeping with the cost of production, because I feel unless the farmer of this country is receiving a price for his products in keeping with the products that he has to buy, that agriculture is due to travel on the road to bankruptcy, and when the farmer goes bankrupt I fear for the welfare of this nation.

I thank you. ((Applause.)

President O'Hair: I know you have all enjoyed Mr. Glover's speech. I have very much. It is seldom that you can hear the class of men that we have at the Illinois Dairymen's convention this year. The fact of the matter is we are the biggest organization in the United States when it comes to getting real talent.

I want to make an announcement or two. The first thing I want to say, the folks that are giving us the banquet tonight would like to know how many of us they are

going to have for dinner, and there are two young men here that will sell you tickets, take your money, and if we can know by noon, then we can let them know how many there will be.

I want to make an announcement about our afternoon meeting. We will begin our meeting at one-forty. Mr. Muckleroy will talk to you and you can't afford to miss his speech, because he is going to tell you, I think, about his own plant. It is one of the most wonderful things I have seen in Illinois. He knows what he is going to tell you, and then Mr. Stanard is going to speak at two-ten.

I have asked Mr. Stanard if he wouldn't say something about the tubercular trouble in Illinois. I think he can tell you something there have been a good many people wanting to know, and I am asking him to speak on that subject. We will have Prof. Fraser and Prof. Morrison again this afternoon.

There is just one thing I want to take a minute to give you, talking about the production of the cow, showing you what men can do that will just try a little. I want to give you some data taken over here in one of the corn belt counties where they feed cattle and raise cows.

Illinois is a little bit different from Wisconsin. We do our dairy business with just a few cows, each farmer having some cows.

Along in the summer I thought I would make a survey over in the corn belt countries, so I went to Schuyler Creek Creamery and told them that I wanted to get some data on cream and butter fat production, on the farmers' cows. They offered me one of their bookkeepers and said, "This young lady can go clear through the books and give you what you want." I said, "I want about six months." (Laughter.) I then told her what information I wanted, and not to take anybody having above over ten cows to a farmer; get the number of cows each man had, the average number of cows per farm, the amount of cream and butter fat produced during the six months' period on the farm, tests and prices, and it has developed some very interesting figures. These figures were all taken from actual

tests and tabulations made. The only thing we guessed about was how much they used on the farm. Here are the figures:

VERMILION COUNTY (ILL.) AVERAGE CREAM PRODUCTION

January 1 to June 30, 1925

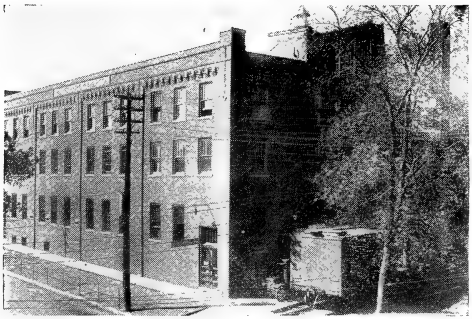
Producers reporting	100
Number of cows milked by producers reporting	414
Average number of cows per farm	4.14
Total pounds cream produced during 6 months' period	126,048 lbs.
Average butterfat test	40½ %
Total pounds butterfat produced during 6 months' period	51,049 lbs.
Total pounds butterfat sold	38,792 lbs.
Average price per pound	42 cents
Value of butterfat sold	$16,292.64
Value of butterfat used on farm in form of milk, cream and butter, at above test and price	$5,147.94
Total value of butterfat produced on 100 farms 6 months	$21,440.58
Average butterfat production per farm in lbs., 6 months	510½ lbs.
Average value of butterfat per farm, 6 months	$214.41
Average pounds butterfat per week per cow	4.74 lbs.
Average value of butterfat per week per cow	$1.99
Pounds butterfat produced per cow per year	246.48

This is in a corn belt county. I just wanted to show you what could be done by the farmers.

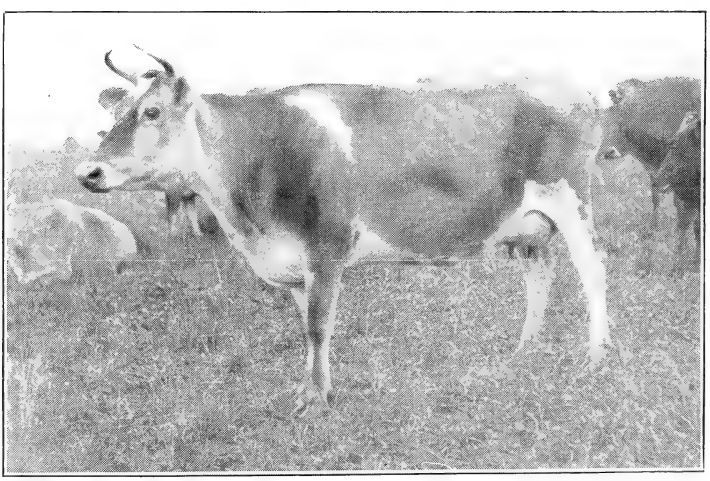
Now we have the next speaker. We had a lot said in the last speech, and this convention is running just like a story I heard. There was a lady in the train and she got a little chilly, and she said to the conductod, "Will you help me on with my wrap?" And he said, "Sure." As he went to put the wrap on her they went around a curve and she fell. He caught the lady and held her up, and said to her: "If you are still cold, we will turn on more steam."

(Laughter.) Now we will turn on some more steam, and we will just keep turning it on all the time.

Now Professor Morisson many of you know, and all of you have heard of him, is going to talk to us at this time. Professor Morisson.



Plant Pioneer Creamery Co.
Galesburg, Ill.



NAME: Raleigh's Lass of Hazeltine ..... No. 572832
SIRE: Vielsie Raleigh Boy ..... No. 208931
DAM: Raleigh's Young Lass ..... No. 478140
DROPPED: Dec. 12, 1922. Registered Apr. 28, 1923.
MARKINGS: Solid color; black tongue and switch.
Tatoo No. 519.
Owned by Louis Nielsen, President Pioneer Creamery Co.

PRACTICAL RATIONS FOR DAIRY COWS

Professor F. B. Morrison, Madison, Wis.

Professor Morisson: Mr. President, ladies and gentlemen: I am glad to talk to you people of Illinois this morning that are here, I am sorry that there are not more people here. Those of us who give addresses to farmers' meetings get used to taking just what comes; when there is a blizzard, we never expect very many people.

I am going to talk to you this morning, not very much upon what we might call practical rations for dairy cows, telling you how many pounds of this and that to mix together to feed a cow to produce an increase of one-half or three-quarters pounds more of butter fat, but I am going to try to show the application of some of the recent discoveries in stock feeding to the practical feeding of dairy cows.

First of all I want to point out that I like to look at all kinds of livestock on the farm as living machines for converting the products of the field into things that are of more use to us, no matter whether it is dairy products, meat, wool, labor or horses or whatever it is.

It is very fortunate for us that these living machines can utilize many crops that we would not care to eat. We would object very seriously if our wives tried feeding us many of the raw products of our fields. The manufacturers of the country thoroughly realize the fundamental fact that in order to get any sort of efficient or economical products, it is absolutely imperative that they keep their factories supplies with the right kind of raw material and in liberal amount. I don't believe any manufacturer ever made much money in running his factory at one-fourth capacity. However, many farmers do not realize those two fundamental facts, that for efficient production they must have the right kind of raw materials for these living factories, and that means running these factories at fair capacity.

Now by supplying feeds of that sort, the right kinds of feeds in the right amounts, we are supplying balanced rations. I am not going to talk to you this morning about balanced rations. That is an old story, dating back to 1864 when Wolf the German scientist recognized that fundamental fact. So that idea of balancing rations is very old in agriculture and in science, yet many people who are using today automobiles, and who have radios in their homes, who are using telephones and these other modern inventions which are all products of an age since the idea of feeding standards and balancing rations, many of these same people do not recognize that this old discovery of balanced rations is probably more essential to their happiness and welfare than a radio or even a telephone. There is absolutely no question about it.

Now, just a few things about the importance of balancing rations and the practical significance of it. Just as Mr. Glover has so well spoken this morning, the fundamental lack in dairy rations is commonly a deficiency of protein, and it is impossible for a dairy cow to produce efficiently or abundantly unless that need is supplied.

Now he has already given part of my speech, in pointing out how legumes will supply a great need in the dairy ration. Just let me mention some experiments carried on at our institution which illustrates that point. Professor Hart, of our Agricultural Chemistry Department, a few years ago carried on so-called matabolism experiments wherein he analyzed all food consumed by cows, and then collected all the facts and circumstances over a period of one year and analyzed them.

He found that when a cow was fed even good clover hay with good corn silage and other farm grain, if she was producing thirty of forty pounds of milk, the cow was constantly losing protein or nitrogen from her body.

Right there is the first reason why milk is such an excellent article for human diet, not only for children but for adults as well. A cow cannot produce this high protein food unless supplied with plenty of the proper ration.

When cows are fed an abundance of alfalfa hay, all

they will eat twice a day with all the corn silage they will eat twice a day, and just some grown grain, corn, barley, or oats, cows producing even thirty or forty pounds of milk a day can be maintained in protein balance. They are not losing protein or nitrogen from their bodies.

We carried on experiments with our pure-bred cows in the regular dairy herd during two different winters, we fed one group of cows nothing but alfalfa hay, corn silage and a mixture of half oats and corn, ground of course. The other ration we fed to another group of cows, consisting of the same feeds, except we substituted three-quarters of a pound of linseed meal and three-quarters of a pound of cottonseed meal for the same weights of corn and oats. Most of us would guess that the cows getting the linseed and cottonseed meal in addition to this home-grown ration of alfalfa and corn silage would produce somewhat more milk or butter fat. To our surprise in neither experiment did they. Throughout the winter the production was just as good on the home grown ration, though these were pure-bred cows producing at least one pound of butter fat a day.

When we figured up the results we found that this home grown ration had supplied a pretty well balanced ration. The nutritive ration of this ration was one year about one to 6.9. That means one pound of digestible gluten protein to 6.a9 pounds of other matters. That is a gluten protein to 6.9 pounds of other matters. That is a mend for feeding year in and year out to good pure-bred cows or high grade cows, a diet with quite as low an allowance of protein as that. I am not quite sure whether the effect over a long period of time would be as good as if a little more protein was supplied. In other words I believe a good dairy cow, a highly efficient cow, is entitled to the benefit of the doubt. I do know that if the Wisconsin and Illinois and Indiana farmers were feeding that sort of a home grown ration this winter they would be making a tremendously larger net revenue from their farms. Right away that means they would not have to worry about the price of feeds. If they were producing

on their own farms an abundance of hay legumes, corn silage and farm grain, corn and oats or barley and oats, they would make themselves independent of the feed manufacturers.

For feeding cows in an official test, most certainly I would advise a different sort of ration, but if the dairy farmers of the United States would make the attempt to raise a good home grown ration largely, and balance it by the use of liberal amounts of legume hay, they would greatly increase their profits. At the present time for the real efficient dairyman I would recommend, even with alfalfa hay, corn silage and corn grain, the use of a small amount of high protein concentrates.

Mr. Glover mentioned the difficulties he has when a farmer writes in asking him to balance rations for him. Nothing makes me feel much worse than when a dairyman writes in and asks us to make an efficient ration for him and he tells us he used timothy and maybe corn silage for his roughage. We cannot make an efficient ration that will produce milk efficiently or abundantly on that sort of a roughage combination, and you men all know it.

One of the difficulties in talking to this kind of an audience is that the fellows that need these lectures are not here. The only advantage is that you can take some of the things they should know back to some of your neighbors, and when they ask questions you can give them a little advice, because the very men who need these facts with reference to increased efficiency usually do not come out to meetings such as this; and that is a fact college men recognize very fully.

So much for the old idea of balanced rations. If any of you want to know what sort of feeds to use, write to your agricultural college, to such men as Professor Fraser, men like that. Get in touch with your county agent, and those men will tell you what sort of rations to use. As Mr. Glover has pointed out, he balances several thousands of rations for cows per year. So in 1926 there is no excuse for any farmer failing to feed his stock efficiently.

Let us take up now some of these more recent discov-

eries in stock feeding and their practical application. Robert Burns wrote: "A man's a man for a' that and a' that." Now that is exceedingly good poetry but mighty poor horse sense as you all know and will agree, because men differ radically in their capabilities, in their training and in their integrity. I don't need to discuss that further. I merely want to point out the fact that the different proteins fed differ as much as men do in efficiency and in quality.

Proteins are the most complicated of all of the feeds which an animal consumes, undoubtedly. Let me illustrate just how complicated they are. Any of you who have had any chemistry know that the chemical formula for water is H_2O. That means that one molecule, the simplest particle of water, contains two atoms of hydrogen and one of oxygen. Then there is NaCl. Compared with those very simple substances the best chemists who have been working on the composition of proteins tell us that the simple protein molecule contains all the way from three or four thousand up to ten thousand atoms of milk casein. According to the most recent investigations a single molecule of milk casein apparently contains about one hundred thousand atoms. Do you blame the chemists for not knowing all about the composition of proteins? Think of a single particle of casein containing one hundred thousand atoms arranged in an intricate pattern. All a chemist can tell us about proteins is by means of experiments where they tear the patterns all to pieces by the action of strong alkali or strong acids, and break the proteins down and study the fragments of which they are composed. It would be a great deal as though a cyclone or tornado demolished this building, and then looking at the fragments left on the ground it would take a very vivid imagination to tell something about the architecture of the building.

About all we know with reference to the composition of proteins is that the proteins of feeding stuffs and those which make up our bodies are made up of from eighteen to twenty different building stones or amino acids. I shall use some scientific and technical expressions this morning and this afternoon, and I am not going to apologize for so

doing. I believe if farming is going to remain a profession in the United States—and I believe it is going to be—instead of being reduced to a peasant organization, we have got to farm fully as much from the collar band up as from the collar band down, and that we have got to adopt a scientific type of thinking and a scientific vocabulary. You users of automobiles know all about superheat, we use such terms as carburetor, we don't need to shy away from amino acids and other scientific terms relating to feeding.

Speaking of carburetor, I am reminded of the story of a man that had been driving an automobile for ten or twelve years. It had gone along during that time, apparently, without giving him very much trouble. One morning it spit and spluttered, he couldn't get it to fire right, so he drove the car into a garage and said to the man in charge, "I think there is something the matter with that thing-a-majig that mixes the air with the gas." And the man took a look at it and said, "Have you been driving a car all these years and don't know what a carburetor is?" (Laughter.)

How can you get efficient mileage? How can a man who doesn't know much about amino acids or scientific feeding expect to get efficient mileage from his livestock? It is more important that a man know something about how to get efficient mileage from his livestock than that he should know the scientific names of the parts of his car; and most of these terms in stock feeding are not so hard to spell and pronounce as are the terms used for your radio or your automobile.

Going on to amino acids, if you don't like that term call them building stones and I will not argue with you. The important thing is to realize that proteins are made up of eighteen to twenty of these building stones from products like—take certain of these acids; about half of the protein of corn is made up entirely of a single protein. They are not zern. Corn fat entirely makes certain of these, if you please, amino acids.

You take a pig and give him all the corn fat he can eat, and the pig cannot grow at all because he does not

get the essential building stones. An animal can take certain amino acids, chop off a chunk and make some of the simpler ones. If a carpenter has some one by six inch boards and he wants a one by three, and he has a ripsaw, he can manufacture the one by three, but you must remember that most of the amino acids or building stones must be present in the feed, and the animal can't manufacture them from anything else it gets, so this pig may have all the protein you can feed him in the form of corn fat, but he can't grow at all. On the other hand if you give him corn grain he can grow some, not very efficient, because the other proteins are not so lopsided as this first protein of corn.

To show the tremendous practical application of the quality of proteins in stock feeding let me give the figures obtained in certain experiments carried on by our Agricultural Chemistry Department, where they have taken young pigs and put them in cages where they can analyze the feed, feces and urine, and tell what is happening to the pig.

We find when pigs are given corn protein as the only kind of protein, that the pigs will be able to use for growth only twenty-three per cent of the entire protein they eat; on the other hand, when they are given milk protein as the only protein, instead of using only twenty-three per cent, the efficiency is sixty-six per cent or just about two-thirds, a tremendous difference then in the quality of milk protein and corn protein from the standpoint of stock feeding. ?

One of the most important facts from the standpoint of stock feeding is this: that all of the cereal proteins are badly balanced or they are lopsided in composition, no matter whether corn, oats, wheat, rye, kaffir, buckwheat or anything else. All the cereals are badly balanced in composition, so you get the same results approximately with wheat, oats, barley, as you would with corn.

Now, how about mixing these proteins together? If you take one of our high protein concentrates, linseed meal, and test it out, you will find that, fed alone, the efficiency of linseed meal is less than that of corn, being seventeen

per cent. However, if you take corn having an efficiency of twenty-three per cent, and linseed meal seventeen per cent, and mix them together, you will supplement the deficiencies of your feeds to some extent, and that the combination will have an efficiency of thirty odd per cent. In other words corn and linseed meal do not have quite the same deficiencies and they tend to suppliment each other. On the other hand if you take corn with an efficiency of twenty-three per cent, and milk with an efficiency of sixty-six per cent and mix them together to make a balanced ration, you will have increased the efficiency of the whole combination to about the same figure that milk has, approximately sixty-odd per cent. In other words milk is not only rich in these building stones or amino that are apt to be lacking in the cereals, but it is so large it can make good the deficiencies in the cereals.

Here is a tremendous and important fact with reference to the use of milk for humans: milk is not only rich in proteins but it has the kind of balance, the protein to balance the deficiency in the protein in other articles of diet.

Just what is the application of this quality of protein to practical stock feeding? The matter may be of tremendous importance in feeding swine or poultry, because swine and poultry do not consume much roughage.

In experiments that we have carried on with swine the results have been very drastic, you might say. These results show that linseed meal or wheat middlings or gluten feed or corn germ meal are not efficient supplements to corn when fed alone; only inefficient results are secured. In trials which we have carried on using linseed meal as the only supplement to corn, even to pigs on pasture it has been worth only about sixteen or seventeen dollars compared with tankage or meat scraps. On the other hand when we have used linseed meal with tankage, to make a linseed meal feed, it has been worth more than tankage instead of less.

That is an illustration of how in swine feeding it is an asset of importance to have a well-balanced protein for

use as a supplement to the cereals, consequently the high value of dairy products, skim milk, buttermilk and whey in the feeding of swine.

The same thing applies in chicken feeding and in feeding the laying hens. Any of you people or any of your neighbors using a ration made up of corn, wheat, oats and other grains, along with such feeds as linseed meal, wheat middlings, and gluten feed, any of these sereal proteins, cannot expect efficient production from your hens on that ration, on account of the poor quality of the proteins. By the addition of dairy by-products, meat meal or scraps, the efficiency of that ration san be tremendously increased.

What is the importance of quality proteins in feeding the dairy cow? In feeding the dairy cow or sheep or horses the quality of proteins in the feed is not anywhere near of as much importance as it is in feeding swine or poultry, for this reason and under these conditions only: when these animals are supplied with plenty of legume hay, they already get proteins of high quality. If a man was using timothy hay and oats straw as a roughage allowance for his dairy cows, he would need six times as much, nearly, as a man feeding swine would; but if a dairyman shall use a liberal allowance of legume hay for his dairy cows, he does not need to pay very much attention to the quality of proteins in his ration. In other words in figuring out which supplement to use under those conditions he can figure out and find which protein, which supplement furnishes digestible food protein the cheapest and largely govern his decision on that basis. If cottonseed furnishes protein cheaper than linseed meal, he can use cottonseed meal.

If a man is using gluten feed, even as the main source of protein, if he is using legume hay and corn silage, gluten feed is a corn by-product and does not contain the corn volume. Gluten feed furnishes the same kind of protein as corn, having certain deficiencies, but an entirely different fat when fed under like conditions, and makes a good supplement when used with legume hay and silage.

That is an exceedingly important point to bear in

mind, that when there is plenty of legume hay in the ration a man should see which supplement furnishes protein at the least price, at all times paying attention to the physical characteristics of these feeds. For example, if a man has an abundance of alfalfa hay, with farm grain, and has a lot of bran to feed, you will have to look out that the ration is not too laxative. He would not want to use too much linseed meal. Use cotton seed meal. On the other hand if he has timothy and corn stalks, then use corn and oats. He will have to use a laxative if he is using a lot of these, and he would use linseed meal.

Now at any time I will be glad to answer at the close of this discussion or this afternoon, any questions on the application of this method of the selection of proteins in feeding the dairy cow. I shall take up this afternoon the question of minerals for dairy cows, but I will make a few remarks right now with reference to the conclusions we have reached concerning minerals for dairy cows, and give you the results of these conclusions this afternoon.

First of all cows should get plenty of common salt. You people don't need to buy it from a mineral feed manufacturer. Mix a half-barrel or a pound of salt in every one hundred pounds of concentrates, and then I believe it is a good plan to let the cows have what salt they want in addition.

In addition to salt, what minerals are apt to be lacking in the ordinary rations in the feeding of dairy cows? The only two minerals that are apt to be lacking in the rations fed dairy cows are calcium and lime or phosphates. That is because milk is so rich in calcium and phosphorus.

We have here another reason why milk is such excellent food for humans, because it is rich in calcium and phosphorus besides common salt. We may not give our stock sufficient salt, but usually with the salt cellar at hand we will use enough of it on our own tables.

How should we supply limes and phosphorus? The best way I know of supplying lime in the ration of the dairy cow is by the liberal use of legume hay. Alfalfa contains 19½ pounds of calcium oxide per thousand pounds. Corn

grains contain only two pounds of calcium oxide in a thousand pounds, less than a one-half pound of lime in a ton of corn. You would pretty nearly have to hunt for it with a microscope. You can't blame a cow for having heart trouble on a ration made up largely of corn, in producing milk efficiency, because she will soon be up against a lack of lime.

The best way of furnishing lime is through an abundant use of legume hay. As I shall emphasize this afternoon, if a man has plenty of alfalfa hay, soy beans, or even clover hay as far as we know he may get no benefit through adding the additional lime to the ration of his cows.

Now I believe it is a good thing again to give a good cow the benefit of the doubt, and with a high producing herd, so even with an abundance of legume hay I would probably add a little lime to the ration, probably two or three pounds of ground limestone to each two or three pounds of the mixture. I cannot guarantee that the cows would get any benefit from that. I do not know enough about it yet. It wouldn't do them any harm, and probably it might do them some good. Limestone or wood ashes are cheap, so you don't need to worry about putting a little of it in but fortunately for us most of the protein-rich feeds are not only rich in protein but also rich in phosphorus.

That is probably true of wheat bread, wheat meal, cottonseed meal, linseed meal, peanuts and soy beans, and consequently peanut meal and soybean meal; and if the concentrate or grain mixture that is being fed to dairy cows contains one-fifth of these high-phosphorus, protein-rich feeds, if there are twenty pounds in a one or anyone of those feeds I have just mentioned, as far as I know there will be no lack of phosphorus in the ration.

That is an exceedingly important matter. You can furnish lime by the use of ground limestone, wood ashes or marl. Those furnishing phosphorus you have to go to the higher priced supplements to get. I said phosphorus is sometimes used as a ground rock phosphate. At the present time we do not recommend the use of a ground

rock phosphate because sometimes it does not give good results, and I will discuss that this afternoon.

If there is not sufficient phosphorus in the ration, if a man is feeding a mixture which does not include one-fifth of these high phosphorus feeds, instead of using ground limestone or calcium supplements, I would advise him to use two to four pounds of ordinary bone meal or bone black in every one thousand pounds of bone mixture; and if you have had any trouble from goitre or big neck in calves, then use the iodine treatments. Where you have not had any trouble from that, I would not recommend that as being an essential. In my opinion it is entirely unnecessary to purchase a complicated mineral mixture for dairy cows.

In closing, just what is the importance of the new substances discovered, the vitamines, in the practical feeding of dairy cows? Several rather extensive books have already been written on vitamines, chiefly as applied to human nutrition. We wont have time to discuss those, the history of their development we are not concerned with very much, but I will merely point out the practical application of each one of these vitamines to the practical feeding of livestock.

Vitamine A or the first class of vitamine is very soluble and is of tremendous importance to the dairy industry. This vitamine is essential for growth and even for the maintenance of health for adults, and we are proud of the fact that dairy products, including butter fat, are one of the best means of supplying this vitamine to the human race. So there again is one of the fundamental reasons for the use of dairy products in the human diet.

There is no product on earth for human feeding that has the advertising possibilities of whole milk and other dairy products, and I don't believe yet that the dairy industry has begun to realize the possibilities from the wise use of advertising the increased use of dairy products. If we advise people to eat more of this, that and the other thing, it means they will eat less of something else and maybe they will not be any better off, but we can feel whenever

we advise people to consume more dairy products in general, that they are going to be benefited thereby in addition to benefiting their pocket books, so we can be good business men and altruists at the same time.

From the standpoint of stock feeding, the most important thing with reference to vitamine A is this: vitamine A is contained in large amounts in all green-leaved plants. Right away that means that all the livestock on pasture do not suffer from a lack of vitamine A. Furthermore this vitamine is not destroyed when hay is cured well, so that the good green color is retained, therefore all livestock which consumes fairly liberal amounts of good, well-cured roughage get an abundant supply of vitamine A. That frees us from a great deal of worry about vitamine A in stock feeding, does it not, that one general fact with reference to high content in green-leaved plants. That means when stock is fed plenty of well-cured hay we do not need to worry about vitamine A.

When feeding swine and poultry there may be a decided lack of vitamine A because these animals do not eat much roughage. Yellow corn is rich in vitamine A, while white corn is lacking in it. We found out in experiments with pigs that we could kill young pigs by feeding them white corn, lacking vitamine A, and milk with plenty of water and so on. This was due to a lack of vitamine A, and also another vitamine. However, by simply mixing in five pounds of chopped alfalfa hay, good, well-cured alfalfa hay, the situation was entirely changed, and on a combination of ninety pounds of white corn and five pounds of chopped alfalfa and skim milk, the pigs would do just as well as on yellow corn and skim milk.

In feeding white corn to swine and poultry in the winter time, be sure you have some other feed furnishing plenty of vitamine A or you may run into grief. I am not talking primarily about swine feeding, but I will interrupt at this time to state that in feeding swine the two most important things are an abundance of growing pasture during the growing season for all pigs and hogs, and also legume hay for all pigs in the winter time. The same importance of vitamine A applies to poultry feeding.

Vitamine B or a water-soluble vitamine, is a vitamine which prevents beri beri, a disease which the Filipinos, Japanese and Chinese used to have when they used all polished rice. We do not need to worry about vitamine B in stock feeding, because ordinary grains and hays are rich in it. That is an exceedingly important matter for us, because a certain concern has been carrying on extensive propaganda to try and persuade us to feed yeast to livestock.

We have experimented with pigs, starting at weaning time, and yeast feeding has not been beneficial or economical, no matter whether fed dry or fermented. The pigs in the latter case did not appreciate their blessings. The action of yeast is to change carbohydrates into alcohol, and we got a good experimentation with these pigs. The results, I think, with the other experiments carried on by the men with calves in our station, and with swine, show that we do not need to feed yeast to dairy cows or calves.

Vitamine C, I could discuss in considerable detail. I will not. Lack of vitamine C causes scurvy, which affects only man, monkeys and guinea pigs. It does not affect farm animals, therefore we do not need to worry about vitamine C in stock feeding.

I shall discuss this afternoon vitamine D, which has a very great and profound relationship to the mineral nutrition of animals.

Vitamine E, the last vitamine, or Vitamine X as it is sometimes called, was found by Evans of California. We know very little about it, yet it is concerned with reproduction, and if animals do not secure this vitamine they are not able to reproduce. The ordinary feeds contain vitamine X; I doubt whether vitamine X is going to play a very important part in our study of vitamines in relation to stock feeding.

Now for a short summarizing with one or two general statements. What do all of these new discoveries in feeding mean in the practical feeding of dairy cows? There have been a tremendous number of experiments carried on by scientists in various parts of the world. All these dis-

coveries to my mind simply give us additional reasons for feeding more legume hay to our livestock. Why? Legume hay is rich in protein, has more carbon emphasis, it helps in balancing rations. Legume hay is not only rich in protein but it contains protein in the quality to supplement the protein in the farm grains.

Legume is rich in calcium, the mineral constituent which is most liable to be lacking in farm rations. It also contains phosphorus and is rich in vitamine A. It is rich in vitamine B, but that doesn't make much difference, because most of our ordinary rations contain plenty of that vitamine. Legume hay also has a fair amount of vitamine C. So all these recent discoveries in stock feeding simply give us additional reasons for raising more legume hay throughout the United States, no matter whether alfalfa, soy beans or cowpeas, whatever hay is best adapted to the particular locality in which you live, raise more legume hay, which will not only net return from our farms but will aid in building up and increasing the greatest returns from our farms, and will result in more progressive agriculture. (Applause.)

BOYS WHO WON PRIZES

President O'Hair: I am going to read the boys' names who won first place in team judging:

Galesburg High School—Halsey Miles, Forest Moberg, Clarence Deale, Chas. Nelson (Alternate).

Placings in individual contest—

$8.00—First, Raymond Nelson, Galesburg.

$7.00—Second, Halsey Miles, Galesburg.

$5.00—Third, Forrest Moberg, Galesburg.

$2.50—Fourth (tied), Ruloff May, LaMoille.

$2.50—Fourth (tied), Floyd Johnson Geneseo.

Here is your loving cup. (A large and beautiful loving cup was displayed.) Mr. Caven will have whatever you want put on it this afternoon and turn it over to you.

As we are in a hurry now to get over to a luncheon, and they are waiting for us, I want at this time though to give you the nominating committees on resolutions:

Resolutions Committee—Louis Nelson, Louis E. Hazlett and N. F. O'Hair.

And on the Nominating Committee—Col. C. C. Miner, Professor R. E. Caldwell and Mr. Weyler.

You folks can report here in the morning at ten o'clock.

Secretary Caven: Will you read again the names of the winners in the individual judging contest?

President O'Hair: Yes. Raymond Nelson, Halsey Miles, Forrest Moberg, and two boys tied for fourth place; Ruloff May and Floyd Johnson.

The afternoon session will begin promptly at 1:40, and we are then giving you ten minutes extra. Professor Muckleroy will be the first speaker, and Mr. Stanard speaks at 2:10, so all of you come back and we will have a good meeting this afternoon. We have had a good meeting this morning.

The meeting adjourned.

WEDNESDAY AFTERNOON SESSION

January 27, 1926

Mr. Chas. Foss, Temporary Chairman.

Mr. Geo. Caven, Secretary.

The Chairman: I would like to suggest that all the people outside come in, it is time for us to open our meeting. Mr. O'Hair is busy at the present time, answering some phone calls, and he requested me to open the meeting.

I wish those of you in the rear would occupy these seats farther in front; and will someone in the lobby please inform the people we are ready to begin the program and have them all come in? We want to begin the program promptly.

Our first subject on the program this afternoon is "Some Lessons as a Beginner in Dairying," by Professor Muckelroy. I want to say in behalf of Professor Muckelroy, that he understands his subject and knows what he is going to talk about, and he is going to talk to you from the standpoint, I am sure, of a farmer, for besides being a teacher in the Southern Illinois Normal School, he is also an actual farmer, and what he has to say this afternoon is going to be from actual experience, I am sure. Professor Muckelroy.

SOME LESSONS AS A BEGINNER IN DAIRYING

Professor R. E. Muckelroy
Southern Illinois State Normal University, Carbondale

Fellow Dairymen: It is indeed a pleasure for me to come into this section of the state and to discuss with you some of our problems that are in common.

I have been attending our State Dairymen's Conventions for several years, and I have listened with a great deal of pleasure and profit to the discussions which have been of a more or less technical nature. I have taken these fine things and built it into my own will power and, as I feel, have been moving into some principles of constructive dairying.

I am under obligations to our friend to make this talk just as short as I can, and to make it just as pointedly as possible. You know, gentlemen, I live way down in southern Illinois, in a section of the state that is altogether different from yours. You here on this upper Illinois elevation have a probability to contend with which we do not. In other words your nitrogen content is nearly twice as much as that of the lower Illinois agronomist, your phosphorus is nearly one-third greater, your potassium content is nearly one-fourth greater; so the problems in fertility which we have to meet are not in common, but there are some general principles which you and I have to deal with, which are absolutely in common, and the first thing that I want to mention is the balance of livestock with our farm food production, the whole meat with your troubles as well as the meat with ours. In other words if you and I are going into the dairying business we don't want to start with a number of cattle, with a number of horses, and with a number of sheep that is altogether beyond what we can produce our feed for, because no section of the country or county ever was a great dairy section that did not produce the greater part of the foods. No individual ever became

a great dairyman, a constructive dairyman, and a productive dairyman, that did not produce the greater part of his feed that he feeds.

I have seen more dairymen grow absolutely discouraged and disgusted with the dairying problems because of this one fact than any other thing that I know of, so if you and I are going into the dairy business we must bear in mind that we must balance our livestock with our feed production. It may be a slow process at first, but if we start with four cows or five cows or six cows and understand cow life as you and I understand our fertility, we are all moving along together.

Another thing, if we have the right number of cattle that we start with, and if we have some six or eight or ten horses to eat up all the overhead profit which we have, then we are charging the whole thing up to our cattle and we are feeling that we are not making a profit. There is many a dairyman who would make a good profit if he had the right number of cows to start with, and who would cut down his horse supply in correspondence with his products, but if we keep ten horses when we only need four or five horses to maintain our farm properly, you can see where the profit goes. So, gentlemen, those are the things which we have got to come in contact with if we ever move into successful dairying.

Because I have so many boys in my classes who come from these conservative homes that want to know these things, and because of the fact that in southern Illinois in order to get by with a thing we have got to prove it, it has led me to be very cautious in some of my work in dairying to show if we rightfully balance our livestock with our fertility and go into livestock as our fertility increases, or if we can produce food which we feed our livestock, it means all the pleasure for you and me.

What sort of feed shall I grow? I care very little for crop rotation unless it provides for the feed which my cattle need. I believe when we raise our own feeds and feed it and put the fertility back on to the soil, we are growing more in the way which we should grow. For example, I

believe we should grow corn, I believe we should grow oats, and the third thing we should grow is a legume. I do not know how much legume you grow, because the fields are covered with snow; I am hoping that half of the fields in this section of the country are fields of alfalfa, because of the fact that if we can grow more corn, oats and legumes, those are the feeds which cattle eat and use.

You say, "I can grow my corn, and I can sell that corn and buy alfalfa hay." I don't care if you do, you can raise it much cheaper than you can buy the alfalfa hay, and if you raise it you have got it. I raise my corn, I raise my oats, I raise my legume hay, and just as my farm or any of the farms in southern Illinois will produce more hay, will produce more corn and oats, I put on more cattle to consume that, and not a dollar's worth of corn and not a dollar's worth of oats or legume hay goes from my farm, because if I don't do that I am selling and selling everything from the soil, as we have been doing all over Illinois all these years.

If we grow legumes we are supplying vitamines and mineral content, which has been and will be talked to you today and tomorrow.

The question comes, if we grow these feeds, the next thing is for us to prepare those feeds. Corn as it is grown is not fit for a cow to eat, but it must be ground. Some of our soy bean hay must be ground; it is too woody. Some of our alfalfa may be ground to mix with it, so the very first thing I did in my dairy work was to prepare—first to grow my seed, second to prepare that seed.

I bought a feed grinder, that is a combination feed grinder. That is called the Letts grinder. It is the best I know on the market at the present time because it is an ensilage cutter combined with a feed grinder, and I could fill my own silos and grind my own feed, and more than that if I wanted to, and I did too, I could grind my own alfalfa hay and my own soy bean hay in order to supplement the bran.

The feeds which I have been feeding in a mixture were 600 pounds of corn to 600 pounds of ground oats,

good oats and corn, you understand, 400 pounds of bran, either bran or ground alfalfa hay or ground soy bean hay, and sometimes I alternate the two because of the fact of the increased palatability if nothing else; and when you grind alfalfa hay it is much cheaper than the use of bran, and it has the same nutritive ratio. Combined with 200 pounds of oil meal and 200 pounds of cottonseed meal, that will make you a ton of feeding material. You can find that in Mr. Wilson's lessons on feeding. Let me repeat it:

600 pounds of ground corn.
600 pounds ground oats.
400 pounds bran or ground alfalfa or ground soy bean hay.
200 pounds of cottonseed meal, making the total

1600 pounds of mixture.

Or, you can leave off your linseed meal and use wholly cottonseed meal if you are feeding silage very heavily.

That is my grain ration, and here is the thing I want to say to you in passing, that no man ever made a profit on his dairy cows because he was short of feed and had cut the feed off. You want a better selection of cows rather than to cut off feed from the dairy stock you have, because it isn't profitable business. Run the machine to its capacity or get rid of one of your machines.

Then with this ration of grain which I have been talking to you about, I feed my silage, I feed a silage of ordinary corn which we grow, with soy beans grown in it. They make the finest silage I have ever tried to feed. I have fed the corn silage with the sunflower, and it is not nearly so palatable as the green silage with the soy bean. Cattle like it so much better and they will eat so much more of it. It is so much better than the old rule of thumb method of feeding.

I like to feed my cows well; my Jerseys I like to feed one pound of this ration to every two and two and a half pounds of milk which they will produce for me. Let me say I think it is just as essential for you and I to know what

our cows are giving, and to pay them back in good nutritive feeds, as it is for you and I to go into a store and ask for something and lay the money down and pay for it as we go out.

Sometimes I get rather, oh, not fussy, but sometimes I get rather out of patience with our cow testing association work. It is the finest thing that ever was, one of the biggest things that ever was, that ever struck the American farmer, but, gentlemen, we can do it ourselves if we have got the will power. We ought to know the value of every cow that stands in our stalls, and until we do do it we are not going into successful dairying, but whenever we can feed our cows in proportion to what they are giving us, and know what they are giving, and know the butter fat test, we are working on a basis that will enable us to become successful dairymen. It is a mighty fine thing for you and I to be able to run our own business, but the minute our business begins to run us we have got our nose to the grindstone, and if we are going to run our business in so far as we know the game, and whenever we don't know the game things soon get the upper hand of us, so with my Jerseys I feed one pound of this mixture to every two to two and one-half pounds of milk which they produce for me; and of course you understand with the alfalfa hay and soy bean hay my cattle get alfalfa hay at night and soy bean hay in the morning—no, I take it just the other way around, they get soy bean hay at night. I have my man kick it around to the mules and our horses, and they get their alfalfa hay in the morning so they can eat it and good days they get out and get some fresh air and things of that sort, but my cattle get the legume hay through and through.

We raise redtop in our section of the country, but as Dr. Hopkins has said to me, what are we going to raise in southern Illinois when we can't raise redtop? We can raise legumes if we will to a great extent. You can raise very many cowpeas in this section of the state. We do in southern Illinois, but the legume is the one thing we have got to do, and I cannot understand how a man can be a dairyman who does not grow a legume or feed it, and if

you have got to buy it there is where the trouble is; so with my Holstein cows I like to feed one pound of this mixture to every three and three and a half pounds of milk which they produce.

That may be open to some argument. With my Guernsay cows I like to feed, by testing, between one pound of this grain to every two and a half to three pounds of milk which they produce for me. You say the Guernsey is the middle ground. Perhaps it is; I am not discussing production at this time. We have got to come to some understanding as to what these cows are going to consume and what it is going to be worth to the cow. I take a great deal of pleasure in knowing when a cow gets down to a certain level, how much she is costing me to feed her. I haven't a cow in my yard that begins quite so low as this, but a cow that weights one thousand pounds, when she gets down in her lacteation period, either when going dry or otherwise, that she is giving ten pounds of milk per day—and of course a cow that doesn't give more than that per day ought to be shot to begin with—but she is going to cost me $1.95 per hundred to reproduce her. A cow that produces twenty pounds costs me around $1.30.

These are simply chart figures in which I like to talk with my fellow dairymen, and which I can explain to him in ways in which he is educated to what we are doing.

A thirty-pound cow costs me around $1.10 to produce one hundred pounds of five per cent milk. A cow producing forty pounds of milk costs one dollar, one dollar and two cents, and sometimes we have a cow around a thousand pounds that may give fifty pounds. Her milk is never quite as rich as these, only about four to four and a half per cent, and we can produce that milk around ninety-five cents.

Then comes materials of Holstein cows. A 1200-pound cow when she gets down to a point of production of only fifteen pounds of three and one-half per cent milk, costs me $1.70 to produce that milk. Around 30 pounds of milk costs me $1.05. Forty-five puonds of milk per day can be produced at a cost of ninety cents, and around 60 pounds

of milk can be produced at a cost of eighty cents a pound.

Now, gentlemen, these are comparative figures. It is just what we get by knowing the weight of our cows, knowing what they produce in actual pounds, in gallons, counting the volume by actually weighing the milk, by knowing how much our butter fat test is, and by feeding the most in response to what they produce.

These are things that our cow testing associations do to be sure it is the thing which we can do ourselves, and the sooner we get to it the better it is going to be for us.

Another thing which you and I have to contend with is the selection of the right kind of cattle. I am not telling you what kind of cattle to buy. It is a question that is asked me many and many times, but the cow that is the best cow for you is the one that you want to buy. Let me say to you this: you and I can't be successful in dairying when we have one whiteface, when we have got one brindle cow, one white-spotted, and one all-black with the exception of white under the body and a white-tipped tail. We can't be successful dairymen when we have got all colors of the rainbow in our yard. You might as well come to that conclusion, because of the fact that we don't know where we are going to be. The sooner you and I get set on the color, the sooner we get set on the size of the cow we want, and the sooner we get set on the kind of feed and what we are going to do, the sooner you and I are growing into successful dairying.

So it is as to the kind of a cow altogether, as to what we want her for. In my own experience I am a Holstein man because of the fact that things as I used to take them indicated I needed the Holstein, but because the bottom dropped out of butter fat I felt that I needed to change. I had started out to sell butter fat, and I was going to the wall every day I sold butter fat. Perhaps you are not—I am glad you are not, but I couldn't make a profit on butter fat, even by feeding the skim milk to my hogs. If I were to do that I would still hold on to the Holstein, but I started in the retail business with a few of my friends a year ago this month, with a Jersey. Our town was already

overdone with retail milk. A few of my friends were called out and asked, "Would you like to have some good Jersey milk?" They said, "Certainly." I started to deliver that milk with a pony cart with a crate on the back end. Things started. I soon got to selling all of my Jersey milk, and the next question was, what shall I do with my Holsteins? And within sixty days I had cleaned out a little herd of Holsteins and put in Jerseys. Now I retail milk from two pure-bred herds of Jerseys and Guernseys and I wish I had more.

When I started in to deliver milk I delivered with a pony cart, then with a spring wagon, then I bought a back end for my Ford runabout, closed it in and painted my sign on the outside of it: "Whole milk from pure-bred Jerseys and Guernseys." Before I did that we were delivering milk three or four times a day, taking the profits off running of the road too much, and I had to get a milk drop and a label, and I carried my sign on my milk drop; and no other gentleman ever puts his sign on my barn. When a man comes to me and says, "Let me paint your barn, I will put my sign on it," I say to him, "Let me put the sign of my old Jersey cow on your building." When we get to a place where we are going to advertise our own business and put our own name on our barns, we are going to keep them painted, and we are going to put our own signs on them, "Duroc Jersey Hogs," and good poultry, and quit letting our business men, however well they may love us, dope up our barns and things of that sort with red spot paint and castor oil signs and a thousond other things, then you and I are going to advertise the sale of our own products.

As to our feed proposition down in southern Illinois, we have men who like to dope up our barns with their patent feeds. I am not against our commercial dairy feeds. The only thing is that they are too high, that is all, and if you can afford to buy those commercial dairy feeds and feed to your cows you are beating me, because of the fact that when you buy those high priced feeds it is all right if you can afford it, but your dairy cows have got to pay the

bill and you have got to extend the overhead expense, but when you raise and grind your own feed, I am grinding and mixing my own feed with a twenty per cent protein costing me $1.55, from $1.50 to $1.63, an average of $1.55. Can you buy one feed with a twenty per cent protein for that? If you can, go to it. But we in southern Illinois can't do it yet, so I feel when we grow these feeds and begin to prepare them we are doing that much in the way in which we should.

When I bought my feed grinder, ensilage grinder and feed cutter in order to cut down overhead on horsepower that was eating the very life out of me in the winter time, my good wife said, "you are going busted sure." She is usually a good prophet but that hasn't come true yet, because I realized that I had to cut my feed in order to cut down my horsepower. If I was going to cut down my horsepower with a tractor I had to manage that tractor to work in the winter time, and if I could fill my own silo at my own pleasure at any time I got ready, when the corn was ripe, if I could work it in the winter time to save from seventy-five cents to one dollar on every one hundred pounds of feed which I fed to my dairy stuff, that was something which my cattle would not have to pay for, so I hold with all the sincerity I have got, that it is a mighty fine thing.

When you and I can grow into these systems of constructive dairying by growing and mixing our own feed, saving all this overhead expense, why should I pay sixty to seventy-five cents on every one hundred pounds of feed that I feed my dairy cows, just in order to get the mixture on the floor? I can take my own hand and scoop shovel and mix my own feed. Then I can run it through my own feed grinder, and I feed my calves that way.

These are all little things in a way, but there has been many a man grown absolutely discouraged and disgusted, because of the fact that he let many of these little things eat the very heart out of the thing, and so it is.

Gentlemen, in closing, I have felt like I kept the confidence of my good friends in talking just thirty minutes,

but in closing let me say I am a firm believer of the dairy business. I believe in it with all of the power which I have got, and when many young men come into my classes as these young men will before me just now—I am talking to these younger boys—who have the spirit and the inspiration to go out and say, "Dad, this is the better way," we have got to prove our faith by our works, and when I can prove these things through absolute practice I can stand up with a smile and face the future with a great deal of satisfaction, because I believe I have given them something they can take back home on to their own farms, and if I didn't believe this with all my heart, as much as I go about southern Illinois, I would be taking something I didn't want to take; but in the sixteen years I have been in the state institution at Carbondale some of my friends called me out and said, "Look here, Muckelroy, don't you know you are going to ruin this farming business? You are going to get it so we can't grow anything on the land, and these farmers that are your friends are going to lose confidence in you." That is only fifteen years ago, gentlemen, but we have grown out of that. We have grown into these systems of better farming, and alfalfa is growing now on the place where we spread the limestones.

The thought of permanent pasture is one thing that confronts us in southern Illinois. We use sweet clover, that is the finest thing I know of for pasture. Last year on the state farm we pastured on eight acres of sweet clover, fourteen head of dairy cattle,—twelve of them were mature cows—four head of horses and sixteen head of sheep—on eight acres of sweet clover! I think that sounds like a big one, but it is a fact and I will prove it to you. That sweet clover was all juicy and green when all of the other pastures were dried up.

I thought some ten or twelve years ago that I would have to put another silo on the state farm in order to tide over the dry weather, the drouth, to make our cows give milk the year around, but about that time there came to us the subject of sweet clover. It saved a great deal of expense, because of the fact that we can have our pastures green all the year through.

I spoke about lots of alfalfa. For instance we have here (referring to chart), A, B, C, D, and E. Field B, which is in alfalfa, is growing all the time. It is cut three times a year, yielding better than three tons, between three and four tons. Field A is in corn. Field B in oats. Field C was in oats a year ago but was sown to sweet clover in the oats, now this spring we have that to pasture until along in July. Field B where oats were sown now is already being sown in oats in 1926. When this field C is pastured off pretty close along in July, and the oats have been cut off of field B, the sweet clover is up high enough so that we turn back upon field B in order to let field C grow in sweet clover; and, gentlemen, we have a fine field of sweet clover that is sweet all the way through for our dairy cows. We need not worry about pasture if you have your crop rotation, corn, oats and legume pasture of sweet clover, and then fill in with alfalfa, then your soy beans as an occasional crop.

This is why, gentlemen, I believe so strongly in the dairying business, because when we once get on the right end of it, it comes right along with us, and the more we get hold of it the better we are running our business and the more faith we have got in it and can prove to the other fellow that our theory is right. (Applause.)

President O'Hair: A fellow was walking down Lover's Lane with his sweetheart one evening when a bulldog came up the road. He ran to the top of the fence; she clambered up after him and the dog went on. They both climbed down and as she was walking ahead she said, "John, I thought you said you would die for me." "Yes, but," he said, "that damn bulldog wasn't dead." (Laughter.) We are not dead yet. We have got two speakers, Mr. Stanard and Professor Morrison. Both have to leave this afternoon on early trains, so I am going to ask Mr. Morrison to speak at this time, for about forty minutes, then Mr. Stanard can get through and get away on his train, and everybody can be happy and we will be glad they are gone (laughter).

MINERAL REQUIREMENTS FOR COWS

Professor F. B. Morrison, Madison, Wis.

Mr. Chairman, ladies and gentlemen: I have had many kinds of introductions: I never had just this kind (laughter). But we all know and like Mr. O'Hair.

This afternoon I am going to take up a little more in detail some of the facts with reference to the mineral requirements of dairy cows in Wisconsin, and I know also in Illinois at the present time, and in the other states of the corn belt there has been carried on very extensive propaganda by manufacturers of commercial mineral mixtures.

Doubtless many of you have wondered as to how much truth there was in the statements made by these men and how much bunk. In talking about the mineral requirements of livestock it has always been my policy to call a spade a spade, instead of calling it a long-handled agricultural implement, and I shall follow that same plan this afternoon.

As I pointed out this morning, there is no question but that minerals are essential for our livestock. Scientists tell us that animals will starve sooner and be killed if they are given feed containing plenty of proteins, carbohydrates and fat, but a feed containing no mineral matter, than they will if they are given absolutely no feed at all; they will die from mineral starvation more rapidly than they would from starvation where they get nothing.

I just mention that to show the dependence upon mineral matter formation. We do not know just exactly what all the functions of the mineral constituents of feed are in a body, but we know that mineral nutrients control the life processes to a great extent, perhaps by carrying electrical charges, like some sort of a telegraph system throughout the body. Whatever method this is brought about by, mineral compounds are absolutely essential for life, in

addition to the well-known fact that the skeleton is composed largely of mineral matter.

As I pointed out this morning, common salt is the mineral constituent that should always be supplied in dairy rations, and it should also practically always be supplied in feeding other classes of livestock, except in very limited districts such as in certain types of alkali sections of the west, where the soil and plants contain unusually large amounts of common salt or sodium chloride.

It was Dr. Babcock many years ago, working with Professor Carlisle, who carried on the first plan, demonstration, of the dependence of dairy cows on an adequate supply of salt. Dr. Babcock fed a good dairy cow a ration that was adequate except that it had no salt excepting the amount contained in the food materials. No salt was added to the ration. The cows got along for a time, although they appeared hungry for salt, but in a few more months they showed they were approaching nutriential disaster, and when salt was supplied in proper amount the cows never showed any indications of this trouble, so a proper amount of salt is essential for dairy cows.

As I mentioned this morning, it is a good plan to mix in one-half pound or one pound of salt in every one hundred pounds of concentrate or green mixture. I believe it is a good plan to supply salt in addition, in the form of a salt box or brick, so that the cows will take what they want. If the salt is supplied regularly they will not take an excess. The amount of salt which livestock require differs in amount as does the quantity which human beings consume. It happens that I like more salt than my wife does, but it is always an easy matter to add a little salt to the food if it does not contain salt to the taste. I think perhaps livestock differ somewhat in their likings for salt, so I think it is safe to let livestock have what salt they wish. In the case of dairy cows I believe it is a good plan to increase the quantity so cows will be sure to get the amounts I have mentioned, keeping the amounts in the concentrate quantities as I have suggested and adding the additional amount in a way that will enable them to get what they need.

As I mentioned this morning, two important minerals in the ration of a dairy cow are calcium or lime and phosphorus. It is very easy to see why the dairy cow needs especially large amounts of these two minerals, as she is constantly losing the minerals from the body in the milk supply.

In addition young growing animals need fish to build their skeletons. Ninety per cent of the mineral matter of the bony skeleton is made up of calcium and phosphorus. During the past two years very great discoveries have been made with reference to the mineral requirements of livestock and especially dairy cows. One of the first experiments to attract national attention was the experiment started in 1907 and 1908 by Professor Hart and his associates in our institution. I can't go into the detail of those experiments. Let me just give the main points.

When they fed four growing heifers—and later cows as they matured — rations where the roughage consisted only of wheat or oats straw with no legume hay or no silage, no corn whatsoever, there was nutritional disaster, even when they were feeding a fairly well balanced concentrate or green mixture. They were feeding a balanced ration according to old feeding standards, yet disaster followed. The animals became not thrifty, and furthermore when they calved the calves were dead or else were produced in a very weak condition. In many cases the cows aborted. It was found after a considerable period of experimentation, that this disaster was due to a lack of lime or calcium, and furthermore to a lack of a vitamine which was deficient in that ration that animals need in order to assimilate lime and phosphorus. That is vitamine D which I did not discuss this morning.

Vitamine D or the anti-rickitic vitamine, meaning curing or preventing ricketts—I will discuss ricketts in just a moment. In carrying on these investigations further these men found that the best way of curing this situation, this nutritional disaster, was by supplying legume hay in that ration. If they merely substituted for half of the straw the same amount of legume hay, the ration was made

adequate because the legume hay furnished not only lime but also a fair amount of this vitamine which was necessary for the animal's well being. That is all as I remember, use lime. Professor Hart within the last two years has taken this old disastrous ration and made it entirely satisfactory by using legume hay and also for extra safety put in cod liver oil, because cod liver oil contains this vitamine in very great abundance. Of course that would not be a practical dairy ration, but they made that experiment so as to analyze the conditions fully, and to satisfy their own scientific curiosity.

Then in the further advancement of knowledge the next most important step made was in the discoveries of Dr. Forbes, then of the Ohio Experiment Station. Dr. Forbes fed his cows in nutritional experiments during several winters, rations that we all thought at that time were absolutely inadequate for high milk production, made up of legume hay, corn silage, corn grain, and several of the common protein-rich concentrate mixtures with plenty of salt and water. To his surprise and the surprise of all of us when he analyzed the fat of these cows, the feces and urine produced, and also the milk secreted, he found these cows on these excellent dairy rations were steadily losing lime and phosphorus from their bodies in the full flush of milk productions.

We did not know what to think about the situation. He then tried the effect of adding various mineral supplements to that ration, ground limestone meal and calcium citrate. To his surprise, even when an abundant amount of lime was furnished, which was apparently much more than the cow needed, these good dairy cows still lost lime from their bodies. In one trial in Wisconsin during ten days a cow lost one-fifth of all the lime in her body, showing the tremendous loss of lime that can follow on an inadequate ration of a milk-producing cow.

Without going further into the history of the matter, what is the present status of our knowledge? It looks to me as though we would be able, by means of the Babcock test, to develop a cow's milk producing and butter-fat pro-

ducing capacity to a much greater extent than we have developed her mineral-assimilating capacity. We haven't known anything about minerals until the last few years, in their relation to dairy production. In other words there is no question in my mind but what a good share of the good producing dairy cows during the winter time and in the full flow of production are steadily losing calcium and perhaps also phosphorus from their bodies; and probably even by the use of any mineral supplicant we can add to the ration, we cannot cure or prevent it, judging from these results, unless we use impracticable rations.

We might ask, why doesn't the cow finally fade away, because the cow in the attempt to keep the composition of her milk constant, her force of maternity makes her take the calcium and phosphorus from her bones to produce a normal milk for her offspring and for our offspring.

So far as we know the situation, based upon the further experiments of Dr. Forbes, when a cow gets along further in lactation, when she is producing less milk and especially when she is drying, then she is able to build again the calcium and the phosphorus stores of her body, because then there is not the heavy drain for calcium and phosphorus that there is in the production of a large amount of milk, thirty and forty pounds and beyond. Furthermore, it is essential that all possible advantage be given the cow by producing an adequate ration so that she will lose as small an amount of mineral as may be during the heavy part of her lacteal period.

The experiments of Dr. Forbes and others have shown very clearly that if the cow is fed timothy hay you will have a much more serious condition than if fed with an abundance of legume hay, therefore do the best you can for the cow by supplying an abundance of legume hay.

Now just a little about vitamine D and its relation to mineral assimilation. First, after vitamines A, B, and C had been discovered, people were in a quandary with reference to certain points. For many years the disease called ricketts had been known, in fact for twenty-five years and over, but until 1918 there had been practically no advance in the knowledge with reference to ricketts. Ricketts is a

disease of the bones, especially in young animals, in which for some reason or other the lime and phosphorus salts are not deposited properly in the growing bones. They say eighty per cent of the babies and young children in New York City have some tendency or symptoms of ricketts, showing the great prevalence of ricketts in our large cities.

Ricketts is a disease of civilization. Savages may starve but they never have ricketts. It is an interesting fact that dogs sometimes have ricketts and cats do not. A dog is our dog. He is an entirely domesticated animal. Our cats condescend to live with us and go out in the way of the world, prowling at night, and perhaps because of that retention of freedom they do not have ricketts. If you take the feline tribe and confine them in a zoo, for instance lions and tigers, they quite often have ricketts under those enforced domestic conditions.

From the standpoint of human nutrition ricketts is of very great importance in the raising of young children. It has been found ricketts can be cured and prevented by the use of cod liver oil. It furnishes not only vitamine A, which is concerned with growth and also is necessary for adults, but also contains exceedingly large amounts of vitamine D.

The fact that cod liver oil cured ricketts was long known along the seacoast of European countries, as France, Norway and Sweden, but it was not known why it did it. In 1922 it was discovered that cod liver oil contains these two different vitamines, which have the two different functions, containing vitamine A that prevents and cures ricketts; so now if there is any danger of a child having ricketts, cod liver oil is an excellent thing to give him. At the present time I am giving cod liver oil to my youngest boy six years old, not that he has ricketts but to assist in the tremendous task the body has in building the skeleton. He is a boy growing up just like I did. I was my present height when I was thirteen or fourteen, over six feet tall and as thin as a rail, and he is growing just the same way father did. Although he is using liberal amounts of dairy products, as a precaution I am making him take cod liver oil.

With cod liver oil you have a very serious difficulty on account of its repulsive taste. In my own case my parents tried to give me cod liver oil, and found that cod liver oil was almost like truth—truth crushed to earth will rise again, and cod liver oil also followed a similar course when they tried to give it to me.

I just mention that fact of the importance of ricketts in children. Other experimentors have found that ricketts can be prevented and cured by ordinary sunlight which has not passed through window glass. Further investigation has shown that the curative part of sunlight is the part that we cannot see. It is the ultra-violet rays which are clearly beyond the visible violet rays in the rainbow; it is the part of the rainbow on beyond the violet that the human eye cannot see.

The infants which suffer from ricketts can be cured or aided in curing by exposing their legs and arms or bodies to sunlight. That is the reason why it is so good for we people who live in cities to get out in the country or go to the seashore or lake, and go barefoot or so we get the full effect of sunlight. That is one of the benefits of taking a vacation and getting out close to nature. People in large cities, especially in the winter time, do not get much of this ultra-violet light, because the ultra-violet light is absorbed somewhat by the atmosphere, and in the winter time the sun's rays coming at an angle, come through many more miles of atmosphere than in the summer time when they come straight down. Go to Chicago today and see that smoke-pall over the city. That filters out the ultra-violet rays pretty near the way it is filtered out through window glass, so the poor people of Chicago will not get much of the ultra-violet rays in the winter time because they are largely taken out by passing at an angle through the atmosphere, and passing through that smoke screen.

That is where people that live in small towns and in the open country have an advantage, and why there is less ricketts among young children under those conditions.

What is the relation of this to stock feeding? It is simply this: we must provide as far as possible feeds not

only rich in lime and phosphorus for our livestock, but we must also try to provide them with this anti-rickitic factor, sunlight shining direct on the body and ultra-violet light are both good anti-rickitic light, have the same functions.

Green growing plants do not contain very large amounts of this vitamine. However, when green alfalfa is cut and is cured out in the sunlight, in the curing process the vitamine D content is increased materially. Just why we do not know, but it is a fact apparently. Earlier from the results of certain experiments it was thought that perhaps the best way of curing alfalfa or other legume hay so as to preserve and obtain all the vitamine it contained, was to cut it and cure it, using a hay cap as soon as possible. That has been tested out in our institution and hay which has been cured in the dark, while showing that the fine green color is preserved, that hay is not rich in the anti-rickitic vitamine but very poor in it, because it was cured in the absence of sunlight. You have got to steer between two difficulties; if hay is allowed to be cut and dried in the rain and sun, the hay will become wet, its nutriments will be washed out and it will not be of so high a nutritive value though it may be rich in this anti-rickitic vitamine. The vitamine A content will be largely destroyed. You can count on a good green color, being rich in vitamine A always. On the other hand vitamine D seems to be developed by the action of sunlight, so as we see the situation at the present time the best way of curing legume hay is the way that the shortage of labor has driven the American farmer to cure it: try to cut it in good weather, then by means of the side delivery rake turn it over, expose it to the drying breeze and sunlight till it is dry enough to load by means of a hay loader, and get into the barn.

Present investigations seem to show that that will not only preserve the nutritive value to the best possible extent but will also provide a content of vitamines A and B. Hay dried in the very best way it can be done is not very rich in vitamine D. The same is true of butter fat. Butter fat is very rich in vitamine A, it has a fair content of vitamine

B, but it is not near as rich in vitamine D as it is in vitamine A. Therefore it is very important, I believe, that dairy cows have plenty of pasture, and that they get out in the sun. Probably some of the good effects of pasture that we have known in the past have been due to the action of sunlight.

I would not think of maintaining dairy cows in barns throughout the year. They should get out on pasture in the sunlight and get fresh, green feeds.

A very interesting development has been made recently in experimental work with poultry, and also with dairy cows, by the Wisconsin experiment station, our own institution. It has been found in the case of poultry, that with laying hens having ultra-violet light produced by these quartz mercury lamps shining on these hens, they can be pepped up so they will produce more eggs. You have all known egg production can be increased by having electric lights, but this is another thing. The ordinary electric light simply fools the hen, makes her work about sixteen hours a day instead of seven or eight. With ordinary electric light she eats more, works longer and lays more eggs, but by means of ultra-violet light it has been possible to maintain a still higher production. Whether it will be practical to use ultra-violet lights in poultry production, I do not know.

Professor Hart, who developed these interesting facts, has also found in experiments with goats, using goats because he could get goats in the agricultural chemistry building and couldn't get cows, some things of interest in milk production.

Now he has experimented with cows that were losing lime steadily from their bodies, then has had the ultra-violet light shine a few minutes a day on the backs of these goats, and within eight days he has brought these animals back to a condition where they are no longer losing lime from their bodies; and he has been able to reduce the rickitic power of that milk six to eight or ten times and produce a milk that is very high in this anti-rickitic property.

We do not know what the application may become in dairy cows. Perhaps some time or other we may find men specializing on milk for babies in large cities, who will have bakeries or ultra-violet lamps in the dairy barns, to shine on the back of each cow a certain number of minutes. Then they can turn out a milk guaranteed to cure ricketts, and there are plenty of people in the cities who have rickitic children, who would be willing to pay a long price for milk of that kind, because it will be produced at a greater cost than the highest grade of certified milk. We do not know what the practical application will be, but it is of profound significance.

This ultra-violet lamp has a milky arc like these milky lights you have seen in printing plants. This sketch shows bluish lights, except that those lamps are housed in glass containers, and they are not ultra-violet because glass will not permit any of the ultra-violet rays to pass through, while these lamps are enclosed in quartz glass which is very expensive, because it is hard to make, and that quartz has the property of permitting the ultra-violet light to shine through. A person cannot look at this ultra-violet light without wearing glass goggles, without severely injuring the eyes. So far, then, with reference to that.

I am going to just conclude, and if you have some questions with reference to this, I will be glad to answer them.

In summarizing our recommendations with reference to minerals for dairy cows, they are simply the statements I made this morning. The best way I know of supplying the material the dairy cow needs is to provide an abundance of good legume hay throughout the winter season, and I would add, furnishing plenty of good green feed, especially pasturage through the growing season.

If the dairyman does not have an abundance of legume hay for his dairy cows, then by all means in the winter time feed a mineral supplement, supplying lime. I mentioned this morning that the protein-rich feeds are in general high in phosphorus, so that if one-fifth or twenty per cent of the concentrate or grain mixture is made up of

any one or all of the following feeds, a person doesn't need to worry about phosphorus—the cows get plenty of it. In those feeds are these:

Wheat bran
Wheat middlings
Linseed meal
Cottonseed meal
Soy beans or
Peanuts or
Peanut oil meal.

If one-third of the concentrate grain mixture is made up of any one or all of those four feeds, one does not need to pay any attention to phosphorus. He can use ordinary ground limestone or even wood ashes or marl, that in Wisconsin many of our farmers are digging up out of our old lake beds; and if a person doesn't have plenty of legume hay I would recommend the addition of three or four pounds of one of these calcium supplements to one hundred pounds of grain mixture, ground limestone, marl or wood ashes.

Even if a person does have plenty of legume hay and though it may do no good, still I would use two or three pounds of ground limestone or marl with every one hundred pounds of the concentrate or a grain mixture. If a person is using entirely home-grown grain and not using any of those high phosphorus feeds, under those conditions instead of using limestone, marl or wood ashes I would use bonemeal or bone black, which supply not only lime but also phosphorus.

I mentioned this morning that farmers sometimes have trouble from goiter or the big neck in calves. Under such condition I would recommend the use of iodine.

How about the other ingredients often put into mineral mixtures, such as Epsom salts, Glauber's salts, sulphur, charcoal, etc.? So far as I know, there is no benefit from the use of any of those constituents in a mineral mixture for dairy cows. I know of no experiments showing that a cow will be happier, healthier or more productive if she

is given a mineral mixture including those various ingredients, and we might as well appreciate that fact. So far as ingredients such as sulphur, charcoal, copperas, etc., are concerned, some of them are mild medicines. Epsom salts are good laxatives, and all right if a cow needs a laxative, but in general I do not believe in patent medicines and in cure-alls. If an animal is healthy you do not need to patronize remedies of one kind or another. Get good advice about staying healthy, but I don't believe in doping a healthy animal with miscellaneous remedies.

Many of the commercial mixtures are intelligently made, but we have got to appreciate this basic fact: there is no evidence that a cow will be any better off by giving her a mixture of things than she will be by following the simple recommendations I have made. These commercial mineral mixtures cost all the way from sixty to seventy up to one hundred and fifty to one hundred and seventy dollars a ton. The question for any farmer to ask himself is this: does he have to spend his hard-earned cash in paying high prices for a mineral mixture when he can supply the mineral needs of his dairy cows by following these simple recommendations?

I have sheets here which give these recommendations. All the essential facts are on the two sides of that sheet, and so far as we know cows will produce just as much and be just as thrifty as if they received a very complicated mineral mixture.

The same statement can be made with reference to preparations, one of which is manufactured and sold extensively in your state, a combination of yeast and minerals. So far as I know, that will produce profit for the manufacturer but not for you. Furthermore, a statement is often made that mineral mixtures will prevent or cure contagious abortion. I am sorry to have to say that there is no scientific proof of those assertions. The type of abortion that has been produced in these Wisconsin experiments that I mentioned, is not contagious abortion. The herd was also tested by the abortion tests. It was nutritional abortion produced by a lack of lime. As far as I

know, contagious abortion is something entirely different, produced by specific disease of the organisms; therefore severlly discussing the statements commonly made by mineral salesmen that their mineral mixture will prevent or cure mineral abortion, their living depends on your buying their particular mixture. The college man in giving you advice should receive your earnest attention—their salaries do not depend upon selling such things.

I thank you. (Applause.)

President O'Hair: Now, boys, we have let Professor Morrison have first place because he has to go away at four-thirty. Mr. Stanard has to leave about thirty minutes later. Professor Fraser, when he speaks we want him to have as long a time as he needs. There isn't a man here that can afford to miss Professor Fraser's talk. He is the professor who has been experimenting with your money that was sent down to the University, and it will be very profitable for you to hear him, but I am going to ask Professor Fraser if he will waive his time, letting us have Mr. Stanard's talk in Mr. Caldwell's time. Mr. Caldwell has agreed to wait until tomorrow.

Mr. Stanard, as you know, is your Director of your Department of Agriculture at Springfield, and he belongs to you, too, and I asked him if he wouldn't say something on the tubercular trouble in the State of Illinois. You know they have been having a little trouble up around Chicago and he has been mixed up in it. I understand he has finally got it straightened out, and I am going to ask him to tell you about it. I have been asked by a lot of folks if there would be something said about it, they are all anxious to know, and I think Mr. Stanard will be capable of explaining it to you and telling you how it is and all about it. I have asked him to do this, and he said if he thought it was the wish of the people that he talk upon it he would, and he has kindly consented to talk along that line; and I will now introduce Mr. S. J. Stanard, the Director of Agriculture at Springfield. (Applause.)

TUBERCULIN TESTING IN ILLINOIS

Mr. S. J. Stanard, Director of Agriculture, Springfield, Ill.

Mr. President, members of the Illinois State Dairymen's Association—friends: I arrived here last evening just in time to see the Scotch performance from this platform, and it reminded me of an incident that happened a few days ago; when I came here this morning and saw the number of empty seats in this room, I was again reminded of that same incident. I spoke of this only a few days ago in a meeting at Champaign, so some of you may have heard it.

A week ago last Sunday morning the pastor of the church I occasionally attend said that he wanted to increase his Sunday night attendance. A good many Scotch attended that church—I am part Scotch myself—so the pastor announced that there would be no contribution requested at the Sunday night service. In response there was a large attendance. After the opening prayer, habit being very strong with this minister, he made his usual announcement that the deacons would now take up the usual collection and that a liberal contribution would be appreciated. A Jew in the back end of the house fainted, and two Scotchmen carried him out! (Laughter.)

When I arrived here the first thing I heard was a request to talk on a certain subject, and ever since I have been here I have been receiving requests. The first request was that I talk on the Department of Agriculture, explaining the functions of that department. In fact I have received several such requests. I have also received requests that I talk on the bovine tubercular situation in Illinois, which seems to be consuming considerable space in the columns of our Chicago daily newspapers. I have agreed to talk on both of these subjects, and I have decided that I will talk on the functions of the State Depart-

ment of Agriculture as requested, and allow the tubercular eradication to come into that talk as it naturally would.

As you are all probably aware, the executive branch of your state government is divided into ten parts or ten departments of state. At the head of each one of these departments there is a director. Each one of these directors not only is a director of the department, but he is a member of the governor's cabinet.

One of these ten departments of state is a department of agriculture, and it is one of the larger of the departments. The department of agriculture of Illinois is divided into nine branches or divisions. Over each one of these divisions there is a superintendent. Each division takes care of one specific line of work.

I will not take the time to take up the work of each one of these divisions, but I will speak briefly on the work of some of the larger of the divisions; and first of all I wish to mention the Division of Foods and Dairies, a division under which the dairy and food inspection of Illinois is conducted, having approximately forty inspectors in the field and approximately fifteen chemists in our laboratory.

When I took office last spring there was some criticism of this division, some people did not think it was going as well as it might. Perhaps it wasn't, or perhaps they were wrong, but this much I wish to say in behalf of that division: last October there were over eight hundred samples of food analyzed in our food laboratories, which was many more samples of food than had ever been analyzed in the state laboratory in any one month in the history of the state. In November the record of September was broken, and there was over one thousand samples of food analyzed. In that same month there were eighty-three thousand pounds of food condemned and destroyed by our inspectors as being unfit for human consumption.

The food of this state is inspected in quantity in the City of Chicago. It is then re-inspected in the retail stores of the State. Our inspectors are everywhere. That division is functioning for the protection of the people of this State, the protection of food commodities of this State, and

it is a service which is equally important to one as it is to another. The dairy side of it is an important branch because dairy products are an important food commodity. I hope you will watch that division in the future and see wherein they are rendering efficient service. They are not functioning one hundred per cent but they are functioning very much better every month as time goes on.

Next I wish to mention that division of Plant Industries and Seed Inspection. This division handles the enforcement of the seed laws of the state as carried on by the eradication program which removed one of the worst enemies of the wheat grower. It has carried on the black smut campaign, and this last spring when the white snakeroot epidemic broke out in northern Illinois and on downstate until it reached Cairo, that division was on the job making surveys of farms and localities where the outbreaks occurred, warning the farmers as to whether or not they had white snakeroot in their pastures; and I am satisfied there were thousands of head of cattle, horses and sheep saved by the warnings given by that division. But more important than that, I am satisfied that a great many human lives were saved, for the drinking of milk from cows that have eaten white snakeroot is very poisonous. We have had several deaths in this state this year.

The division is now not only engaged in the analyzing of seed samples but is also sending out bulletins, delivering talks and doing everything they can to warn the farmers of Illinois, so that another year should we have a repetition of the white snakeroot epidemic, the farmers of this state will know what it is, will be forewarned, and will be able to guard against it.

This division also has control of some of the embargo and quarantine work for the protection of our plant life. It is occasionally necessary for the state department to issue an embargo for the protection of agriculture. It may be for the protection of the plant life of the state or it may be for the protection of the livestock industry of the state. We all make mistakes, but we are doing our best to protect the farmer.

I am going to tell you now of an incident that occurred in the latter part of November, and I do not wish you to take it that I am criticisnig anyone in particular when I tell you of this incident, but it merely illustrates what may happen and how necessary it is that there be adequate protection in our state. The latter part of November the division of plant industry received word from the Minister of Agriculture of the Dominion of Canada that he had been granted permission by the United States Department of Agriculture to ship corn from the province of Ontario, the corn borer area of Canada, to the National Livestock Show at Chicago. The superintendent of plant industry brought that wire to my desk immediately and I replied by sending the Minister of Agriculture of Canada a wire for him to send the corn; my inspectors would receive it and either burn it or return it. I in turn sent a copy of my wire to the Secretary of Agriculture at Washington, and the Secretary of Agriculture at Washington notified him that his Department was right, and that they would be guided by the Illinois regulation. On the other hand if there had been no agency in this state to protect us against such things, that are happening every little while, we would be at the mercy of the hundreds of pests which might be brought into this state. This is merely a sample of the work of the division of Plant Industry.

Next I wish to mention, but briefly, the division of Federal-State Co-operative Crop Estimates as it is conducted in this state, the Illinois Department of Agriculture co-operating with the United States Department of Agriculture in their Bureau of Agriculture Economics. I can well remember fifteen and twenty years ago the fluctuations and the prices of grain on our Chicago grain market. These fluctuations were very extreme and very often. You may think that the present grain market is bad. You may think that the fluctuations are extreme, and at times they are, but if you use your memory a little just now you will remember back twenty or twenty-five or thirty years ago, that the Chicago board of trade was in that day. You will remember how it was a daily occurrence for the grain

market to jump away up or away down, apparently being influenced more by speculation than it is now influenced. It is not perfect as it stands today by any means. I remember last year I was on the board of trade in company with one of our marketing experts, when the price of wheat went to $2.05 per bushel, and I asked him what he thought about it and what the cause of it might be. It was only a few months ago that the leaders in agricultural thought were telling us there was an over-production of wheat and the farmer for that reason was taking a low price for his wheat. I said, "How does it happen that this extreme increase has occurred here today?" "Oh," he says, "they had the wrong information, that is all. The wrong impression was given out, and there was no over-production of wheat." "There was really an under-production, there was a shortage." "The demand exceeds the supply," he said, "and therefore the price has gone up quickly." I took it for granted that he was right, didn't give it any particular thought, but about a week later I happened to be on the board of trade in company with the same gentleman, and I saw the price of wheat drop sixteen cents a bushel in a few hours, and I asked him what was the matter, what had caused this extreme drop when there was such a shortage as he had told me about the week before. And he said, "Well, I guess those damned farmers have over-produced again. (Laughter.) So you see we still have conditions which are probably not perfect, but I mention this to call to your attention that the condition is somewhat improved; and in my estimation the thing that has improved that condition more probably than anything else is the Federal-State Co-operative Crop Estimate, which places in the hands of the farmers the average situation the same as every one else, the best information that there is available on crops and crop estimates.

That information is not perfect but it is the best there is. The brokerage houses have their own means of obtaining estimates. They obtain those estimates because they want an idea of the condition before the federal estimates come out, but when the federal estimates come out they

drop their own estimates and take the federal estimates because they know they are the best; and when a man stands up before you and tells you the Federal-State Co-operative Crop Estimate is for the benefit of the speculator you can set it down in your account book that he doesn't know what he is talking about. It is handled absolutely honestly by the United States Government.

It was my privilege last summer to go over their system with them, and I never saw a system which safeguarded information like that system does. It is released so that every one gets it, and if the farmer will pay attention to it, if he will use the information that it gives to him, it places him on a basis so far as information is concerned, with the man who is speculating on the market, and it is this information as to conditions covering practically the entire United States which gives the farmer an opportunity to market intelligently; and when we find it or when there is found a method, a theory or a system for the correcting of the agricultural marketing evil, I do not know what that system will be, but I do know that if such a system is ever inaugurated, the basis for that system will be the Federal-State Co-operative Crop Estimates, because it is the only source of information that we have that is honest, that we are sure is as near correct as it can be.

Now let us pass on and speak next of the division of animal industry. When that division is mentioned we immediately think of tubercular testing. In the minds of the people of the state that is the function of the division, but it has some other functions which are just about as important as the testing of cattle for bovine tuberculosis, but we will handle that subject first. It is of great importance now. It is in the minds of the people now. Every one is thinking about tuberculin testing, partly because of the order and partly because of the Health Commissioner of Chicago, and third, because of such great consternation and because of the misinterpretation of the tubercular milk situation by the Chicago daily press.

Very few true statements have appeared in the Chicago newspapers regarding this situation. A sample of

this is shown by the Chicago Tribune publishing interviews with myself on their front page, three days in succession, without ever having talked with me. That shows you something of what the system is in regard to news on such matters in the City of Chicago.

Last year as in former years, the tuberculin testing in the State of Illinois was co-operative between the state and the federal governments. The federal inspector in charge was in direct charge of the work. This system was an outgrowth of the work started by the federal Department of Agriculture in placing veterinarians and inspectors in this state as they did in other states, telling the people and telling the farmer how important it was that they test their cattle for bovine tuberculosis.

There is where their sentiment started, and that sentiment grew. They represented at that time that if the state would pay one-third indemnity on condemned cattle the federal government would pay one-third and the farmer would lose one-third. Last year, under the management of representatives of the United States Department of Agriculture, in spite of our warnings, there was over two hundred thousand dollars spent or obligated in this state, than there was apparent money available to pay, because the federal government was out of money and continued the testing at high speed. That obligated someone, because the farmer had been assured that he would get his indemnity. We scratched around and scratched around all summer to try and pay that obligation. The state of Illinois paid one hundred and thirty-four thousand dollars of the federal claim. In order to do that we used all of the emergency appropriation made agriculture and made to the governor's office, and we reached the end of our rope.

When they found at Washington that we were all through, and they couldn't get any more out of us, they came across and paid the rest of it. I am telling you this to give you a little history on what has happened in Illinois.

The Tice Bill was before the last legislature. The Tice bill was not drafted nor was it backed by the state

Department of Agriculture. It was in the hands of others, and I am informed that representatives of the United States Department of Agriculture assisted in the drafting of that bill. It was passed and became a law.

There was a special reason for their wanting that clause in that bill. It was inserted and it passed. It seems conditions now are not exactly as some anticipated they would be, but in order to comply with the law, in order to protect the state of Illinois, in order to protect the Illinois state treasury, but above all I would say in order to comply with the Illinois statutes, the state department of agriculture has taken charge of the tuberculosis eradication program in Illinois.

You have heard a great deal of talk about protests, about resolutions being passed by this organization and that organization protesting against the state department taking charge of this work, and I will just say in connection with that, that whether the men who did those things were so ignorant of the fact that they were not in a position to take any such action, or those actions were malicious, I don't know which, but you will see on the face of it how ridiculous it is for an agricultural organization of any type to pass a resolution protesting against a state department complying with the state law; and in this connection I may just as well read section twenty-seven of the Bovine Tuberculosis Eradication law of the State of Illinois:

> "The State Department of Agriculture is hereby charged with the enforcement of the provisions of this Act"

and that Act covers the whole co-operative program. A few months ago while I was in Washington I talked this thing over with Dr. Moler, the chief of the Division of Animal Industry of the United States Government. The doctor indicated to me that under our present statute a change would have to be made. The doctor suggested that when it was necessary to make that change he would sign an agreement to that effect.

On January 16, 1926, Dr. Moler signed such an agree-

ment and dated it himself. I have the agreement in my pocket. It provides that the work in the State of Illinois shall continue to be co-operative, that the program shall continue as before, the same system, that there are no changes of any consequence in policy unless those changes are agreed upon by both of the contracting parties, meaning the director of agriculture and the chief of the Bureau of Animal Industry. The contract reads almost identically the same as the contract which has been in existence in this state since Governor Lowden took office and Charles Adkins was director of agriculture, with the exception that instead of the federal man being in charge, the state department is in charge.

There is the truth of the situation regarding the management of our tubercular testing which you have seen so much of in the newspapers which you have read, protesting against some of the pure milk products and the Illinois Agricultural Association. You have the facts. If there are any questions on it I will be glad to answer them at the close of this talk, for I am not talking without having thought it over. I am not talking without having the evidence with me in connection with the starting of the testing, which was stopped because the Federal Department of Agriculture ran out of money with which to pay indemnity some weeks ago.

I will say that I issued orders last week to the state veterinarians of this state, to resume testing. I notified them that the State of Illinois would pay as promptly as it was possible to get the vouchers through, the state paying one-third of the indemnity. I indicated that I supposed the federal one-third of the indemnity would be paid by an emergency appropriation to be made by Congress which is now in session, but that if Congress did not appropriate on or before the first of next July, the State of Illinois would pay the federal one-third of indemnity as well as the state third, assuring the farmers that they would receive the total two-thirds on the indemnity of the cattle reacting to the test for bovine tuberculosis condemned on the accredited herd or area plan in this state.

So far as I know the veterinarians are at work. We have not had time to visit them all, most all of them are at work, because we have heard from most of them. If I was informed there was one that refused to work, then I would suggest that the board of supervisors of that particular county do their duty.

The Division of Animal Industries has other functions as well as tubercular testing, and they like the division of Plant Industry, are charged with the protection of agriculture. They are charged with the protection of the livestock industry.

I might tell you of another incident which would illustrate this work. A few weeks ago the superintendent of the Division of Animal Industry, Mr. Robison, came to my office and laid before me a telegram notifying him that a court, a judge in the State of Texas, had made a decision or granted an injunction against a quarantine on an area where there was supposed to be cases of foot and mouth disease, thereby releasing the owners of stock in that area to ship to any place they saw fit.

I read that telegram and decided it was time for action, so we declared an embargo on all livestock, hay, grain, and all other commodities which it seemed to us it would be possible for this infection to be carried in, against the entire state of Texas, the embargo to go into effect on all commodities shipped from that state after the decision of the court mentioned. Forty-eight hours later the superintendent of the Animal Industry informed me that many of the other states of the Union had followed the same course. Three days later the governor of Texas notified us that the matter was under control, that the quarantine was on and that there was no further danger.

Within a couple of days, for we took a couple of days in order to assure ourselves that there was nothing in transit that might be infected, we removed the embargo. Those things happen every little while. We are placing embargoes, we are removing embargoes, we are quarantining here and there as it seems necessary. Each time such action is taken it is worthy of considerable consideration,

for nearly every time there is an embargo placed someone suffers. Some farmer may be present in Texas to buy cattle at the time that embargo was placed. Some farmer may have innocently shipped cattle from the state of Texas and had them held up for a few days on the road by that embargo. Embargoes are not anything to play with, because they oftentimes hurt, but when the livestock industry of a great state like Illinois is at stake, then it is necessary that we have machinery on the job for the protection of that industry, and it is necessary to take action and not take any chances.

The veterinary branch of the Division of Animal Industry worked constantly in connection with the white snakeroot epidemic, and with every other kind of an epidemic that has started or looked like it might start, continually trying to protect the farmer, the livestock owner of this state, and I believe upon investigation that you will say that without that protection the livestock industry of the state would be in grave danger all the time.

I do not wish to take a great deal more of your time, so I am going to pass on hurriedly. I am not going to stop to take up the matter of the Apiary Division, the work they are doing for the eradication of foul brood in the bees, nor do I wish to take up your time on poultry husbandry and their egg-laying contests at Kankakee, Quincy, and Murphysboro. I won't take time to discuss state records and records of the United States and some few world-records made in those few egg-laying contests in this state, but we will pass on and not stop to consider the appropriations, I may say, for the Department of Agriculture so far as the appropriation for farm advisor, passing on their salary each month, nor will we stop for the consideration of the appropriation for county fairs nor any of the others, but I do wish to mention briefly another division of the Illinois Department of Agriculture, the Illinois State Fair.

In some ways we have the greatest state fair in the Union from a standpoint of exhibits and educational features, taking them all into consideration as a whole there isn't a state fair in the United States that excels Illinois,

but from a standpoint of exhibits or a standpoint of attendance I should say, there are several fairs that excel Illinois from the standpoint of building fine structures, etc. There are several fairs that are better than Illinois.

That one condition is being corrected. We hope to have some new buildings, a new racetrack, a new grandstand, a place to house our exhibits better, within a few months. But now I want to talk to you about the attendance side of it.

A state fair is primarily an educational institution. It is also a place of amusement, entertainment, etc., but without the educational feature it is my contention the state fair or the county fair has no real reason for running; but with the greatest exhibits, the greatest fair for exhibits in the United States at your door, I believe that you can afford to attend the Illinois State Fair. The dates of it have been changed. It has been moved up to August twenty-first instead of being later in September, and I think that if you will come to the state fair this year you will agree that we will give you a nice program. I think you will enjoy seeing the exhibits of farm products, the livestock exhibits, the educational exhibits, and all those things, and then when it comes to the amusement side I just want to mention this, that in past years when you went there to see an automobile race you saw a hippodrome event but now when you go to see an automobile race at the Illinois State Fair I believe you will be convinced without my telling you, that it is not a hippodrome. We are playing absolutely square with the public and giving them what we pretend to give them, an honest race. I am sorry that the accident which you all heard of, happened last year on our race track, I am sorry that human life was lost, but that incident proved to the public that the Illinois Department of Agriculture in the State Fair was playing square; and when you come to Springfield this year, load that car full of your neighbors and bring them along, because if you are not satisfied with the program come around to my office and I will return the price of admission.

Voices: We are all coming to see you! (Laughter.)

Mr. Stanard (Continuing): Now, friends, in closing, for I have talked long enough, I only wish to say this: there is a great deal of talk about agricultural conditions. I am leaving here in a few minutes to go to Des Moines to another conference of Illinois and Iowa. A great many plans have been suggested for the so-called relief of agriculture. I am in favor of anything which is constructive and beneficial to the farmer. I am not in favor of radical legislation which will fall back on him as a heavy load later on. I hope that some good will come from this agricultural conference and from this session of Congress, but that is all to be determined in the future.

In making this talk or my representations regarding the State Department of Agriculture, regarding the T. B. program or any other, I want you to feel that I am not coming to you telling you that we are giving you something for nothing. I am not coming to you trying to convince you that I am a philanthropist or anything of that kind. I am merely coming to you, telling you how we are spending your money, and telling you that to the best of our ability we are spending it efficiently, and as time goes on we hope to be able to come to you and show you that we have increased in efficiency per dollar invested.

I am for the development of agriculture and I am for the efficient, conscientious administration of state affairs. I am for the truth being given to the Illinois farmer instead of the pack of falsehoods which have been his only means of information from a great many sources during the past few months. I want him to know what the true condition is, and I will assure you that the affairs of the Illinois Department of Agriculture will be conducted in such a manner as to be of the greatest possible service to the farmer as I am capable of conscientious thought to determine what that course should be, and when we are all through I am not worried, I will leave the verdict up to you people and farmers of the state. (Great applause.)

President O'Hair: Have some of you folks got some information that you feel thankful for? I know I have.

Now, we have Professor Fraser, from the University

of Illinois, and we are going to give him all the time he wants, and you can't afford to miss it because it is going to be along the line of better feeding and better pasture for dairy cows. I am going to, without any more introduction, introduce Professor Fraser. (Applause.)

Professor W. J. Fraser, University of Illinois

Mr. Chairman, ladies and gentlemen: If I may have the lights out and the slides please, we will start with them at once. (Slides shown) (Address).

Secretary Caven: This will close the program for the afternoon. To the few who are here I want to tell you the event for tonight is the banquet at the Galesburg Club. It is going to be quite an event. I am sure you will enjoy it. Tomorrow we have the two sessions morning and afternoon, just the same as today, and we have equally as good speakers for those sessions. I hope you will all be here and bring others who are interested.

Question: What time is the banquet, Mr. Caven?

Secretary Caven: At six-thirty.

Whereupon the meeting adjourned at five o'clock P. M.

AT THE BANQUET

Wednesday Evening, January 27, 1926

Mr. N. W. Hepburn, of Peoria, Toastmaster

Toastmaster (after the assemblage was called to order): We are starting this fifty-second Annual Banquet in the language of the politician who said, "Friends—I will not call you ladies and gentlemen; I know you too well for that." (Laughter.)

This program looks lengthy but it isn't. This program isn't what it seems. It has been reported to me here by the good pastor that there are no souls saved after the first five minutes of a speech, so we are going to limit these speeches to about three or four minutes, and when they get longer than that something else will be done. (Laughter.)

As we look back at the receding years, and as we happen to have kept a record of the various association meetings, we find that the years go by pretty fast. I suppose a toastmaster usually starts out by saying he isn't going to make a speech, and then proceeds to make one; or, if I was using my Swedish friend's program I would probably say it worse and they would probably be more appreciative. (Great applause.)

They say Mark Twain was billed for a lecture in a small town, on the subject of Temperance. As he went into the town he found his lecture wasn't billed very well, so he thought he would check up on it a little. He went into a grocery store where a fellow was picking mackerel out of a barrel, and said, "Is there anything in town going on tonight?" And the groceryman pulled his head up out of the barrel and said, "Well, I reckon there is. I been sellin' quite a lot of bad eggs today." (Laughter.)

I don't know what O'Hair's experience has been along

that line, but I do know this, that the success of an organization depends in large measure upon the kind of officers that serve it. Mr. O'Hair has been doing his bit as president of the Illinois State Dairymen's Associatoin, I know you will want to hear from him at this time. (Applause.)

President O'Hair: Folks, this is the fifty-second anniversary of the Illinois State Dairymen's Association. I don't want to take up the time to go into the history of it, but I have been connected with it some eight or ten years. We have had conventions where we have had larger crowds, we may have had more people at the banquet, but never in the history of a convention have I attended where a town has been so loyal, so grand and so entertaining to the State Dairymen folks, as Galesburg. (Applause.)

You have simply been wonderful. Now, I have had some experience in the last two years with some folks in Galesburg and I will just say that there are some men here in the city that have touched my very soul with their kindness and their goodness, and I never will forget them, although I may never be back to Galesburg.

My first acquaintance with a man from Galesburg was Mr. Louie Nielson. Mr. Nielson and I were in Knoxville, Tennessee, a couple of years ago, together, and if any of you folks were ever in Knoxville you know you have got to travel some if you keep up with the system down there.

One evening as we went out of the beautiful hotel where we were stopping, I said to Mr. Nielson, "I'm very forgetful, I never remember anything after I sleep." We were there another week, and Mr. Nielson came home a few days before I did; and just as I was getting ready to come home I got a telegram from him saying, "Be sure and take a good nap before you come home." (Great laughter and applause.)

A Sunday School teacher asked her boys how many of them would like to be president of the United States. They all held up their hands but one little fellow, and he kind of began to cry, and she said, "What is the matter, Lee, wouldn't you like to be president?" "Yes, ma'am," he said, "but I can't." "Why can't you?" she said. He

said, "I can't, I am a democrat." (Laughter.) You are all republicans up here, aren't you?

Last winter a big ship was in a storm out on the Pacific for about four days, and it tore the mast all off and battered up things generally. The fourth day the storm subsided, and after it had got calm and the sea settled down a big Irish mate came over across the deck, and the Captain said, "Mate, there is a man dead down in fifty-four. Go down and throw him overboard." The mate was gone an hour and came back whistling a tune. The Captain said, "Mate, did you throw the man overboard in fifty-four?" "Yes, I throwed the man over in forty-four, Captain." And the Captain said, "Why, Mike, that man wasn't dead." "That is what he said, but, hell, he was a republican and I didn't believe it." (Laughter.)

I have a speech that I would like to give you, but I am a little like the boy. A very dirty-faced, dirty-nosed boy was riding in a street car in Chicago, and a very fancifully dressed lady got on and sat down behind him. She said, "Son, have you a handkerchief?" And he said, "Yes, ma'am, but I never loan it to strangers." (Laughter.)

I think we ought to have something better. Over in our locality we have a neighbor with a large family. One morning the neighbor and his wife and twelve children were sitting down to breakfast at the breakfast table when the wife noticed that the baby's high chair was pretty badly worn and in rather a dilapidated condition. And she said, "John, this old high chair is getting all worn out, I am afraid it will fall and hurt the baby." And he said, "Mary, after breakfast you go right down town and get a good new, substantial one, one that will last awhile. (Laughter and applause.)

Now you have all been hearing a lot of good things in the last few days, and you should remember them. Now I will tell you a story (laughter). Over at Mattoon, Illinois, during the war there was a big Irish fireman who had been a stationary engineer down in the country. He went to the railroad to get a job. They sent him to the yardmaster. He went to the yardmaster and the yard-

master said, "Can you run an engine?" "Sure, I can run an engine." A big, powerful engine was sitting out in the yard, on the tracks. The yardmaster said to him, "Come in and run that engine in the roundhouse." He tried it the first time, got it in and seeing the bumpers, reversed it, and out it came. He tried it a second time but almost ran into a string of cars, reversed again and out he came. The third time he tried it and looking back he saw a string of cars and out he came. Someone threw the switch and turned the engine over. Everybody ran and pulled him out, thought he would be either hurt or killed, but he jumped up, wiped the sweat off his forehead and out of his eyes and said, "I had it in there three times; why in hell didn't you shut the door?" (Laughter.)

I never saw as many pretty women in my life as there are in Galesburg. (Applause.) I never saw as many homely men. (Applause.) I don't know how it has been, but you know you fellows all go home—you know how it is. (A chair in the rear of the room collapsed.)

I guess I had better quit. It's getting so it isn't safe here. (Laughter.) I was just going to say, a young fellow and his girl were walking down Lovers' Lane one evening when a savage bulldog came tearing down the road right towards them. The young fellow scrambled out of the way as fast as his legs could carry him and climbed on top of a fence and let the girl get up the best way she could. The dog went on by and they got down and went on, and she said, "John, I thought you said you would face death for me." "Yes, but," he said, "that damned bulldog wasn't dead." (Laughter.)

If I keep on talking I will tell you a story directly. (Laughter.) Well, I wrote Mrs. O'Hair today and told her about the beautiful girls that are here, and I said, "Mother, they are not for me. I have had bad luck." I was going up to Chicago last fall, and when I got ready to go Mrs. O'Hair had her grip packed and she said she was going along. I tried to persuade her to stay, and she said, "No," so after we got into Chicago I said, "We will go to a show." And when we got ready to go, she said,

"Daddy, don't go to any shows where the women are dressed in tight clothes," and they wasn't. (Laughter.)

Now, folks, you will be through tomorrow and we will return back to our homes and to our different work. I want to thank all you folks in Galesburg; it has been a very happy and profitable time for us, and we hope it has been for you. (Applause.)

Toastmaster: Mr. O'Hair is a Sunday school teacher at home, but he isn't there now. (Laughter and applause.) They say Mark Twain was making a speech one time, and at the close of the speech a lawyer who had charge of the program shoved his hands deep down into his pockets and said, "Doesn't it seem queer to you that a humanist would make such a funny speech?" And Mark Twain made this reply: "Doesn't it seem sort of funny that a lawyer would have his hands in his own pockets?" (Laughter.)

This gentleman I am about to introduce I wouldn't have accused him of having his hands in other folks' pockets, but the secretary of a chamber of commerce and dozens of other organizations has to reach the people's pockets and the people's hearts, and I think you people here in Galesburg know more of J. Willis Peterson than I do, and we will let him speak for himself at this time.

Mr. J. Willis Peterson (Secretary Galesburg Chamber of Commerce): Mr. Toastmaster, ladies and gentlemen: When I was first delegated to take part on this program I rather had the idea that perhaps I was to impress upon the audience tonight that they were entirely free to enjoy all privileges, to enjoy a very humorous and enjoyable entertainment throughout the entire evening, and to get you prepared for such a program, but I now realize that that part has already been taken care of, so then again I thought that perhaps I was delegated on the program to make a speech, but after looking over the program I decided that that was not my part on the program, and going the entire list down on the program I really thought that perhaps the only part that I was supposed to take on this program was really to be introduced, stand up and allow

all you people to take a good look and see for yourself who the secretary of the Chamber of Commerce was, and then bow and sit down, but, folks, I am going to do just a little bit more than that. However, they say the longer the speech is the greater the tire. I am not going to indulge in anything like that, because I want you to be as happy when I get through as you were when I started, so I am going to be a short spokesman and you are not going to be even a little tired when I get through.

Some months ago the Chamber of Commerce together with Mr. Nielson and Mr. Hawkinson and other men of that splendid type, extended a very cordial and sincere invitation to the Illinois Dairymen's Association through their officials to hold their annual convention in our city of Galesburg. We of course endeavored to impress upon them at that time that Galesburg would be an ideal place for them to hold a real convention and be assured of having a success throughout their annual show and their meeting; and so we told them of the many things pertaining to Galesburg of which we are all proud, and of the many facilities that help to make for a good convention. Finally they were convinced, and decided that they would have their convention here, so we immediately started in to prepare for that convention, and I think now that the officials of the Illinois Dairymen's Association will vouch for the fact that we to some extent at least have endeavored to carry out our promises to them, and I think you will find that we are having wonderful co-operation from every one and from all interested in our community, to help the officials and the delegates and the members of the Illinois Dairymen's Association to have a real convention, and to make them feel that they are indeed welcome here in our county.

So you see the task is a great one on the shoulders of a chamber of commerce in regard to conventions. We must invite a convention. We must persuade them to come and to satisfy them that our city is the place for them to hold their convention, and if we are successful in having them come it is up to us to prove the things that we have

said to them, to try to entertain them and take care of them in such a manner that they indeed will think and that they can feel satisfied with the promises that were made and can feel that they have been carried out. And so here in Galesburg we do that very thing. We endeavor to carry out our promises, so when people have attended a convention at Galseburg they go back and they tell of Galesburg as a good town. They tell of the wonderful time that they had down in Galesburg. They are the ones who are advertising Galesburg for us. We are too modest to do so ourselves, because we know that all you people are proud of your communities and glad and happy of the things that you do in your cities from where you come from, so we do not wish to say before you that we are so proud of our city and try to overbalance anything that you might have, but we do endeavor to show you that you are indeed welcome to our community, and we try to entertain you and make you feel at home and happy and contented, so that when you leave you are glad you have been here, and you are proud and glad and happy to come again.

And so that is the kind of greetings and welcome we extend to all of our visitors that come to Galesburg, and assure you that the Illinois Dairymen's Association has that from the Galesburg Chamber of Commerce. (Enthusiastic applause.)

The Toastmaster: At the suggestion of our President we will digress for a moment to hear from a delegation here from Harrisburg, headed by Charles Taylor. They have got something they want to say to us.

Mr. Charles Taylor: Mr. Toastmaster, members of the Illinois Dairymen's Association: I am up here at the urgent request of my friends down in Egypt. I never let my folks ask me do a thing that I am not ready to respond, because I believe in my folks and in the community from which I come, and when I walk down the streets of Galesburg and a man walks by the side of me and says, "Galesburg is a mighty good town, but—" I change my position and get on the other side. I have no faith in men who do

not have faith in their own community, and if I did not have unbounded faith in Egypt I would not be up here tonight, asking you to come down and see us.

We live down there, and we fought the battle with nature. We felled our forests, dug and dredged our ditches, tiled out our gumbo, and have made wonderfully productive farms where nature did so much of it for you. We have really something down there to show you, and we are mighty anxious to have you come down and see us and see for yourself, because I have abiding faith in the community from where I come, and when I find out and in my own mind I am convinced beyond all balance of reason that Harrisburg is not the best city in Illinois, I am going to move to Galesburg or somewhere else.

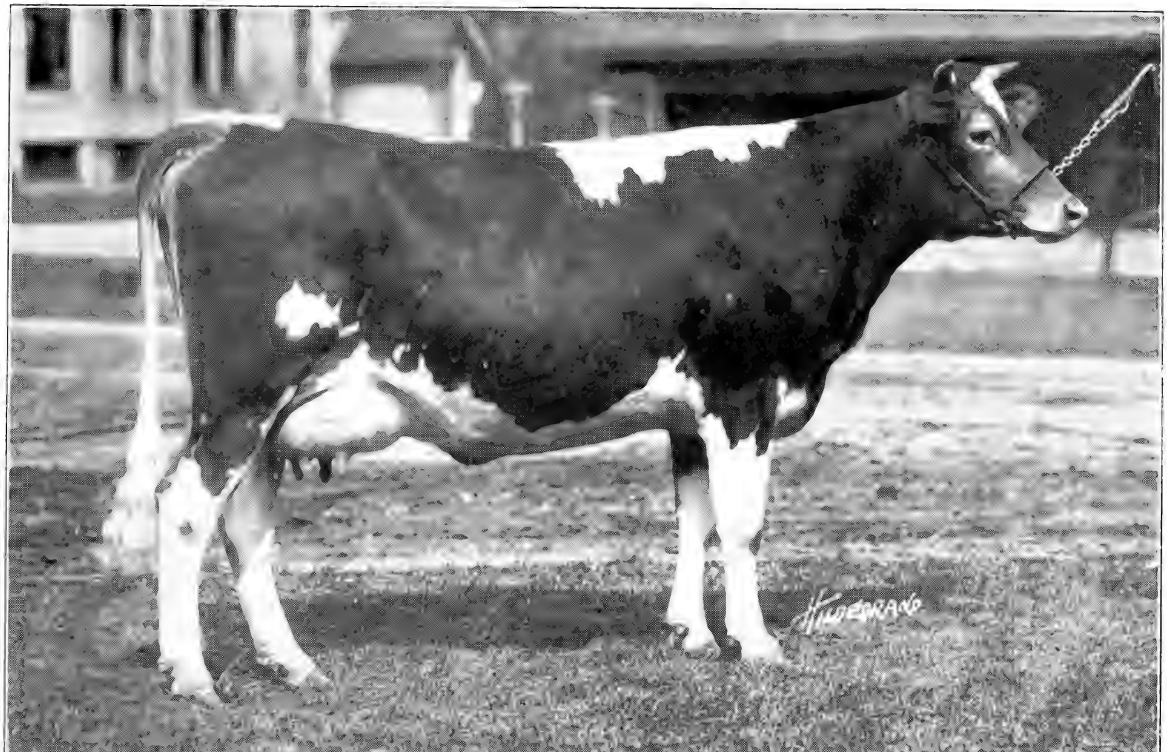
Recently I was in the national office of the National Rotary Club, and the secretary handed me a letter from a man who said: "Dear Sir: I live in a town with a population of eighty." Comprehend the figure, will you? "We have a postoffice," he said, "a blacksmith shop and one store. I wonder if by some means we could have a Rotary Club down here, to boost my town." I wish I had three fellows like that!

One day I was on a train going up to Galesburg to deliver an address before the Chamber of Commerce. It was on Sunday and I had an American magazine and was reading some article, and I was kidding myself with the thought that there was nobody on that train who knew Charley Taylor. Somebody slapped me on the back and said, "Charley, where are you going?" And I said, "I am going up to Decatur." A woman was sitting behind me, and she said, "I am going to Decatur." Then she said, "I live in Decatur," and lifted her head. "It is a beautiful city, it has a population of fifty-one thousand." And I said, do you mean to tell me that the population of Decatur is fifty-one thousand? This book says it is thirty-one thousand. "But that is a misprint," she said, "the population of my community, sir, is fifty-one thousand." I would rather hear a man lie about his community and boost it, than to tell the truth about it and knock it. (Applause.)

This much for my own community. I do not know where my future may be spent, I may have some notion about it but if I happen to get up to the gate and the gatekeeper of that gate said, "Go over in that direction, I do not know you, sir," and they send me over where they have this fire and brimstone, and I come to Galesburg and they say, "Come in, put on a pair of asbestos hose;" I would say, "Come on in, fellows; it is the best fire and brimstone I ever saw." (Laughter.)

There are some Rotarians here that happen to know how I became district governor, and I want to get that clear in the minds of the rest of you. To do that I will just tell you the story of how a nigger came to be made the deacon of a Baptist church in my town, how he came to be made the deacon in his church. This man was made deacon in the church and Rastus was down at the store where a crowd of people were gathered. A girl said, "Hello, Rastus, I hear you was made a deacon in the church last night." "Yes, ma'am, I sho' was." And another girl said, "Rastus, is what I hear about you the truth?" "I gues it is. What yo' heah?" "Why, I heard you was made a deacon." "I sho' was." Finally, the oldest man in the crowd said, "Rastus, I heard you was made a deacon in the church." "Yes, sah, I sho' was dat." And he said, "Rastus, tell me, how did this happen?" And Rastus said, "Yes, sah, I dis' tells you 'zackly how dat happen." He said, "Dere is a low-down element in our chu'ch, dey rise up and demand some representation, and I was de guy dey picked." (Laughter.)

I should like to say a good many things to you about Egypt tonight. If there is anybody here that has never been down in the heart of my beloved Egypt, travel through it and see what we have got. Of course we have Williamson County down there, but I say to you that the Egyptian has raised himself and made himself equal to the proposition; and the Williamson County of yesterday is not the Williamson County of today, and in Herrin where there has been blood shed, tonight, in my humble opinion, there are more men bowed humbly in prayer meeting than there is in any city of its size in my beloved state.



GUERNSEY COW

King's Aline of Four Pine 98182. Record at 2 years—12759.60 lbs. milk, 582.41 lbs. fat. First in her class 18 months and under 2 years at the national Dairy Show. Owned by H. C. Horneman, Danville, Ill.

The things that have been unkindly said about us, and it may be truthfully, I am happy to say to you that we shall outgrow them, and we shall be victors. I come to you to extend the invitation to come to my town. If you do come down there, we are not going to overwork folks' imagination. I heard Miss Coons make a talk to a gang of bald-headed and white-headed men and she said, "I want you to imagine for a minute you are all children fourteen years old. If you come down I will give you two hundred rosy-cheeked Egyptian girls to talk to and you can have this bald-headed gang of men thrown out. (Laughter.)

I come to extend this invitation to you. I shall leave my documents with your secreatry. I come in the name of the Kiwanis, I come in the name of the Lions, I come in the name of the Rotary Club—I think it is one of the best in the State of Illinois—of my own city, and I have a message from all three of them asking you to come down and see us and we will do our best to make you happy.

I have a letter from the four great coal groups that represent twenty-five millions in money; they send you greetings and an invitation to come down and see how our folks make a living, and to see our twenty-five hundred homes of happiness and contentment, and see our great gang of boys, eight or nine hundred in a community high school, who have been taught that all folks are equal so long as they conduct themselves morally and otherwise as they ought, and the teachers in that school have so worked it out that I dare you to go there tomorrow and tell the difference between the banker's daughter and the laborer's daughter.

I bring you greetings from the three great banks of my city, representing total resources of more than six million dollars. Bring your check books with you and they will take care of you as far as that is concerned, down there.

I have a letter from the Farm Bureau. Many of you are acquainted with the Farm Adviser. He sent a very cordial greeting and said, "Be certain that it gets into the hands of the committee." The Harrisburg Dairy Products

thought it would be a great inspiration to the dairy business, and all the big business men of the community want you. I have letters from the biggest business men who have achieved unusual success, and they have all invited you to come down and see us. I also have a telegram from the agricultural man of the New York Central Lines. He asks you to come down, and I have this much to say for my city: after you have been three days with us, you will say, "All Charley Taylor said about Egypt is true." And I want to say to you we are close enough to the Mason and Dixon Line, we will be just as cordial as the most southern courtesy you have received, and when you come back you will have a different impression of Egypt. Truly down there they will show you real hospitality, and when you leave my community you will leave it with the fondest and tenderest memories of having visited my beloved Egypt. Sometimes I am almost afraid—I am sorry to leave it for a little while. I sometimes have to go away for six or seven weeks, and when I get back and step off the train the first thing I hear is, "How do you do, Charley, I am glad to see you back." I just like to get back to Egypt and shake hands with folks I have been living among all these years; and there isn't a city in the world that I would leave my beloved Harrisburg to live in. I want you to come down and know my folks like I know them, and without any invitation you will say, "Is there any chance for us to come again?" I extend you this invitation, you can extend the next one to yourselves. I am mighty happy to have had this time with you. (Great applause.)

Toastmaster: I am not one of the "powers that be" in this organization, Mr. Taylor, but I do not know how the officers of an organization like this could help having a thing like that get under their shirt, President O'Hair, and I am sure this man will receive the proper attention at the proper time.

A new minister in a Virginia church was delivering his very first sermon. The darkey janitor sat in the back end of the church and was a very interested and critical visitor. The next day a gentleman came to him and said,

"Rastus, what do you think of the new minister? Don't you think he made a wonderful prayer?" And the darkey said, "Massa, I sho' do think he made one pow'ful prayer. He suttinly as't de Lawd for t'ings dat de other minister didn't know de Lawd had." (Laughter.)

The next speaker on this program is Henry Hawkinson. I think he delivered a lot here in this convention, that the people of Galesburg, even, didn't know he had (Applause.)

Mr. Henry Hawkinson: Mr. Toastmaster, ladies and gentlemen: I have never been compared with a minister before. I am very happy to be compared in that class; I don't know whether I was the minister or the janitor (laughter). I should have been the janitor, but I am very happy tonight to be placed in the position I am. You will see I come on the program quite early in the evening. Now I am going to say to you at the outset that I have got the advantage of you. You can't pull on me what the lecturer had pulled on him in Paris, Illinois, I think it was, where O'Hair come from, where they had a lecture course—I think it was down there—I wouldn't say positively it was, but as the story goes it was said to be a fact. They had a lecture course down there and there was a fellow that came down there to lecture, and they were all good folks, and the citizens all came in and took seats in the church. They had the lecture that evening, the house was quite full. The man started out just as these speakers are starting out, and what is more, he started out to deliver his lecture which was paid for, which I am not going to be paid for tonight. At that time he had a manuscript to prompt himself—I don't have to, because I am an extemporaneous speaker. He started to deliver his lecture, and the first thing he knew—there were about as many seats and openings as there are here—the first thing he knew they slipped out one by one, by two's and three's and half a dozen at a time, but the man was going along delivering his speech, doing his best work, and, behold, after he had talked about as long as he could talk, about an hour and a half or two hours, there was only one man left in the

audience. The fellow finished his lecture, finished his speech and then said to the lone man sitting there, "Brother, if it is not out of order I would just like to ask you how you come to stay. It sure is courtesy on your part. I appreciate beyond words the courtesy you have shown me. I would like to know before I leave this town why you stayed." "Why," said the lone man, "that is easy, brother; I am the janitor." (Laughter.)

Now if you will permit me to say on behalf of the Chamber of Commerce convention committee and on behalf of the Chamber of Commerce of the City of Galesburg, you have already heard from our worthy secretary but I want to add to what he has said, that we are very happy indeed to have had the representatives of this industry of Illinois as our guests and will have for another day at this time.

Now I wouldn't have you think for one moment that we would have had this convention at this time if there hadn't two things happened. One thing is that O'Hair and Louie Nielson were in Tennessee (laughter) and the other is that the Pioneer Creamery Company, the biggest institution in Knox County, is in the city of Galesburg, and that is the reason why the Illinois Dairymen's Association is meeting here today. (Applause.)

I want to say to you, as referred to by the Toastmaster, that the pioneers are Louis Nielson and Mr. Nelson of Peoria, and all the rest of them, and I will tell you frankly that we are indeed very happy to see this spirit of co-operation of you fellows that make butter and all of those dairy products, that you are so friendly, that you get together and come over to Galesburg, one of the best towns in the State of Illinois, second to none, not even Harrisburg (laughter). However, if I had anything to do with it, I would like to go down to Egypt to check up on O'Hair, and I would like to go down to Harrisburg, and I think as long as he is president we ought to go down there (laughter).

In conclusion, now, let me say that I have never through all my experience, and I have no hesitancy in

telling you I have had some experience of being a layman in the city of Galesburg and elsewhere, in trying to make convention folks happy, but I want to frankly say that we could not have done the little that we have done if it had not been for the co-operation of the various activities that we have in the City of Galesburg. The response of these activities, these luncheon clubs and the entertainment given, has been one hundred per cent, and the reason I believe, or one of the reasons that the response has been one hundred per cent, is that through our Chamber of Commerce and through our efforts we have been able to put in thousands of people in the City of Galesburg every year.

For your information I want to tell you something. Brother Taylor is off on the right foot. I don't blame him for boosting his Harrisburg. I would too, if I lived down there, but this little City of Galesburg, this town of schools, colleges, churches and industries, and add in this City of Galesburg the nineteen conventions this year and we have put in the City of Galesburg fifteen to twenty thousand people, and the City of Galesburg has profited through those visitors not less than a quarter of a million dollars, so, Brother Taylor, it pays to keep the good work up.

Let me say, that the organization here for conventions, also the spirit that has been exemplified here during this convention, not only of the home folks but also of the members of the Illinois Dairy Convention, through their officers, has been a spirit such as is exemplified in a little story that I am just about to tell. I also have heard it, it is an old one—I don't get many new ones. But the story goes something like this:

Back in the old stagecoach days—there are very few of us, only some of the gray-headed men like myself and Mr. Caven can go back that far—you know they used to travel by stagecoach in this country, and they were going along and the colored fellow driving the horses of the four-horse team had one of the passengers sitting on the seat with him; and as he went along, he would flick off the leaf of a tree or hit the bark of a tree, hitting anything as

they went along. The fellow sitting by him said to him, "Sambo, how do you do that?" "Oh, Boss," he says, "that is easy enough if you get on to it. Of course it took a good many years to bring this about, but then I can do it." The passenger looked over in the branch of some trees, and there was a hornets' nest. He said, "Just flick that hornets' nest, will you?" "Oh, no, Boss," said the darkey, "I'se not goin' to do anything of the kind." "Why not, Sambo?" "Oh," he says, "Dey is organized." And that is the way we are down here on the convention, and I am sure that this convention has brought about co-operation and organization that will mean much good not only for us that are going through this period of time, but also for those that will follow us.

I do believe indeed that the demonstration and the lectures that we have had from the National Dairy Council, of the younger generation in the schools is something worth while and will live on, and in conclusion let me say I am very happy and very thankful to have had the privilege to be chairman of the Convention Committee of the Chamber of Commerce, and for the courtesies shown me by the officers, and for the spirit of co-operation, which has been one hundred per cent; and if you don't decide to come to Harrisburg let me close by saying that you may come back to Galesburg. (Great applause.)

Toastmaster: I think Hawkinson has made a good speech, but I think he is over-modest. Everybody tells me he has been instrumental here, in making this convention go over big.

They tell that the children up in the Province of Nottingham were a considerate lot of children. A little boy's grandmother died. Following her death he wrote a letter to the angels: "Dear Angel: When grandmother arrives, please furnish her a harp; she is short-winded and can't play a bugle." I tell that story that it may offer a suggestion to the following speakers. It seems a shame to saddle this on to Louie, who is one of our hosts of the evening, but I assure you there is no one here that I would take more pleasure in introducing than the president of the

Pioneer Creamery Company, who has always been an active worker in the Illinois State Dairy Association. (Applause.)

Mr. Louis Nielson: Mr. Toastmaster, ladies and gentlemen: Our Toastmaster has a state-wide reputation for an unlimited fund of wit and humor, and which you have no doubt found out by now.

We have among us this evening a number of prominent men and eloquent speakers from whose lips wisdom and wit and humor will fall like glittering pearls, and I shall not take very much of your time; I shall take the hint that the toastmaster gives us.

I want to say at this time that we are glad to be permitted to entertain the Illinois Dairymen's Association, the members and delagates, and the prominent men who are instructing us in better dairying this week; and as a representative of the dairy industry in Galesburg I assure you that you are welcome, and we want you to come again to the best city in the State of Illinois. (Applause.)

I want to say that we have had the best chairman of our convention committee that can be found anywhere. Mr. Henry Hawkinson has been untiring in arranging everything so that it went off smoothly, and if anything has been left undone to make your stay comfortable and to make you feel at home, it is due to a lack of knowing how and not to a lack of willingness or effort on our part. We want to make this the best convention that has ever been held.

You will perhaps notice at all our luncheons and at our banquet tonight we have served almost entirely dairy products. It has been the chief part of the menu. In other words we have dedicated the week to dairy products, and I am sure you will appreciate the value of that great industry.

Our Mr. Crissey has been busy hauling the genial and versatile President of your Association all over Knox and Warren counties. You know, of course, that Mr. O'Hair is a big dairyman and also a famous Jersey cattle breeder. What you perhaps do not know is that he is also a big politician. He claims that Edgar County is one hundred per

cent democratic. I have been told that already as a very, very small lad he had a very keen sense for possession, and one day his father said to his mother, "I am going to find out what vocation our boy is going to choose when he grows up. I am going to take a Bible, an apple and a silver dollar and place them on the parlor table and then tell him to go in and take his choice. If he chooses the Bible we will make a minister out of him; if he eats the apple we will make a dairyman out of him, and if he pockets the silver dollar we will make a merchant out of him." So he told Willie to go in and look over the three articles placed on the table and select his choice. A little later when his father and mother entered the parlor, they found Willie sitting on the Bible, eating the apple and he had put the silver dollar in his pocket. His father shook his head and said, "Our boy wants everything, let us make a politician out of him." (Laughter.)

W. S. is not only a successful politician, he is also a successful dairyman, and while he has not succeeded in changing the political complexion in Knox and Warren counties, he has done good fine work and for the good of a far greater cause than political partisanship.

The Company that I have the honor of representing have spent twenty-five years in development work in the western and central Illinois districts, and during those twenty-five years we have seen lots of changes, and we have seen the industry grow. We have seen it double and treble until today the dairy industry is the most important branch of American agriculture, distributing nearly three billion dollars' worth of money annually to the producers.

This tremendous growth has been brought about through the efforts of our agricultural schools, through associations like this and similar organizations, and also I don't think I am saying too much when I say it is also due to the unselfish efforts of men who have had a vision of the industry, who have had the best interests of the industry at heart, and to the constant information and education from those sources to producer, distributor and consumer alike, thereby making it possible to market a greater and greater dairy crop each succeeding year.

Ladies and gentlemen, I wish to impress upon you the importance of the dairy industry. I don't think, in fact I know there is no more dignified industry than ours. There is no one industry more essential, more necessary to human health and human welfare. There is no class of products more essential, more vital in building up perfect manhood and womanhood than dairy products, and what we need, I think, is more pride in our industry. We need more education of its value, and less legislation.

I thank you. (Applause.)

Toastmaster: I am going to ask Mr. Nielson to introduce the next speaker on the program.

Mr. Nielson: Ladies and gentlemen, when we had our dairy meeting the last time in Galesburg, we had with us a man who most of you knew, whom we all loved, Mr. W. W. Marple, who has since passed to the Great Beyond. I am sure it will please you and that I will have your permission to ask one of the young ladies in our office to read a tribute to the dairy cow, from the pen of our old friend, Mr. Marple. It will not only remind those of us who knew him and loved him, of his great worth to our industry, but it will express in better terms than I could employ the economic value, the great importance of the dairy cow, the foundation of our industry and the foster mother of our race. This tribute will be read by Miss Claire Marry.

W. W. Marple's Eulogy to the Dairy Cow

In the mad scramble for wealth and position that comes with wealth, so characteristic of the American people, we have tolerated the dairy cow only because of her revenue. I would remind you that she is a mother, and because of the fact that out of her motherhood we have made merchandise, she has become a wealth producer, but we should not forget that she is still a mother, not only the mother of her own family but the foster mother of about three-fourths of the human family, and for this we hold her in grateful remembrance. In India she is more

than royalty. She is a god, and as such she is worshipped. She is considered as steps to Heaven, as a part of Heaven.

It is not for this we hold her in high esteem. It is not alone for what she has done that we have given her so prominent a place, it is also for the part she plays in contributing to our comfort.

Little do we realize the debt we owe the cow. During the dark ages of savagery and barbarism, we find her early ancestors native of the wild forests of the Old World. As the bright rays of civilization penetrated the darkness of that early period, and man called upon the cow, she came forth from her seclusion to share in the efforts that gave us a greater nation and more enlightened people!

For thousands of years she has shown her allegiance to man, sharing alike in his prosperity and adversity.

In 1493, when Columbus made his second voyage to America, the cow came with him—and from that time to the present day she has been a most potent factor in making this, our own country, the greatest nation, with the highest type of womanhood and manhood history has ever known.

Her sons helped till the soil of our ancestors and slowly moved the products of the farm to market. They went with man into the dense forests of the New World, helped clear them for homes, and made cultivation possible for the coming generation, and when the tide of emigration turned westward, they hauled the belongings of the pioneer across the sun-scorched plains and over the great mountain ranges to new homes beyond.

Truly, the Cow is man's greatest benefactor. Hail, wind, droughts, and floods may come, destroy our crops and banish our hopes, but, from what is left, the Cow manufactures into the most nourishing and life-sustaining goods —and is she not life itself to the thousands of little ones dependent upon her? We love her for her docility, her beauty and her usefulness. Her loyalty has never weakened, and should misfortune overtake us, as we become bowed down with the weight of years, we know that in the cow we have a friend that was never known to falter.

She pays the debt. She saves the home. God bless the Cow—little do we realize the debt we owe her! (Applause.)

Toastmaster: Tradition has it that in a rather large town an old bachelor was conducting a very lucrative business. He lived after the traditions of bachelors and was interested in the things that bachelors are usually interested in. The walls of his apartment, or the shelves on the walls, were covered with trophies which he had won in various contests which he had partaken of, in golf, in bowling and other bachelor games.

In the same organization was a cheery, genial man by the name of Sam, who was the sunshine of the office as contrasted to the cloudiness which the old bachelor usually spread. One fine morning Sam came down looking very much troubled, and as the morning wore on he became more troubled. His perturbed condition became more and more apparent. Finally, a telephone call came and Sam dashed to the telephone and left. Nobody saw him for three or four days, then he came back and dropped into his place. "Hello, Sam," was his greeting. "Where you been, Sam?" "What's all the excitement?" "Well," Sam said, "we have twin boys at our house." "Well, now, that is fine." And the news got around to the old bachelor, and the old bachelor said, "Well, Sam has been with us a long time, this is something we ought to celebrate." So the employees all got together and said to the old bachelor, "You are the one to do this." They left it to the bachelor to fix up something for the surprise. The evening of the event came, and Sam and his friends were there. The bachelor was there, and he was asked to make the presentation speech. Sam was called into a little corner of the room and the bachelor started out on his speech. A trophy was brought out, a cover was lifted and there stood a beautiful loving cup, and on the loving cup was engraved Sam, Mrs. Sam and, appropriately, one engraved for the children. Everyone thought this was a peculiar gift, and Sam said, "That for me?" "Yes. It is a loving cup." "Oh," Sam said, "I thought maybe it was one of those cups you

had to win three times in succession." (Applause and laughter.)

By his persistency and faithfulness to this organization Hugh Van Pelt has won the place in our hearts which brings him back year after year to speak to this convention. I want to introduce Hugh Van Pelt, of Waterloo, Iowa. (Applause.)

Mr. Hugh Van Pelt (Waterloo, Iowa): Mr. Toastmaster, ladies and gentlemen: I am sure I don't know what they mean when they refer to that loving cup, if I have to win it three times in succession or if I can come back three times more. Anyway, I feel tonight in a very peculiar light. Formerly, if I could describe it to you, it compares with the plight in which a Dutchman found himself in Ohio before the days of hard roads. He had a four-horse team hitched to a labor wagon and the wagon got stuck in the mud. He was out at the side of it, discouraged to the point of almost weeping. A friend of his came along on horseback and said, "What is the matter, Hans?" And Hans between half-sobs said, "I am stuck." "What is the use of worrying about being stuck?" the friend said. "Wasn't you ever stuck before?" "Sure, I have been stuck a lot of times, but always before I had something to unload." (Laughter.) And so when one is stuck he is fortunate to have something to unload, and always when I find myself in this position I do have something to unload, but tonight I do not, because my rule is to unload a lot of stories, and my good friend O'Hair has unloaded those already; there are no stories left to unload.

I feel that I am like the rest of you, I can refer to Mr. O'Hair in this manner because we all with him in the dairy industry of Illinois, especially, are good chums, which reminds me of a fellow down in Russellville, Arkansas, last winter. He was taking a midnight train. A young fellow and a young lady got on the train and took a stateroom, and as they went in the young fellow gave the porter a dollar and said to him, "I don't want you to say anything about we folks being married," he knowing that everyone that got on at Russellville knew it because they were

throwing rice and everything at them. Next morning the bride and groom went back to breakfast and as they returned to their stateroom people looked at them and smiled, and when they got back he called the porter and said to him, "Porter, I thought I told you not to tell anybody in this train that we were newly married folks." "Su'h, Boss, I nebber did tell nothin' like that. 'S a matter ob fact they said, wasn't you folks married? And I said, No, sah, No, sah, you wasn't." (Laughter.) "No, sah, Boss, I nebber done tell nothin' like that. I sez, 'they are just chums'." (Laughter and applause.)

I would be inclined to tell some stories as Mr. O'Hair did, but you noticed when he was telling them the chair broke down, and when that balloon bust right in my face it reminded me of a colored fellow down south. This darkey had some money in a bank and he went to get it. Just as he went in to get it the door was shut in his face. Finally someone inside came to him and said, "Why are you pounding on that door?" "I want some money." "You can't get no money out of this bank; this bank is busted." "What you mean busted?" "Didn't you ever hear of busted before?" And the darkey said, "Um-m-m huh, I done hear about busted, but this am the first time I ever had a bank busted right in my face." (Laughter and applause.)

I am a Rotarian myself. You have got to be careful when you are a Rotarian. I congratulate Charley Taylor that he is still a Rotarian. I am inclined to think if he keeps on much longer he is not going to be a Rotarian. (Laughter.)

You know always if I was going to talk I would have to say something about the dairy industry, but I have been looking around here and I don't see many dairymen and farmers, only O'Hair and myself.

I do think all of us ought to know something about the dairy industry because there are times when embarrassment is liable to take place. A lawyer over in our town was told by his doctor, "You don't only need live in the country, but you have got to work. Just living won't

get much fresh air in your lungs; get a job and go to work." The lawyer went out to hunt a job and finally came to a place after trying several times. He was very much discouraged, he had had a hard time getting a job —this fellow was a real lawyer—but finally he found a farmer who said, "What can you do?" Being a lawyer, he said, "I can do anything on the farm." Every man in the United States, when he was a boy, lived on a farm, so the farmer said, "All right, it is time to milk, now. Take that stool and pail and you go ahead and get the cows and we will milk." The fellow started off over in the pasture and it was sufficiently early, but he went on, and it began to get dark. The farmer went over in the pasture and there he saw a cow running around in the pasture, like that (illustrating). Finally the farmer got up to where the fellow was and said, "What is the matter, aren't you getting along very well?" "No," he said, "I have been out here two hours, and I haven't got any of these cows milked yet; I can't get them to sit down on this stool long enough to milk them." (Laughter.)

I am reminded about stopping. This is the first time I have said anything about stopping. An after-dinner speaker is always entitled to start and stop three times, and he gets stopped after the third time if his terminal facilities are good. (Applause.)

Toastmaster: It is really surprising to find how many Sunday school teachers we have in this gathering (laughter). I think a meeting of this kind would be incomplete without hearing from a representative of the University of Illinois, and I want at this time to introduce Professor W. J. Fraser.

Professor W. J. Fraser: Mr. Toastmaster, ladies and gentlemen: I am afraid this is a hard place to command the program, after such men as Mr. O'Hair and my friend Van Pelt; but a little girl was given a dolly for a Christmas present. A lady visited the family shortly after and the little girl was telling what a wonderful fine dolly she had. She said it was one of those dollies that talk. She

said, "If you squeeze it, it talks." "What does the dolly say, does it say mama?" the lady asked. "No, it is one of these modern dolls, if you squeeze it, it says, 'Oh, Boy'." (Laughter and applause.)

Seriously, I had a tribute to the modern dairy cow, all written, but I am sure if I should attempt to give it after these eloquent words of our dear old departed friend, Mr. Marple, all the chairs would break down. I think probably I had better wait till next year and give it at Harrisburg or some other Burg where the meeting is held. (Applause.)

Toastmaster: Professor Fraser is about the last man I expected to go wrong (laughter).

The Illinois State Dairymen's Association as well as the commercial institutions of this country, our schools, and other similar institutions, have found themselves turning now and then to an organization in this state, in this nation, which to some is not very well known. I think, however, here no lengthy introduction need be indulged in, for most of us who have been to some of the clubs or have been somewhere where you have heard the two ladies from the National Dairy Council speak this week. I take pleasure at this time in introducing Miss Coons, who will do her stunt at this time.

Miss Gladys Coon then gave a National Dairy Council demonstration talk on dairy and allied foods, as given to boys and girls in the educational work the Council is doing in a national way through such representatives. The demonstration was received with interest and attention, as were her other lectures given during the week of the State Association meeting. (Applause.)

Toastmaster: We will now hear from Major Wilson Henderson, of Galesburg, and president of the local Dairy Association. Major Henderson.

Major Wilson Henderson: Mr. Toastmaster, ladies and gentlemen: I assure you I was not chaplain in the army, I wasn't bugler, either. I have the honor to repre-

sent on this occasion the milk producers of Galesburg, the men that "pail" the cow, that use the milk.

If I am correctly informed there are approximately one million milk cows in Illinois. Assuming that one man milks five cows, there will be an army of two hundred thousand men sally forth tomorrow morning between four-thirty and five to milk the cows and bring in the golden fluid that makes peaches and strawberries delicious, that makes grapenuts fit to eat, that brings the milk and cream to our coffee, the cheese and butter and all those things that we have that are delicious, from the cow.

It is strange to me that in all of our literature, in poetry, in songs, in sculpture, in paintings, nobody has ever yet devoted much attention to the man that milks the cow. The blacksmith has been immortalized in songs and in poetry, the reaper, the sower, the builder, all have had their eulogies sung, but the man that milks the cow has gone unhonored and unsung. The cow is held up as the embodiment of rudeness and stupidity, and whenever we see the milkman or the cow appear in print the milkman is always getting kicked over or is being pawed over by some calf that he is trying to teach to eat, so that he can cheat the mother out of the milk so that some lady can wear her dress buttoned up down the back.

(Read: "Here's to the job that will not stay done.") (Great applause.)

Toastmaster: As we go along year after year and watch the development in this industry, knowing that some of the credit is due to those boys and young men who are being taught agriculture, the young men who are teaching the subject of agriculture in the high school, it gives me pleasure at this time to introduce Mr. M. H. Alexander, the agricultural high school teacher of Galesburg. (Applause.)

Mr. M. H. Alexander: Mr. Toastmaster, ladies and gentlemen: I am mighty sorry that there wasn't somebody down in Knoxville at that time to keep Mr. O'Hair awake,

I think we might have heard some more very interesting information in regard to Mr. Nielson.

The toastmaster knew that it wouldn't do any good to pass the hat in this crowd. He knew he wouldn't get rid of the crowd in that way, so he called on me to make a speech.

I wonder if you boys here tonight know that in the United States every year there are four hundred thousand men every year that take up the business of agriculture for the first time, and I wonder if you know, I know that you have a very good conception at least, as to how many of those men and the men who are already engaged in the business of agriculture are technically trained for the job which they have undertaken?

I am mighty glad tonight to be able to say that I am connected with the movement which has for its aim the business of teaching this new crop of farmers which are taking up the business of agriculture every year, putting across to them the technical education which will help them to do the thing which Mr. Glover very aptly expressed today on the floor of the convention, that of farming from the collar up as much as from the collar down, and that is the thing which the farmers of today and the future are going to have to do if they expect to make a success of their business.

Perhaps you know boys, you do know, that vocational agriculture in the United States is helped by appropriations from the Federal government under a law passed in 1917, known as the Smith-Hughes Act. Under the benefits of this Act any community may employ an agriculture teacher and be reimbursed to the extent of half his salary, providing they meet the several requirements, and those requirements are very reasonable in the State of Illinois.

In Illinois we have this year 167 vocational agriculture departments. During the year 1925 more than forty-two hundred projects were finished by boys who are enrolled in these vocational agriculture departments, and the net returns from these projects was very nearly two hundred and fifty thousand dollars, more than the cost of voca-

tional agriculture to the State of Illinois, so you see the vocational agriculture paid its way in the State of Illinois in 1925, and these net and total profits are getting larger year by year, not only in the individual project but for the projects as a whole.

The average net return to the boys last year was ninety-seven dollars: about one hundred and ten dollars per boy from crop projects and almost seventy dollars per boy from animal husbandry projects.

I am mighty glad to say that one of the most outstanding of those carried on by boys enrolled in agriculture departments was dairy projects, one of the most profitable of which was carried on down in Mr. Taylor's beloved Egypt. This project was a very successful one and is being carried on year by year, being continued from one class to another, where the boys retail the milk, and they have made quite a successful project out of it and have shown the bulk of farmers in that region that money can be made in dairying. And that is not the only dairy project that has been carried on.

We do not have the largest agricultural department in the Galesburg High School that there is in the State of Illinois, but we have the best boys to work with. There are a good many of them here tonight, and they will get a lot of benefit from this meeting. I would like to have the opportunity to introduce all of you people to these boys. It has been a great pleasure to me to work with them. I am glad to see a good many of them are interested in dairying and becoming more interested, because I firmly believe that dairying is the coming business of agriculture today in the United States.

We were told on the floor of the convention this afternoon that more than twenty-five per cent of the income from the agricultural products of the United States consist of income on dairy projects, so that you see it is a very important industry, a thing which the boys enrolled in vocational agriculture are becoming more and more interested in.

I might just say this, that the way of the Smith-Hughes

teacher is not always a smooth way. I am glad to say I have had nothing but encouragement since coming to Galesburg, but that is not always true in all the communities where Smith-Hughes men are engaged; and if any of you men have vocational agriculture departments in your home high school, you will go home and lend a little aid and encouragement to the Smith-Hughes teacher, because he is there to serve you and will be glad to do so. (Applause.)

Toastmaster: I am now going to do the most unfair thing I have done this evening. There is one name that is not printed on this program, that was intended to be on, that isn't here, but no convention would be complete without his appearance on the program. I never saw this fellow in such a tight place that he couldn't get out, and I am going to take the liberty of calling on Mr. Filson, the agricultural agent of the C. & E. I. Railroad—if he can't wiggle out of this. Mr. Filson.

Mr. C. M. Filson (Salem): Mr. Toastmaster, ladies and gentlemen: It is a pleasure to be here, quite a surprise to me, I assure you, but this is the first time I knew I was going to be called on, so I don't think there is much I can say to you at this time. The C. & E. I. Railroad Company has been with you on several of these occasions, and I am always proud to be called upon by you. I thank you for calling on me.

Toastmaster: Professor Muckelroy has been down in southern Illinois teaching those people what the necessities were, and I take a great deal of pleasure in calling on Professor Muckelroy of the Southern Illinois Normal School at Carbondale. (Applause.)

Professor R. E. Muckelroy: Mr. Toastmaster, if you are going on down the list you have quite a lot of us yet, because I have been looking at that list. I am always glad to be at a meeting like this—until it comes my time, if I have any time at all. I like to hear these stories and if I didn't know these men so well, like Mr. O'Hair, Mr. Van

Pelt and Mr. Fraser over there, I would feel toward their business very much in the way in which three little boys felt toward one of their pets one time.

These three little boys were very pious fellows. They had gone to church and seen how people were converted and baptized, and so one time they thought they would have a little prayer meeting, and they had as their audience their little pets, a little pup, a little bantam rooster and a little Tommy cat. They had them converted, and the next thing they wanted to do was baptize them. Each boy had to baptize his own pet. As they went into the waters the little boy who had the bantam rooster waded in and said his little ceremony, put the little rooster in under the water. The little fellow came up and crowed. They thought that was very funny. The one with the little poodle dog waded in, said his story and the little dog came up and flopped his ears and coughed, and that was a little funny. The boy who had the little Tommy cat waded in, and as he held him in his hand, and with his eyes heavenward he said, "I baptize thee in the name of the Father and the Son—" but the little Tommy saw where he was going and as he saw where he was going he began to scratch his hand, and it was all bloody, and the little fellow came out crying, and they held a little consultation, and they didn't know what to do with this poor little Tommy cat. Something must be done, so one of the little fellows said, "I'll tell you what to do with him; we will just sprinkle him and let him go to Hell." (Laughter.)

This is a mighty fine thing for business men to meet business men, doctor to meet lawyer and lawyer to meet dentist, and dentist to meet the farmer, if there should be any farmers here.

If I should start out to find a farmer in this crowd I would be very much in the fix that the man was who started out to find the happiest man in the world. He went to a doctor, thinking he was the happiest man in the world; he went to a school teacher and thought that he was the happiest man in the world, and finally when he was about to despair someone told him to go to Mark Twain, that Mark Twain because he had written so many

things that made people's hearts glad, that there was the happiest man in the world. So he went his long road to Hartford, Conn., and went to the home of Mark Twain. He was admitted, and later went up to his room. When Mark Twain came to the door he had his hair down over his eyes, very much in distress and trouble, and the man told Mark Twain what he came for, on the quest for the happiest man in the world. He said, "I don't know what you came here for. I have been feeding this fire for ten days with my manuscripts, and I can't write anything." He says, "I am writing a love story and I can't get it to end just right." And the man who was on the search of this happiest man said, "Tell me, Mr. Twain, your trouble. Maybe I can help you out."

He said, "This is a love story of a young man who left his boyhood home in early days, his sweetheart behind him, and he had gone to see the world. But in his mature manhood, after he had gotten his education and money enough for his needs he came back to visit the old home. Mother and father were gone. Sister had gone. Brother was living on the old home place, and I have this young man, now in middle age, going over the old farmstead viewing the boyhood places of his life and the years past. I have him now in his brother's buggy riding down the lane, and he is coming to the woodland, and as he comes to the woodland he comes to the old creek and there is the old swimmin' hole, and as all other boys know what it is when they come back to the old swimmin' hole he longed to take a swim, and as he used to in days gone by he hitched his horse and went in, took his swim, and as he came out drying himself with his hands and swimming in nature's way of swimming, he was dressing. He had on his shirt, tie, he had on his collar, and he heard the rattle of a wagon coming through the bushes, and as it came nearer he saw something must be done. He ran and jumped in his buggy, pulled the laprobe over his lap, but as the wagon came nearer he saw three parties in there: rather a healthy man and woman, and behind on the old board was a middle-aged lady. As they came nearer the lady looked, and as

she looked she raised herself and she said, "Hello, John, how are you?" And John saw it was the sweetheart of his younger boyhood. And as they came nearer John of course greeted her, and she jumped out of the wagon and ran to John, and with that happy greeting as sweethearts always greet each other." Mark Twain says, "I have got them this far, and now if you can tell me how in the hell I can get the breeches on this man and get him back in the buggy, I want you to tell me." (Great laughter.)

And now, ladies and gentlemen, I don't know where I am going to find the dairyman or the honest-to-goodness would-be farmer if I should start out, perhaps it would be something of the same kind, but we have a long list and I want to say, in my appreciation of being here, this is a wonderful crowd, and if you come to Harrisburg next year I hope that you may swing by Carbondale, the best town in southern Illinois (laughter), and there you will find the best normal school in the state of Illinois, and you will find the town with the best churches in southern Illinois, of the most hard roads and the people of the biggest hearts of southern Illinois. Come and see us.

I thank you. (Great applause.)

Toastmaster: At this time we will call on Mr. R. E. Caldwell, of Milwaukee, Wisconsin.

Professor R. E. Caldwell (Waukegan, Ill.): (Applause.) I believe, ladies and gentlemen, that we are all trying to finish the story. I think to make a speech at a banquet without telling a story would be the most unusual thing I could do. I just want to say one other thing in behalf of the work now being done by the National Dairy Council. I believe before an audience such as this, that a more thorough and full appreciation should be had of the work that that wonderful organization is doing and has been doing for several years past.

Four or five years ago this organization got under way in a good well organized way, and since that time have been telling, as you have heard this evening, before schools, before clubs, before organizations such as this,

the merits of the dairy products, in a very intensive campaign which has been carried on in some of our larger cities, and appreciation of dairy products increased and raised to the financial betterment of the dairy industry and the general betterment of humanity that has been touched through this great organization. So just with this one word I beseech of you to make a study and investigatoin of the work of the National Dairy Council, support that organization and go forward with it in its great success.

I thank you. (Applause.)

Toastmaster: I have the pleasure of introducing to you Mr. W. B. Barney, Secretary of the Holstein-Friesian Association and former Food and Dairy Commissioner of Iowa. Mr. Barney.

Mr. W. B. Barney: Mr. Toastmaster, ladies and gentlemen: I am a servant of that association and sometimes termed one of their experts.

I have listened with a great deal of pleasure to a lot of stories that my friend Van Pelt and President O'Hair, and other Sunday School teachers have told tonight. (Laughter.)

I am reminded of the things that happened in Iowa. It was during the war. Big Bill Atkinson was speaker of the house of representatives, and during the war he conducted a Chautauqua doings. One day a young man came into his place and said, "I am looking for an opportunity to go out on the Chautauqua platform. Couldn't you give me a job?" "I don't know, what could you do?" "Oh, I think I could put the thing over." "All right. I might give you a trial for a couple of weeks, you can find out what you can do. Then come in and report." He left and was gone a couple of weeks. On his return he went to the office and Mr. Atkinson said, "How did you make it?" "Fine, fine. Did fine." "Did they like your stuff?" "Oh, they were delighted with it." "Did they ask you to come back?" "My, Lord, they dared me to come back!" (Laughter.)

I have been invited to come to Illinois a number of

times, and I have dared to come back. I want to take what little time I have tonight in expressing my appreciation of the treatment I received over at Springfield three years ago this winter. It has been my job to look after legislation of the Holstein-Friesian Association for the last three years, and Governor Lowden who is president of our Association at this time—I think many of you know him—suggested that I be sent out to do certain things that might benefit the various industries and in time we would come into our own share of it.

One of the things we have been looking after — it seemed to me it was about as much up to me during the time I was commissioner to have good legislation as it was to enforce the laws that were on the statute books when I took charge of that department.

I know that there was a lot of stuff being put over by the oleo people, in the manner of advertising they were doing, in the use of pictures of dairy cows and the use of dairy terms in advertising their product, and I had enacted in the State of Iowa a law prohibiting that, and I want to say I know from experience I had there, and from the prosecution that I made for the Jelke people, that it helped wonderfully. I took a survey of what it was doing. When they put on an advertising campaign in the daily papers, with advertisements that made wonderful butter advertisements, and when we come to back up their product what did we find but just a trace of skim milk. I was very glad we had the law written as it was; because under the general advertising law it puts too much on the man that is making the prosecution to prove. The proof is altogether too hard to get. With the specific law we had there it was no trouble to put over prosecution.

I just want to say a word tonight, that when I went down to Illinois three years ago this winter, I knew that this was the state where a very large amount of oleo was made. I had good support there, and I have had it in twenty-four states where that law has been enacted, and it was largely due to the efforts of your present Agricultural Commissioner or director of agriculture, Mr. Stanard,

and the President of this Association, that I was enabled to put it over. I had the hearty co-operation of your entire body, and I want to express my appreciation for it.

Just to show you that it is worth while I want to say that I made the same sort of an effort in Indiana. We didn't get by the first year and last year we got busy again. The law was passed in Indiana. It was signed by the house, the speaker of the house, and it was signed by the president of the senate, and it was sent on over to the governor, and it disappeared. Now, you can't make me believe that any of the Germans stole it, but I do think I know where it went. It disappeared. Why did they put forth such extraordinary efforts if it wasn't a good law? They go on and advertise the products just as they used to in Illinois. I know they evade the law sometimes, but that is true of all laws.

Out in Idaho—I was out there last winter, and this law was enacted in Idaho. It passed the house by a good big majority. It went through the senate with only one vote to spare. What happened? They got busy overnight, worked in the dark, and next day it failed of passage because it was reconsidered, and failed of passage because they put the matter up to the senator from Idaho at Washington, and advised him that he should do something to see that that act didn't become a law in Idaho, and they telegraphed him from Washington, and he got busy for the reason that he had a loan-shark bill he wanted to get through. He called them down in Idaho on the assumption that it was going to injure the industry of Idaho, because it will make enemies of the people in the south who were selling cottonseed oil for the manufacture of oleo.

What are the real facts in the matter? There are about three hundred million pounds of various oils used in the manufacture of oleo a year. Only about ten per cent of that at this time is used in the manufacture of oleo. Most of the oil used at this time is cocoanut oil. I have been in the south and have been warning these fellows against that sort of propaganda. I was in Tennessee week before last. You have got to create a sentiment for these

things before you can put them over, and I told them this story, as I have you tonight, that it was all "bunk," this stuff they were passing out about the large amount of cottonseed oil that was used, influencing the people to stand for the oleo interests, against the dairy interests. I think in view of the fact that there is about two million five hundred thousand dollars worth of cottonseed oil used in the manufacture of oleo, and about thirty-eight million dollars' worth of cottonseed product used by the people of the north, that we might retaliate if they do not get busy and get this thing straightened out. There are other products we can use up here, in place of cottonseed products, that can be used to advantage. These fellows are no good.

I thank you again for calling on me, and I am glad to be able to express my appreciation of the splendid support I got in Springfield, in putting this matter over. (Applause.)

Toastmaster: The next speaker is the Reverend Van Buskirk.

Rev. Van Buskirk: I wondered a good deal just how I happened to get into this bunch. One thing about it, if this "gang" are all Sunday School superintendents I am going home and analyze my cow (laughter). I told your chairman I thought he would have to put me last, and Mr. Caven on before me, and let me be the last on the program. I had a wonderful speech all fixed up, I have been thinking all day about this meeting.

I think that, after all, we have got about the biggest challenge to the folks interested in a big proposition like ours. I listened with a good deal of interest to Miss Shehan in the speech she made. It is a wonderful opportunity after all, to think that when we are in a business which gives us our bread and butter, the clothes we wear, so at the same time we are having a real share in entering into the heart and life of American childhood, manhood and womanhood, because these things not only make the body finer, better and cleaner, but when the body is finer and better and cleaner then the mind is in a position to think

of higher things, and the heart is in a better position to feel higher things and so in our job we ourselves can be what our product is, and at the same time send out to the world not only better and finer and cleaner food, but happiness and joy and the real, high ideals of life. (Applause.)

Toastmaster: Last but not least is the man who does all the work—our Secretary, George Caven.

Secretary Caven: I am exceedingly sorry that I never had any experiences as a Sunday School teacher, and that I wasn't destined to be a preacher. It has been a great misfortune. (Laughter.)

We have been here this week and we have been trying to put over the idea that in this necessary industry of agriculture which is the basis of all industries, dairying is the most important branch and the most necessary. We wanted to put that idea over to the people on the dairy farms about Galesburg, and we wanted particularly to impress it upon the business men of Galesburg and make them feel that the problem was their problem as well as the farmers' problem.

We succeeded pretty well, I think, in getting the idea to the dairyists, but when it comes to getting that idea before the people of Galesburg, before the business interests, I think we have got to say that the young ladies who represented the National Council here, have done better and more than we have done. And I say that because I heard the expressions of the members of the different clubs, including the Mayor of Galesburg, after the demonstrations made by these young ladies at the club meetings yesterday and the day before. If those expressions are to be taken at their face value, it won't be very long before Galesburg will be putting on a campaign such as the National Dairy Council conducts, and which has produced such wonderful results wherever they have sent their workers, and I hope they will. Galesburg is ripe for it, just like any other town is, but I do not feel at all discouraged about the results we have had here. I think they have been wonderful,

and tonight the only discordant note, so far as I am concerned, was that reference of Mr. Hawkinson to gray hair; he gave the intimation that gray hair meant extreme age. That is an exceedingly wrong impression, and I didn't want especially the ladies, to get that impression about gray hair. And besides if it is true, why the idea of my serving this Association forty more years can't possibly be carried out. (Great applause.)

Toastmaster: I am sure we would be ungrateful indeed, Mr. President, if we did not express the thanks to those clubs, individuals and interests who have played so important a part in making our stay a success and making this banquet a success, and I am sure that they will be incorporated as a part of the recommendations of the committee, which goes into the record.

There has been just one thing lacking to me here tonight, and I am sure some of my friends feel the same way. This is the second time in the history of this organization since I can remember, that we met without our beloved friend, W. W. Marple, and because it is so appropriate and because so many of you feel the same way about it, and because I am sure we would like to go on record in this matter in this way, I should like, Mr. President, to read a little poem in memoriam of Mr. Marple as a part of this record. The poem was written by Douglas Mallock, in memory of Emerson Hough, who died two years ago, but the words are so beautiful, it is so appropriate for the time we are now thinking of, that I will take this occasion to read it.

IN MEMORY OF EMERSON HOUGH

By Douglas Malloch

Time brings not death, it brings but changes;
I know he rides, but rides afar;
Today some other planet ranges
Where its other comrades are.

For there were those who rode before him
As there are these he leaves behind;
Altho from us time's changes bore him,
Out there our comrade still will find
The kinship of the comrade mind.

Time brings us change and leaves us fretting
We weep when every comrade goes;
Perhaps too much, perhaps forgetting
That over yonder there are those
To whom he comes and whom he knows.

I would not hold our loss too lightly;
God knows, and he, how deep the pain;
But, friends, I see still shining brightly
The brightest link in all our chain
That links us with a new domain.

Time breaks no circle such as this,
For this, I swear, because believing;
However hurt, however grieving,
However much a friend we miss,
Between the worlds is no abyss.

For friendship binds the worlds together
World over there, world over here;
From earth to heaven is the tether
That brings the earth and heaven near
And makes them both a bit more dear.

Not weaker now our chain, but stronger;
In all our loss and all our ill
We now shall look a little longer
At ev'ry star above the hill
And think of him, and have him still.

Whatever vales we yet may wander
What sorrow come, what tempest blow,
We have a friend, a friend out yonder,
To greet us when we have to go,
Out yonder someone that we know.

To all eternity he binds us;
He links the planet and the star;
He rides ahead, the trail he finds us,
And where he is and where we are
Will never seem again so far.

Read by the Toastmaster in memory of William Marple.

This, ladies and gentlemen, closes the Fifty-Second Banquet of the Illinois State Dairymen's Association.

Good night. (Applause.)

THE DAIRY ASSOCIATION

A poem by N. W. Hepburn, toastmaster, read by him at the opening of the banquet, Wednesday evening.

We are met here again, this great congregation,
To celebrate an anniversary of the Dairy Association.
For years without number, I can't tell you now,
They've been pushing the cause of the old Dairy Cow.

They've taught men to feed her and not do it by halves
Then they "learned" all the farmers how to raise dairy calves.
They got all this work running finer than silk
Then they told all the children why they ought to drink milk.

You can't raise a nation you can just bet your boots
Without dairy products; on poor substitutes,
So all of these fellows these nice words did utter
You can't get along without lots of good butter.

There's dried milk, condensed milk and ice cream and cheese
Put up in a dish all the nation to please.
So they've sponsored the cause which will prosperity bring
Of doing the stunts that they call "dairying."

There are a lot of good friends who have made this thing go
Some mighty good fellows I'd like you to know.
They have all had their shoulder to the Dairyman's wheel
And I want you to know how toward them we all feel.

First there's George Caven, whose hair has grown white
And he's toiled for us all from morning till night
He's served as a secretary since the good days of yore
And we hope he will serve us for forty years more.

Then there's J. P. Mason, our old President
Who told of dairying where'er he went
He told the story in his farmer way
And taught them the merits of alfalfa hay.

Another old timer who ain't much for looks
And the things that he tells didn't come out of books
It's old Daddy Filson from southern Illinois
Who started the calf clubs for the girls and boys.

And good old Prof. Fraser from the University school
When he first talked this stuff they thought him a fool
With vision and foresight he broadcast his seed
And now comes the harvest which the whole nation needs.

We've had lots of help from the University boys
As they have toiled for the welfare of old Illinois,
Ruehe and Prucha, Dusty, Mason and Yapp,
Fraser, Gaines and Neven, all mighty fine chaps.

He looked at her head he twisted her tail
He knew at a glance what she'd do at the pail
And there at her side on his knees as he knelt
I looked under his hat and saw Hughie Van Pelt.

They wandered down in the meadow together, His arm was round her neck
He didn't know what the other fellow would do, He didn't care by heck!
He didn't know what his wife would say, In fact he didn't care.
She was a Jersey heifer—He was Daddy O'Hair!

And while we're mentionin' all the things that's been done
We'll have to give credit to our host, Louie Nielson.
One of the reasons you find us all here
Is cause there's been some work done by the old **Pioneer.**

Out in the foreground like a big ocean liner
Stands the big superintendent, our own Col. Miner.
He raises the devil with the boys testing cream
If they don't do it right they'll find it's no dream.

There was a jovial Sudy whose success was first made
In making good butter and buildin' up trade
He moved to the orange country and now "of late"
He's the prince of those barons doin' real estate.

We've had the support of the boys in the State
Those fellows have been working both early and late.
Our friend S. J. Stanard whose boss in Len Small
Turns the key to state and says, "Boys, take it all."

And then there's a lot of these creamery boys
Who've been doing their bit to help Illinois
There's Louis from Galesburg and John from Peoria
As they've watched this thing grow, they've helped it begorra!

With Herman from Danville and from Champaign came Fred
With all of this push we'll sure get ahead.
As they've worked with each other on this dairy cow scheme
They've been teachin' the farmers how to market their cream.

Then there's these boys from Louie Swift
Who've come along to give us a lift.
On this big job they've worked like the dickens
When they're not buying cream they're picking up chickens.

There's a whole lot of others, but time's slipping by
If we just had the time we could praise to the sky
So here's to them all, let's say it right now
To all the good friends who've helped the old dairy cow.

So it's breedin' and feedin' and cuttin' the hay
And you might raise the question, "Does dairying pay?"
If he's raised the good calves and picked a good **cook**
Just go over to town and see his bank book!

Tain't no small item to you city folks
As we sit here a crackin' our jokes
The butter is better than it once used to be
As a result and the efforts these fellows sowed **free.**

Yes, things are lots better, I can't tell you how
But it come thru the love of the old dairy cow
Thru all of these years we have laid the foundation
Which one day will tell on the health of the nation.

So here's to the clubs and the friends and the rest
Who have thru their efforts made this meeting a success
From all our glad hearts we give thanks to them all
Because they have heard when the dairymen call.

In that great day of reckoning when all good friends meet
There's a lot of these fellows will sit on front seats
Because they've toiled well without hope of renoun
They'll be among those who'll wear a bright crown.

THURSDAY MORNING SESSION

January 28, 1926

President O'Hair: The first thing on the program this morning is the election of officers, and I will turn the meeting over to Professor Caldwell.

Professor Caldwell then acted as Chairman of the meeting.

The Chairman: The officers and directors are all elected for the year, aren't they?

President O'Hair: Yes, sir.

The Chairman: And the Association elects all of them instead of the Board of Directors electing the officers?

President O'Hair: Yes, that is the way we do it.

The Chairman: The officers are elected at this time rather than by the directors?

President O'Hair: I think the treasurer is made a director, and the secretary is made a director, I think, under the new constitution.

The Chairman: Then we have nine directors counting the secretary and treasurer?

President O'Hair: Yes, sir, counting the seven other directors.

The Chairman: Well, there is the president, vice-president, then the directors; are the secretary and treasurer elected by the board?

President O'Hair: They are elected right at this time.

The Chairman: You have the president, vice-presi-

dent, secretary, treasurer, and directors. We have a nominating committee. Is the committee ready to report?

Nominating Committee Chairman: Mr. President, the committee begs to report as follows:

The Chairman: Make a full report.

Nom. Com. Chairman: We recommend that the following be elected for the ensuing year as directors:

S. J. Stanard, Springfield.
Chas. Foss, Freeport, R. 6.
T. P. Smith, Danville.
W. S. O'Hair, Paris.
C. M. Filson, Salem.
John Steele, McLeansboro.
J. P. Phillips, Sesser.
George Caven, Chicago.
Harlan See, Paris.

The Chairman: You have also to indicate in those your recommendations for your officers, do you not? What one is recommended for president, vice-president, secretary and treasurer?

Nom. Com. Chairman: We recommend that the parties serving us the past year be re-elected. They are as follows:

For president, Mr. W. S. O'Hair, Paris.
Vice president, S. J. Stanard, Springfield.
Treasurer, Charles Foss, Route 6, Freeport.
Secretary, George Caven, Chicago.

The Chairman: Gentlemen, you have heard the report of the nominating committee. What is your pleasure?

A Member: Mr. Chairman, I move you that the Secretary be instructed to cast the unanimous ballot of the Association for the officers and directors nominated, for the ensuing year. Motion seconded.

The Chairman: It has been duly moved and seconded that the Secretary be instructed to cast the unanimous bal-

lot of the Association for the list of nominees as read, as officers and directors of this Association for the ensuing year. Are there any remarks? (None were offered.) If not, all in favor of the emotion signify the same by saying aye, contrary minded no. (The motion carried.)

The motion passed and the officers for the ensuing year have been named.

The Secretary cast the ballot, and the officers and directors were declared duly elected.

The Chairman: I will now turn the meeting back to the President.

President O'Hair: The resolutions committee, if you will just go on.

The Chairman: Are the resolutions committee ready to report?

The Resolutions

Mr. N. F. O'Hair (Chairman, Resolutions Committee): Mr. Chairman, I wish to introduce the following resolutions:

Be It Resolved, That we, the Illinois State Dairymen's Association, extend to the Galesburg Chamber of Commerce, the Elks Club, the Lions Club, the Rotary Club, the Optimists Club, the Kiwanis Club, the Exchange Club, the Galesburg Club, and the Business and Professional Women's Club, the Galesburg Co-operative Milk Producers' Association, and all other civic and trade organizations of Galesburg and vicinity, our sincere appreciation of the excellent manner in which they have assisted in making the 1926 Convention a success, by extending courtesy, by furnishing excellent entertainment and generally making our stay in Galesburg a pleasure.

In this connection we desire to make special mention of the untiring efforts on the part of Henry Hawkinson and Louis Nielson, for we realize that we owe to them a debt of gratitude.

Resolution No. 2

Be It Resolved by this Association that the Secretary transmit to Honorable Len Small, Governor of the State of Illinois, and to Honorable S. J. Stanard, Director of the Illinois State Department of Agriculture, this Association's endorsement of the Tuberculosis Eradication program as it is now being carried on in this state and express to the aforesaid the confidence of this Association in the management of that program by our present state officials.

Resolution No. 3

Be It Resolved, That we extend to the National Dairy Council and all of the other speakers, our sincere appreciation of the excellent manner in which they have assisted in making this Convention a success.

Resolution No. 4

Be It Resolved, That the Secretary of the Illinois State Dairymen's Association be instructed to communicate to Honorable Len Small, Governor of the State of Illinois, the appreciation of the Illinois State Dairymen's Association for his untiring efforts in promoting the construction of concrete highways in Illinois, thereby rendering great assistance to the dairy farmers of this State.

Resolution No. 5

Be It Resolved, That the Secretary of the Illinois State Dairymen's Association express to Honorable Len Small, Governor of the State of Illinois, the appreciation of this Association for his having complied with the request of this Association in the appointment of Stillman J. Stanard to the position of Director of Agriculture.

Be it further resolved, that this Association go on record as endorsing his policies as already evidenced in the conducting of the affairs of that Department.

N. F. O'Hair, Chairman,
Resolutions Committee.
L. E. Hazlett.
Louis Nielson.

Mr. N. F. O'Hair: As chairman of the resolutions committee, I move that these resolutions be adopted. Motion seconded.

Secretary Caven: Mr. Chairman, in that list of clubs don't forget the Optimists. I think you mentioned just three clubs there.

Mr. N. F. O'Hair: That is right.

The Chairman: I also think it is the Galesburg Club instead of the Elks Club, or both.

President O'Hair: Just put in everybody. We don't want to leave any of them out; they all did wonderful work to make the meeting a success.

Mr. Charles Foss: Include all the clubs, I think. They all did good work.

President O'Hair: Yes, include them all, under the separate names.

Mr. Charles Foss: I would suggest that Mr. O'Hair show the list to a local man to be sure that we have not omitted anyone that should be on there.

The Chairman: A very good suggestion, it will be taken care of.

(The list was finally submitted as it appears in this record.)

The Chairman: Any other point? If not, are you ready for the question?

(Call for the question.)

All those in favor of adopting the resolutions as presented signify by saying aye. Contrary minded no.

(The motion carried. So ordered.)

Any other matters, Mr. President?

There being nothing further along that line, the Chairman retired and President O'Hair resumed the chair.

President O'Hair: Gentlemen, in behalf of the State

Dairymen's Association I want to thank personally every speaker that has been on our program. I have said for a month and I am still saying that there will not be another convention of any kind, any place, with the talent that we have had here. I know it is true, and people that have not attended have just missed it.

You know, people don't like to go to Sunday School or attend dairy meetings. A boy going to school and studying English literature when he got home said to his very prim and old-fashioned aunt, "Aunt Mary, did you ever see Oliver Twist?" And she said, "Johnny, you shut up. You know I never attend any of those kind of dances." (Laughter.) And they don't like to attend these kind of meetings.

We are going to call on Professor Fraser for thirty minutes, then we are going to call him down. We have got a man here that has froze his toes getting here—he said he did (laughter). I know we will all enjoy Professor Fraser.

MOST MILK PER ACRE ON FARM FEEDS ALONE

Professor W. J. Fraser, University of Illinois

Mr. President, gentlemen: Now if we may have the lights out and the slides, please, we will run them through as rapidly as possible.

The thing we talked about yesterday afternoon was feeding cows alfalfa and corn silage, on the Dairy Demonstration at the University. Here of course the cows were fed the year around, but on farms such feeding should be for only the winter six months and not for the summer.

We have a much better and cheaper way of feeding cows during the summer six months, and that is run them on sweet clover pasture, and that is what I want to talk about this morning.

(The lights were turned off and the lecture continued with the use of slides shown on the screen.)

SWEET CLOVER, THE SIX MONTHS' PASTURE, INCREASES PROFIT

Professor Wilber J. Fraser, University of Illinois

A good productive pasture will supply the feed for a dairy herd for practically one-half the year, and so is entitled to as much consideration as all the other crops combined that make up the winter half of the ration. However, the real value of a good pasture; the land and labor it will save, the production it will provide for and stimulate, and the conditioning effect it has, particularly on milk cows in getting them in shape for the winter's production on barn feeding, is so little realized that on only a few farms does the pasture really play an important part in providing the year's feed for the stock.

Bluegrass is the pasture commonly used and realizing that it was not productive, we desired to get some data upon this point and so conducted a pasture experiment at the University of Illinois in which was determined the actual amount of digestible feed which the bluegrass produced during each of four consecutive years. The results showed that, as a pasture, bluegrass was fully as nonproductive as we had surmised, if not more so, because it actually produced only about one-seventh as much feed per year as the same area of corn and alfalfa would produce, and only about one-half as much as oats, and one-fourth as much as clover.

The first year there was a fairly regular yield but it would have required four acres of bluegrass pasture per cow to supply sufficient feed for good cows. The third year, after June 1, 9½ acres per cow would have been required.

Bluegrass Worthless for Long Periods

The second year and the fourth year there were periods of three and a half to four months when bluegrass pasture was worthless as feed—30 or more acres per cow affording barely sufficient feed. Now it is easily seen that when pasture is this poor, it ceases to be a pasture and becomes merely an exercising ground because to maintain her milk flow when 30 acres are required, a cow would have to be endowed with certain characteristics as yet unknown in the dairy breeds. Granting her a muzzle 18 inches wide, she would have to walk 24 miles a day, cropping the grass clean as she went like a lawn-mower run with a gas engine, in order to get her full feed, thus requiring not only a new departure in facial anatomy, but phenomenal speed and endurance in addition. Absurd as may be the mental picture of such a gaunt, broad-visaged animal, zealously forging ahead to cover her mileage of bare pasture during the daylight hours, one should not let his hilarity dull the point of the fact that she is just the ideal type of cow for our bluegrass pastures in the Middle West where summer droughts are so frequent and severe.

For this reason, dairymen must set to work to breed this kind of cow—or find other more productive and dependable pasture than bluegrass. Obviously, the latter is the more practicable.

This test, and common experience show that bluegrass fails more than half the season and fails at any period of drought. The most certain thing about it is its uncertainty and the loss that comes to the whole herd from lack of supplying a sufficient pasture or ration during the hot, dry weather of summer is almost beyond comprehension, and may easily amount to the difference between success and failure to the dairy farmer.

Need Much Supplementary Feed With Bluegrass

According to the four years' test of bluegrass, and allowing one and a half acres of bluegrass per cow, a good cow would require to properly and adequately supplement pasture, an average of 30 pounds of silage, eight pounds of hay, and ten pounds of grain per day for five out of the six summer months and it would require one and a half acres of land per cow to produce this supplementary feed. Thus for a herd of twenty cows, it would take, besides the 30 acres of bluegrass pasture, 30 acres of other crops and all the labor of raising them; threshing the oats, making the hay, filling the silo, husking the corn and grinding the grain, besides the labor involved in feeding in the barn the year around. In other words, one acre of cultivated crops would be required for every acre of bluegrass pasture, and much labor in addition. This is expensive summer feeding and makes the profits lean indeed, but the loss is much worse with the many herds that are not given this extra feed because they go hungry, lose flesh, and fall off in their milk flow, thus cutting off all chance of profit.

Because sweet clover gave promise of being such a reliable pasture, I began raising it on my farm in northern Illinois twelve years ago. The results were so excellent that I have spent considerable time during the last few years studying this crop wherever possible.

To continue this study and to get a broader view of

the suitability of sweet clover as a pasture crop, questionnaires were sent to a large number of dairy farmers in different parts of Illinois who had pastured dairy cows on sweet clover and as an average on the 81 farms from which reports were received it took only three-fourths of an acre of sweet clover pasture to adequately support a cow. That is the average efficiency of sweet clover as a pasture; not a few exceptional cases but the common experience in all sections of the state and under all the varying conditions on these farms.

In the northern part of Illinois, farmers can usually turn out about April 25 and can keep the cows on the sweet clover pasture until approximately October 25—six months—while in the southern part of the state, the season is usually about two weeks longer. Six full months or more of good pasture, capable of supporting well over a cow to the acre, is a tremendous item in the cost of the year's feed and the resulting economy in milk production.

Best to Seed in Spring in Small Grains

The most successful management of sweet clover pasture requires seeding each year in the small grain. The cattle begin in the spring on the second year's crop which comes on early. They graze on this until the middle or last of August, when they are turned on the new clover in the grain stubble, and use it until the latter part of October. The old clover and the new seeding are growing on the farm each year, and the six months' pasture is partly from the one and partly from the other. The pasture requires but one year's use of the land, however, because a crop of small grain is cut from the same land on which the clover grows the first year. The expense of the ground is chargeable to the clover for only one year—the second year of its growth.

The established fact from this farm experience and the four years' bluegrass pasture test at the University of Illinois is that sweet clover has a six months' pasture season and a carrying capacity of a cow to three-fourths of an acre, while bluegrass furnishes pasture for only about

two months and requires from two to three acres per cow. The principal reason for this advantage is that sweet clover is so deep rooting that it does not fail in time of dry weather.

Stays Green and Fresh Throughout Summer

The cow's requirement for feed is continuous throughout the summer, and the greatest need is for an abundant pasture in the trying time of flies and excessive heat, which is just the time when bluegrass so miserably fails to supply sufficient feed. In order to solve the pasture problem economically, we must have an ample and continuous supply of feed for the six months of summer, and the 81 answers made it clear and positive that the sweet clover stayed green and fresh throughout the hot and dry weather of July and August when bluegrass pastures were burned up.

All of the farmers were highly pleased with the production of their cows and several reported better production on sweet clover pasture without grain than on such an excellent winter ration as corn silage, legume hay, and a good grain ration.

One cow on my farm produced 56 pounds of milk per day on sweet clover pasture without grain, and I have seen several other cows in different parts of the state that produced this amount or more on sweet clover pasture without grain. One of these cows, belonging to Mr. Renschen of Clinton County, produced 75 pounds of milk on three milkings per day without grain. Here is strong evidence of the high feeding value of sweet clover for dairy cows.

Saves Land, Labor and the Cow's Energy

In addition to the fact that sweet clover pasture saves land and labor on the dairy farm and provides for such a good production of milk, it aids the cow in producing this milk by conserving her energy in that it permits her to fill up on feed quickly and then lie down and contentedly chew her cud, instead of having to eat all day, as she does

on bluegrass during dry weather, in vain attempt to get sufficient feed.

Can Be Disked Into Bluegrass

There is much untillable land here in the middle west which is kept in grass pasture. Sweet clover seed worked into this bluegrass will—provided the land is not acid, and a good stand is secured—increase the yield of pasture two or three times. Maes Brothers, Jackson County, Illinois, have had remarkable success with this practice. At the time I visited their farm, one pasture was still producing a good amount of sweet clover after having reseeded itself for seven years. If a good stand of clover is secured in the bluegrass, one and one-half acres of this pasture should support a cow for six months.

Not Difficult to Grow with Proper Methods

Troubles have been found and failures have occurred in growing sweet clover and, for this reason, many imagine that sweet clover is a difficult and uncertain crop to produce.

Sweet clover has two requirements that are absolutely essential to its growth, namely: soil that is not acid and inoculation. Complying with these requirements makes the difference between success and failure in raising the crop. Experienced growers, almost without exception, report no trouble in securing a stand after the soil has been limed and inoculated where needed. This is a new crop and it is not strange that many growers should at first overlook or ignore this preparation.

Sweet clover often grows along the fence row or roadsides, and people make the mistake of concluding from this that their soil is not acid. The fence row has not been cultivated and hence has not lost its lime, while the tilled field adjacent has been worked for many years and is quite likely to be deficient in lime. The ground limestone should be applied and mixed into the soil three or four inches deep, at least six months before seeding. From two to four tons per acre is the usual requirement.

Lime Will Last a Dozen Years

It has been found by many actual tests, as well as by the luxuriant growth of the sweet clover, that one application of ground limestone will keep the soil sweet for ten to fifteen years. Sweet clover seeded on acid soil will frequently make a start and cause the farmer to think he is going to get a stand, but later in the season it turns yellow and dies.

Inoculation may be accomplished by buying the pure culture and following the directions that come with it. Another method is to get some soil from a field where sweet clover has grown successfully and mix a quart of this soil with a quart of water, shake thoroughly, and let stand a few minutes. Then pour off a pint of the top muddy water and apply this to a bushel of seed and mix well.

"Biennial White" Best Variety

"Biennial white" sweet clover is the kind recommended for dairy pastures. It will frequently grow successfully where alfalfa and other clovers will not grow at all. It is a sure "catch" when sown on sweet and inoculated soil. With ten consecutive years' seeding here at the University, a stand was obtained every year, while in the same ten years only five stands of red clover were secured. This variety of sweet clover develops such large, deep roots that it withstands the drought, withstands heaving in the spring if allowed a fair growth the summer before, makes the most pasture, and is most beneficial to the crops that follow. Care should be taken in buying seed to get this variety rather than some smaller strain or the annual Hubam.

Thus the more important points to be remembered under the successful culture and management of sweet clover for pasture may be summarized as follows:

1. If the soil is acid—apply lime. This is very important as it is a waste of seed and time to attempt to grow it on acid soil.

2. If the land is not already inoculated the seed must be.

3. Either for pasture or to plow under to improve the soil, the "biennial white" variety will give the best results and should be seeded in small grain in the spring.

4. The crop should be permitted to make a good growth the first fall. It should reach a height of 12 to 15 inches before turning the stock on so the plants can develop a deep root system.

Common Objections Not Serious

The three objections often mentioned in connection with sweet clover are that the cows will not eat it readily, that it sometimes causes bloat, and that it occasionally taints the milk. I spent one entire summer visiting dairymen who had their cows on sweet clover pasture and yet I have never seen anyone who put his cows on the sweet clover when it was young and tender who experienced any difficulty, after the first day or two, in getting his cows to eat it.

Tainted milk can be avoided by having a little dry roughage available to the cows to keep their bowels in good condition. This is especially important when cows are first turned onto sweet clover pasture. Many dairymen in Illinois are pasturing their cows on sweet clover and are shipping milk to cities and have no objections whatever because of a sweet clover flavor in the milk.

When sweet clover has not been frosted, I have never heard of a serious case of bloat if the cows are kept continuously on it, night and day, and are given access to a little dry straw in the pasture.

Thus the three common objections to sweet clover as a pasture come to naught when put to the test in intelligent farm practice while its advantages, in that it saves land, labor and the cow's energy, and thus produces more milk and profit per cow, per acre, and per man, make it a most valuable crop to the dairy farmer.

Liberal Feeding Important to Profit

In debating whether or not sweet clover will prove valuable to him, the dairyman should not lose sight of the fact that the kind and amount of feed which good cows get, largely determines their production, and also that feed is about 60 per cent of the cost of production. One of the high points to be remembered in dairying, is that the top of the ration makes the milk and the top of the milk makes the profit. Thus a crop which comes so near to completely solving the feeding problem for six months is surely worthy of first consideration in planning for the feed production of future years.

Question: If you turn cows out on sweet clover pasture in the spring you are apt to have trouble with bloat. How would you avoid that?

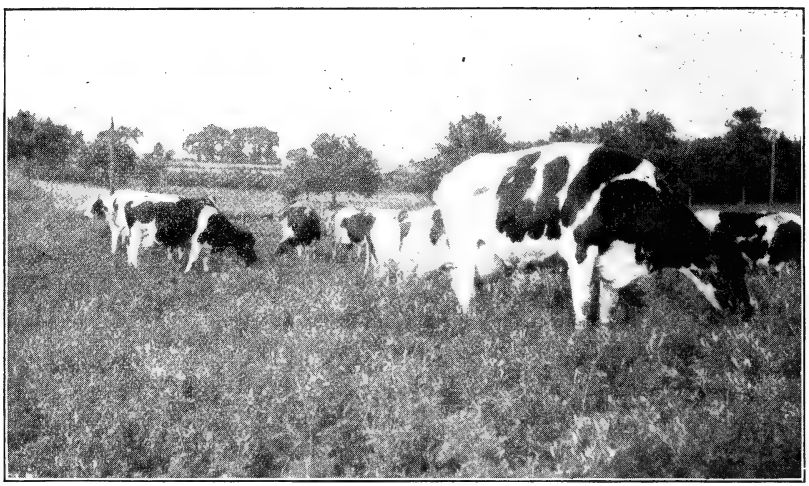
Prof. Fraser: If you turn them out when the cow is full of her ordinary feed, wait until the dew is off, and keep a little dry straw on the pasture, you will have no trouble at all with bloat. The cows will eat some of this dry straw. The same thing will prevent taint of milk. Whenever you keep a cow's bowels in the right condition you are not apt to have any trouble with tainted milk.

When you once get them on the sweet clover pasture you want to keep them on. If you keep them off over night and turn them on again hungry next morning, you are apt to have trouble. The only time I have ever known them to have trouble with bloat was once in the middle of May, when we had three frosts in central Illinois. They ate that frosted alfalfa and it did make some of them bloat.

Question: How about in the fall?

Answer: It doesn't seem to be so bad in the fall. You see, it is exceedingly green and succulent the middle of May. By the time we get frost in the fall it is cooler and it doesn't grow so fast.

If your cows are giving over twenty-five pounds in milk, you ought to feed grain.



Productive Pasture for Good Cows Boosts Dairy Profits

Cow Comfort After a Big Meal on Sweet Clover Pasture

A Perfect Stand of Sweet Clover After Lime on the Acid Soil of Southern Illinois

Question: What kind would you advise?

Prof. Fraser: Just farm grown grain; you don't need high protein feeds. (Applause.)

President O'Hair: Down in the hills of Tennessee a colored preacher was holding a meeting. They had got things warmed up pretty well, he asked for testimonials, and there was a lot of them got up and testified, and after that he said he wanted testimonials on heaven, and they all said they knew heaven was their home and hoped the Lord would come and get them. And then the preacher said, "Brother Smith, haven't you got a testimonial?" He said, "Yes, yes, I testified too. I know Liza has gone on over and Lizzie is there, and the children is there, and I know heaven is my home, it is a beautiful home, but I want you to know I ain't a darn bit homesick." (Laughter.) I hope you are not homesick, as we have got three of the best men yet.

This afternoon we will move back to the rear of the room where it is warmer and we can be more comfortable. Mr. Caldwell will speak to us this afternoon. Mr. Barney will tell you that the Holstein cow is better than a Jersey and I want you to hear him. That is this afternoon, and if you come back don't think you are going to get too cold.

And now I am going to introduce to you the giant of the dairy business, the man that is known from coast to coast as an authority on the subject—Hugh Van Pelt.

SELECTING DAIRY COWS

By Hugh G. Van Pelt

Starting in the dairy business is based upon the selection of good cows. The question of starting in the dairy business is a question of the advisability of starting in the dairy business and starting right. I would like to say just one word upon that, because I believe that if every farmer in this county or in this section of the state could only be here and take home with him this particular portion of the message I would like to leave with you, it would have a great bearing on the prosperity of this part of the state.

It seems to me there has not been a time when it was more advisable to go into the dairy business with good cows and provide feed for them in the manner in which it has been outlined here, than at the present time.

I heard Doctor Larson of the Bureau of Dairying, Department of Agriculture, speak the other day, and I was absolutely surprised to learn what the situation pertaining to dairying is in the United States at the present time; to think in advance far enough for the calf of today to be the cow of tomorrow; to think what the dairy situation is going to be.

During the six years following 1918, the per capita consumption of milk in all its products increased from 834 pounds to 1020 pounds. Now to supply this amount of increase would require over six million cows more than we had in 1918. To take care of the increase together with our increase of population—you know it requires an increase of three hundred and seventy-five thousand cows per year for us to take care of the per capita consumption of our increased population—over six million cows would be required, providing our cows were giving no more milk than they were six years ago, but the average production per cow has increased about five hundred pounds per year.

During that time we have had an increase of a trifle

over two million cows, so that at the present time we are four million cows behind what we were six years ago, from the standpoint of cows per capita of population, and we are not now increasing very rapidly in cows.

I spoke a week ago yesterday at Hartford, Connecticut, to the Connecticut State Dairy Convention, and I wish you people could have been there. Conditions there are much more exacting than here, where farmers buy corn and oats and protein feeds. They ship feed half way across the nation, and it is a problem how to make money, and they have figured their problem down to where they do not believe they can afford to raise calves. I think they are wrong because they are already buying good grade cows in all of the eastern states and paying from one hundred dollars up. They cannot buy a good grade cow short of one hundred dollars and in some sections, especially good grade cows are selling for one hundred and twenty-five dollars to one hundred and fifty dollars, some of them one hundred and seventy-five dollars. It looks to me that one of the very best businesses we could have in this country is to do as they are doing up in Wisconsin—raise good cows for the people down east.

In the convention hall was a big sign, "Connecticut imports 12,000 cows a year." All the eastern states are doing likewise, and so when I say to you that we are four million cows behind right now, in the United States, and that we are increasing to the extent that we need three hundred and seventy-five thousand cows a year, you can see we are going to have to do something before we begin catching up with our quota.

I think the next problem we are going to have in this country is lack of milk supply. As was brought out here yesterday, when we get to the point where the demand exceeds the supply sufficiently, then we will have a condition where oleo creeps in to take the place of our butter. That is really a danger which confronts the industry.

In addition to that, already we are facing foreign butter leaping over our tariff wall to supply the butter which we are not producing for ourselves; and I would deviate

a moment here to say that whenever foreign nations, some of them buying our feeds, paying freight on them across the nation and over the ocean, feeding them to good cows, converting them into butter, shipping the butter back across the ocean, leaping over our tariff wall and competing with us, whenever that situation begins to take place there can be no doubt but what there should be profit in milking good cows properly cared for in this country.

Now I don't believe that there is any profit in milking poor cows improperly fed and improperly cared for, and I believe there has never been a time when good cows, properly fed, have not represented a profitable type of agriculture. I don't believe the time will ever come when it will be unprofitable to properly feed and care for good cows. Good care and feed, and good cows go hand in hand. There is no use knowing what a good cow is unless you are going to properly feed and care for that cow if you have her, and on the other hand it is just as true that there is no opportunity of making a profit out of a poor cow, no matter how well you feed and care for her. These things dovetail, and in starting in the dairying business it seems to me there is just one way to do it economically, safely, and on the basis of making a profit.

Successful and profitable dairying is not at all difficult. There is not a farmer in this country, in fact there is not a boy in this country but whom you can start in the dairy business and do so economically and in a manner which will result in profit and pleasure to him, providing he starts rightly.

The man who is farming should not be kept away from good dairying because of any great investment required. My observation has indicated to me that successful and profitable dairying results from starting in a very small manner, investing a small amount of money, rather than starting in a good way and investing a lot of money. A man who has in his mind that one good cow properly fed and cared for is more to be desired than a herd of poor cows improperly fed and cared for, has the secret of starting in the dairy business. My experience, extending

over a good many years in the breeding business, has demonstrated a very peculiar attitude of mind possessed by men who desire to start in the dairy business. That man who is starting in the dairy business invariably knows about how much money he can spare. Then he decides how many cows he desires. His next step is to make that amount of money spread over that number of cows. He probably has ten stalls in his barn, and so he decides that he must fill every stall. He takes the amount of money which he has and goes forth with the determination of securing ten cows for that money. Invariably he should secure one cow and one sire with his money, instead of ten cows. That has been brought out very fully, however, and I do not need to discuss it.

There is no doubt whatever that a man can make more money with one good cow properly cared for than he can with ten poor cows improperly cared for, so if I were advising one about starting in the dairy business today, I would suggest that he take just the equipment which he has and start with one or two or three just as good cows as he can buy, and then have as good a sire, at least as good a sire as the cows he has, and then feed them abundantly and take care of them, never allowing his herd to get so large but what he can give each cow the individual attention that she should have.

Until one fully realizes that dairying is a business of recognizing cows as individuals, feeding and caring for them as individuals, it is difficult to succeed with dairying, but just as soon as we realize that every cow is just as much an individual as we ourselves are, that she must be cared for as an individual, fed as an individual, then dairying is certain to be profitable. When we have reached that stage, then, and then only is it advisable to decide what a good cow is.

We are milking twenty-six million cows or thereabouts, in the United States, and I wonder if the men who own and feed and care for these cows have ever stopped to consider what the characteristics of a good cow really are. I have given much thought to this, and I have asked thou-

sands of people to give me an additional point to those which have so long seemed to me to be the really essential points to be observed in selecting dairy cows—and I have never learned of a sixth essential point! As long as there are only five of these essential points, I am advising you that when we point them out on the good cow which is before you, that you remember them, take them home with you and put them into practice, and remember this: all these five points dovetail together just like that (indicating) and it makes no difference how well developed a cow may be in any four of these points, if she is seriously lacking in a fifth point she is not going to be a highly productive, economical, profitable cow, because she is not a whole cow, she is only a part of a cow, and to be profitable under agricultural conditions as they always exist, a cow must be a whole cow.

She must be well developed in these five essential points. I hope when we have shown these five essential points you will realize that it makes no difference whether you are milking grade cows or pure-bred cows, whether you have Guernseys, Jerseys, Holsteins or Ayreshires or any other breed, the five essential points obtain just the same. When you have come to realize this, I hope you will forget the little details which so many attempt to put into practice when we go out to select cows, and especially when we go out to select sires.

It is amazing to know how many people interested in Jerseys, for instance, will not buy a cow if she has a white spot on her in some place, because they think she must be a scrub. Many men are so peculiar that they look in a cow's mouth to see what color her tongue is, and if it is white they think there is something wrong, and if she is a black Jersey they positively would not have her. They do not realize that the highest-producing Jersey cows we have are black cows. I could tell you the reason, but that would take too long a time, but I will just leave it with you to look from now on and see if you ever see a bad black Jersey.

I was down in Louisiana a couple of years, where

some colored boys were milking the cows, and one of them would seemingly always get a pail of milk from his cow. I went over to him and said, "You always seem to get a pail of milk from your cow, how does that come?" He looked up at me and rolled his eyes and said, "Boss, I always picks the black one." So many people are selecting cows on color. If a Guernsey and her face is black they won't have her. If she has got white spots and is a Jersey they won't have her, and if she is a Holstein and isn't black and white they won't have her. If she is a Jersey and she is black they won't have her.

Let me send this message home with you, if I don't leave anything else today: those things are details and amount to nothing except as they please one's personal vanity and personal pride. I know a lot of millionaires that can afford to do that way, but personally I have never gotten rich enough to be able to select cows on the question of whether they have white tongues or black and white switches. Just remember that whatever breed you have, the fundamental basis of a good cow is the five essential points, which are:

1. Constitution.
2. Capacity.
3. Dairy temperament.
4. Blood circulation.
5. Ability.

I have mentioned constitution first, not because it is any more important than the other four points, but you will agree with me that constitution is essential because of all of the animals that we have on the farm the cow is the hardest-worked animal we have. We expect that she will work twenty-four hours a day, three hundred and sixty-fixe days in the year. When she has finished her year we expect that she will do another year's work and keep this up twelve or fifteen years, in the dairy, if she is a good cow. In order to work as the cow is expected to work and as she must work if she is going to be highly productive and economically profitable, she must have a strong con-

stitution. Her constitution must be doubly strong, because we of the north, when the cold weather of late fall comes, put our cows in the barn and keep them there until along in the spring, the latter part of March or April, and there is not one man out of a hundred, and possibly one out of a thousand, that ever stops to think whether his cow has fresh or pure air to breathe, because we have not yet figured that fresh air and sunshine are just as essential to large and profitable milk production as feed and water are.

There are only two things I know of, that cost no more now than they did before the war—sunshine and fresh air. They are the only two things that I know of which we strive so hard to keep out of our barns and away from our cows in the winter time—sunshine and fresh air. If we would just go home now and make some openings in our barn and let in sufficient fresh air and sunshine for our cows, we would not only increase the productivity of them but we would add greatly to their healthfulness. Many of our barns are veritable incubators for disease germs which are the cause of tuberculosis, contagious abortions, cow pneumonia, calf scours, and such diseases. If we would just give the cows the fresh air and sunshine which they need, which would cost us nothing, we would get away from a good many of these diseases and produce milk and butter fat at a much greater profit.

The indication of constitution is, first the large nostril. The only thing that purifies blood is oxygen and the only available oxygen is in fresh air, therefore the only oxygen that gets into a cow's lungs to purify her blood must pass through the nostrils. I know of no reason why a fast horse should have a large nostril any more than the dairy cow, because the dairy cow not only works as hard as the horse, but she works twenty-four hours a day.

In order for the cow to have a strong constitution she must breathe large volumes of fresh air containing oxygen. The cow with a large nostril, other things being equal, has a better constitution than the cow with a small nostril. This cow's nostril is not at all large, making it necessary that she breathe much more rapidly than a cow with a

large nostril or she does not get the fresh air into her lungs to purify her blood. There is no doubt that the cow with the large nostril gets more oxygen to purify her blood than the cow with the small nostril.

We ask that the top of the cow be deep from the top of the shoulder to the floor of the chest, and well sprung in the front rib, allowing plenty of room for the respiratory organs, the heart and lungs. That cow which is shallow from the top of the shoulder to the floor of the chest may give a lot of milk when she freshens and for thirty or sixty or ninety days, but gradually she decreases in milk flow and becomes unprofitable. After six or seven months she goes dry and shows a loss rather than a profit until she freshens again. So if our cows are to be profitable, live long and be healthful, they should have nostrils that are large, and chests that are deep and well sprung ribs.

The second point is capacity. A lot of people object to having their cow called a machine, and I realize that a cow is much more than a machine. She is a living, animate object. She responds to kindness, good care, feed and love, more than a machine. Nevertheless, when we get right down to the basic facts, your cows are machines that are placed on your farms—in your factory, if you please—for identically the same purpose that machines are placed in the factory under the big smokestacks in the cities; for converting promptly, economically and profitably the raw materials you grow in your fields, the grains and grasses, into the finished commodities, milk and butter fat, and that cow which can eat the most feed in a given specified time and manufacture it economically and profitably into milk and butter fat is the most profitable cow for you to have.

And then, when you have such a cow the most profitable way to utilize her is to give her every bit of the right kind of raw material that she possibly will utilize economically and profitably without interfering with her usefulness and health.

The indications of capacity are, first, the large mouth. Any animal with a large mouth is a good feeder. Any animal with a small mouth is a poor feeder. The man who

feeds beef cattle for the market learned this long, long ago and avoids the steers which have small pointed mouths. The beef man knows that a steer with a small mouth will not eat enough feed to get fat. Such a steer will never be profitable. The same is true of the cow. The cow with a small mouth will eat enough feed to maintain her body but not enough to produce largely and profitably, milk and butter fat.

It has been said that cows which can drink out of a tincup will give a tincup full of milk, but a cow which requires a washtub out of which to eat and drink will give a washtub full of milk.

We ask that the cow be long from the shoulder to the hip and beyond, well sprung in the rib and deep in the body. There is where she stores her feed.

If the cow is short from the shoulder and doesn't have the spring of rib she is short and shallow in the body, she will not store up the amount of feed to make butter fat required for a profit. Cows short from the shoulder to the hip and beyond, slab-sided in the rib and shallow in the body, do not eat enough feed to be profitable; they eat enough feed to take care of themselves but not enough to make any profit for their owner.

The size of the barrel is merely indicative of the amount a cow can eat at one time. The question of how she handles her feed depends on the character, strength and power of her digestive apparatus, which in turn is determined by the condition and appearance of the hide and hair. This cow is covered with a hide soft and pliable and elastic, although she has not been blanketed, probably given no special care. If you were to run your hands through her hair you would see it is soft and silky. The hide and hair are merely a continuation outward of the vital organs of digestion. Soft and silky hair is indicative of a strong, powerful digestive apparatus. She will eat her feed, as much as she can, then she will lie down. She regurgitates her feed, masticates it, mixes it with saliva, starts the first processes of digestion, gets rid of that feed promptly and is ready for more. That cow which has a

hide and hair resistant to the touch, a hide which clings to the ribs and is covered with stiff, coarse hair, has a digestive apparatus that there is something wrong with, either temporarily or permanently. She may eat a lot of feed at one time, but she does not digest it sufficiently; there is a large portion passes on undigested and wasted. She is not an economical cow and certainly not a high-producing cow, because she wastes her feed.

The third essential point is nervous temperament or we might call it dairy temperament. The question is whether the cow is a worker or a loafer. A loafer is not profitable in any family or in any class of animals. Our cows must be workers if they are going to be high producers. The cow that stands in the shade of the tree and in the pool of water, fighting flies while the other cows graze back and forth across the pasture, gathering green food and nutrients, is a loafer and is not a profitable cow.

The indication of nervous temperament is first, the head. This cow is broad between the eyes, well dished in the face. She has large, bright, prominent eyes. Those are the first indications of dairy temperament or the inherent power and ability to work. Then as we pass on back we ask that the cow be free from beefiness over the top of the back. Along this cow's back is an absence of beef and fat over her backbone. The spinal vertebrae are very prominent. There is her hip, there is her rib, not an ounce of beef on the cow's body. She has converted it into milk and butter fat.

Whenever I reach this point I always stop just long enough to say that this absence of flesh should not be an evidence that the cow has not had enough to eat. A good dairy cow properly developed in nervous temperament will be free from beefiness over the top line and over the hips and ribs, even though she has eaten enough feed in a year to feed two or three steers.

The dairy cow has been bred for generations for the purpose of manufacturing her feed into milk and butter fat, and milk and butter fat are not made over the top line or over the ribs; they are made in the udder, so that the

good dairy cow properly bred takes her feed and places it in the udder where milk and butter fat are made. This absence of beefiness over the top line and over the hips and ribs is the evidence, providing the cow has been well fed, that she is utilizing her feed for manufacturing butter fat worth fifty cents a pound instead of beef fat worth ten or fifteen cents a pound. Cows covered with a lot of beef over the top and over the ribs are loafers, because they have converted their feed into beef instead of butter.

The only way to get back the money invested in this beef the cow has manufactured out of her feed, is to kill the cow, and that spoils the game.

The fourth point—blood circulation—is the question of what the cow does with the nutrients she has taken from her feed when it has entered the digestive apparatus. If you stop to think how one cow takes feed and manufactures it into beef and another cow takes the same feed and manufactures it into milk and butter fat, then you will begin to realize that the character of the blood flow of a cow, and the direction in which it flows, are very important factors. Books and volumes have been written upon this, but briefly, the beef cow eats her feed, and when she gets time she lies down, regurgitates, masticates it, mixes the saliva with it; it then goes into the second stomach, passes to the third and fourth and as it passes along in the processes of digestion the digestive fluids take from it the digestible nutrients. Then the blood is pumped out from the heart and passes along the digestive system, picks up or absorbs these nutrients and, in the case of a beef cow, puts them on the top of the shoulder, on the back, loins and hip, and rump, and in the hind quarters; the beef cow places her feed above that line there (indicating on cow). You must bear in mind that the high-priced cuts is above that line, and if your cattle are to sell for ten or eleven cents instead of three or four or five cents a pound, you must put your feed into cattle that will have porterhouse steaks and rib roasts. So, the reason we have beef cattle is because they have been bred for the purpose of manufacturing their feed into beef and putting their feed over the high-priced cuts of the animal.

While our beef breeders have been striving to breed animals that will so convert their feed, there have been intelligent men over in Holland and Scotland and on the Jersey and Guernsey Isles and here in America, striving to breed a cow that will eat feed in the same manner as the beef cow, digest it in the same way, have the nutrients absorbed in the same way, and then put them down in the udder. That is why we have dairy and beef cattle, and that is why it is such folly for you to attempt to profit with dairying cattle in the feed lot. It also shows the absolute folly of using cows whose ancestors have been bred for a hundred years or more for the purpose of making beef on the top line and expecting them to change right around and put their feed down in the udder. If we are going to manufacture beef, let us do it with cattle bred for the purpose, and if we wish to manufacture milk and butter fat let us choose one of the breeds that has been bred so long for the purpose of manufacturing milk and butter fat. Then, when we select our breed, regardless of what that may be, let us see to it that the individuals we select have these characteristics which are indicative of large, economical, profitable milk and butter fat production.

The evidence of how much blood flows past the digestive apparatus, putting nutrients in the udder, is portrayed by the veins on the udder and the veins which pass forward from the udder. Especially good, high producing cows, when they are in large flow of milk, have veins which are readily seen all over the udder.

All cows have two large veins passing forward from the udder. We call them milk veins. They do not have milk in them, they have blood in them and they carry the blood which has left the udder after depositing therein the digested milk-making nutrients. Then when the blood flows up to this point we find an opening in the cow's abdomen, large enough to insert the thumb. Through these openings the blood passes back to the lungs. The blood is continuously pumped out and goes into the udder, leaving nutrients to be made into milk and butter fat, and then hastens back to the lungs to be purified and to the heart

to be pumped on its journey again. Throughout the life of the cow that process continues. All cows have two of these veins, one on each side. All cows have at least two milk wells. Some cows have little short, straight veins the size of your little finger, and little milk wells in which you can just about insert the little finger. Especially good cows have large milk veins the size of your wrist, and they are crooked, passing back and forth across the abdomen of the cow. The milk wells are large, in which you can insert your thumb, showing that there is a large flow of the fluid carrying an enormous amount of nutrient for the manufacture of large quantities of milk.

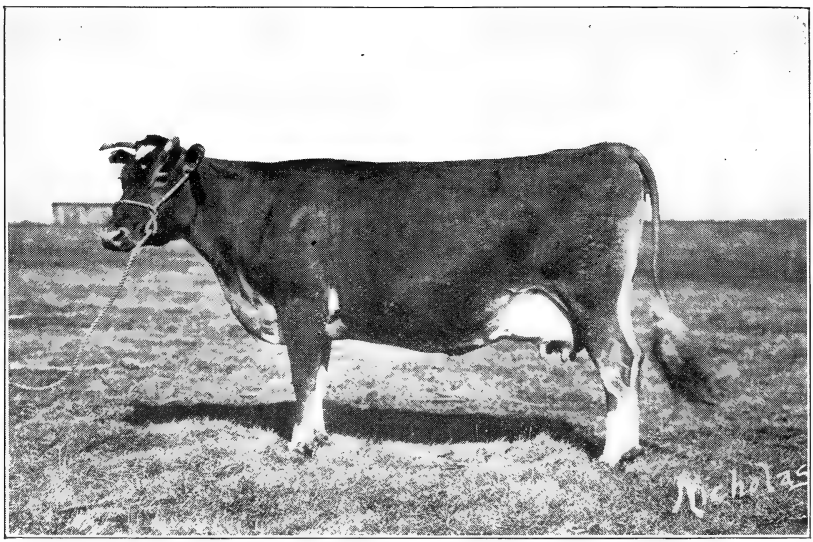
I said all cows have two of these milk wells. Some cows have three or four or five. I have counted as high as thirteen of these milk wells on one cow's abdomen, which was absolutely covered with a network of veins varying in size from the size of your thumb to the size of your wrist.

Someone spoke here yesterday of a cow giving thirty-six thousand pounds of milk in a year. In order for her to give that amount of milk there is required a tremendous constitution, a tremendous capacity for handling feed, a wonderfully developed nervous temperament employed in gathering and digesting and assimilating this tremendous amount of feed, and then there must be a very remarkable flow of blood, carrying the nutrients from the digestive apparatus and placing them in the udder. Were you to look under such a cow, you would find that she has her abdomen absolutely covered with veins to take care of this tremendous flow of blood. You would probably count on her abdomen, if you were careful, ten to fifteen of these milk wells provided by nature for the purpose of permitting the blood to get back to the lungs and heart for purification, to be pumped back again.

I have never seen a good cow with little, short, straight veins and two little milk wells. I have never seen a poor cow with great large milk veins and large numerous milk wells, so if these indications are present and associated with the other essential points, you can depend upon it that productivity of your cows is quite certain.

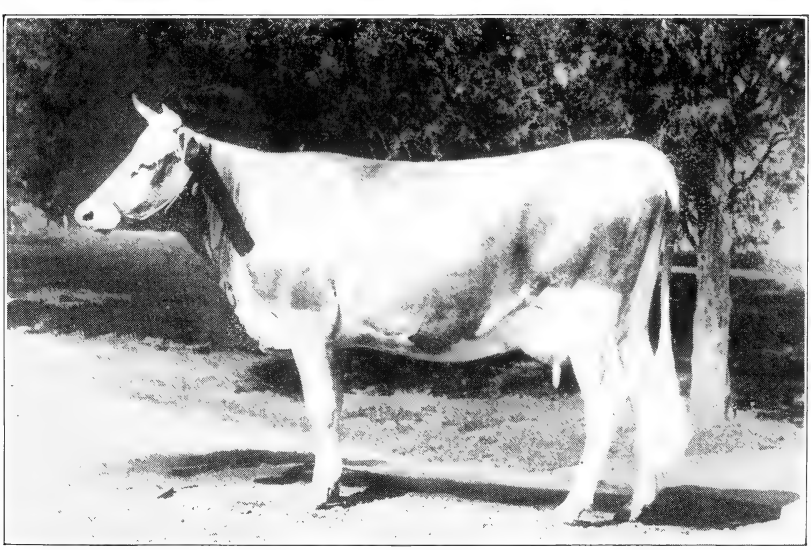
The fifth point I mentioned was ability. That is the evidence of what the cow does with the digested nutrients after they are placed in the udder. We realize that a cow must have a large udder in order to be a cow of ability. The dimensions are size, length, breadth and depth. We do not desire that the cow's udder be very deep, because such udders are troublesome. In the summer time when they are on pasture they may run coming to the barn or going from, and when they do, the udder flops back and forth, hits against the legs or against some foreign object, and little blood vessels are broken in it and the cow gives bloody milk. Until this condition is corrected the cow is not profitable. And then, in late fall or early spring, the cow lies down on a cold surface and catches cold in the udder, garget results and she probably loses a quarter or half of her udder. Invariably cows with deep udders are troublesome cows to have.

We ask that the cow's udder therefore be set well up against the body, and because we sacrifice a portion of the size and capacity in decreased depth, it is all the more necessary that our cows have udders that are broad and long. In order for a cow to have a broad udder she must be thin in the thigh, well arched out, giving room for the wide udder. You will notice this cow's udder sets way up there (indicating), she is thin in the thigh, and when she is fresh and the udder is full, her udder would hang up there (indicating on cow). Cows should be well arched out in the thighs, giving room there for broad, highly attached udders. We wish the udder to extend far forward, because the measurement of length is from the attachment behind to the attachment in front (indicating). That gives length and breadth of udder. You have all seen cows with large udders that were not large producing cows. The reason for this is that some udders are just as large after milking as before, and the reason for this is that they are made up of beed and fat instead of milk-making glands. made up of beef and fat instead of milk-making glands. is filled with milk-making glands are the handling qualities of the udder; it is soft and elastic. This cow's udder is



GUERNSEY COW

Beauty of Ore Hill 93905. Will produce about 650 lbs. fat this year. Owned by H. C. Horneman, Danville, Ill.



GUERNSEY HEIFER

Pergue's Gloria Crescent 247257. Record at 2 years—13120.3 lbs. milk and 666.4 lbs. fat. State Champion Guernsey in Class G and GG. Ranks eighth for the entire breed in Class GG. Owned by H. C. Horneman, Danville, Ill.

soft and elastic and covered with soft, silky hair. The udder as the cow feeds gradually expands, and as we milk her it collapses. As she feeds again it expands; twice a day during the milking period that process takes place, and when cows have udders that are long and broad, attached up well against the body and have proper texture and quality as is evidenced here, they will be large producers, providing their ability is reinforced with the right kind of constitution, capacity, dairy temperament and blood circulation.

Now these five points we must have. After that, then it is well to please our vanity, if we may call it that, by looking for the color of cows we wish, the size of cows we wish, and the other details, which are absolutely personal with us and have little if anything to do with the productivity or the capacity of cows.

Just one more point and I am through. That is the question of where to secure these cows. I mentioned before that in starting in dairying one should not only have good cows, but a good sire. We should bear in mind that cows are nothing more nor less than the reflection of the sires that have been used in generations preceding them. Our cows of the future are going to be identically the kind of cows that the sires we use will breed for us. The strangest thing that I know about in all agriculture is the carelessness with which sires are used on the American farm. It is something that is absolutely impossible to understand. Any good farmer realizes that if he is going to raise good corn or wheat or oats or alfalfa or sweet clover or anything else, he must use good seed. He seems to recognize this same factor in connection with his pigs and chickens and beef animals, but when it comes to breeding dairy cows he seems to think it makes no difference what kind of a sire he uses, he can have good cows.

Now there is no class of animals on earth that I know about, that will respond so quickly to the use of either good sires or poor sires. This is based upon the law that like begets like or the likeness of an ancestor. That is as true today as it ever has been, and we have known of that

law being in operation for the last two thousand years. Interpreted into every-day language it means, use good sires and you will have good cows; use common no-account sires and you will have common no-account cows. So again I would say in starting in the dairy business, I have never greatly favored going out and buying a lot of good cows. I have always believed we could take the cows we have on our own farms, at least select the better of them by the use of scales and the Babcock test, and then mate them with good sires, knowing that each generation we will have better cows providing each generation we use better sires than we used the generation preceding. It is absolutely a certainty that if you will use a good sire that is strongly bred and therefore pure-sired, that you can have any kind of cows that you desire. And take this home with you: if you use just a common old cheap bull without any breeding behind him, without any individuality, you are going to breed that kind of cows. If you will use a good sire, strongly built along lines of milk production, mate him with your cows and raise heifer calves, you will raise good cattle.

The kind of a sire that we use is one that inherently possesses exactly the points we desire in our cows, therefore we wish sires that have large nostrils, clean-cut faces, broad between the eyes, large, bright prominent eyes. In the sire we wish that the neck not only be fairly long but well crested, clean-cut over the shoulder, especially deep from the top of the shoulders and down to the chest, and well sprung in the ribs. He should be straight and strong of back, because we must realize that the proper build depends as much on the cow extending upward as extending downward. If your cow has a back that falls from four to six inches, then there must be that much fall down here (illustrating), therefore we desire straight and strong backs on our sires so that they will transmit that characteristic to their offspring. He must be well sprung in the rib and deep in the body, long from the shoulder back to the hip bone, hide soft and covered with hair that is soft and silky, because we must have that combination and that

condition existing with our cows, and if that condition exists in our sires and they are pre-potent, then regardless to an extent of what kind of cows we mate them with, they will transmit those characteristics through the cows to their daughters. Then, gradually, we will be breeding the kind of cows we desire.

We need not think that we are going to do it one hundred per cent in one generation, but we must have the patience of the breeders of other countries; we may expect to make large improvement the first generation, improvement almost as large as the second, and show a like improvement the third generation, and thus continue to improve. We should remember that our lifetime, although too short to breed the perfect cow, nevertheless is long enough for us to breed as good cattle as can be bred, providing we use the right kind of sires.

When we think in these terms, let us also call to mind that as long as life is, from the cradle to the grave, it is too short for us to fool it away monkeying around with scrub cows and not properly feeding them, and especially is it too short for us to take the trip accompanied by a scrub or a no-account sire which breeds cows down instead of upward. I think that ninety per cent of the dairymen of this country are using sires which are breeding downward their cows instead of breeding them upward. We know that we want to breed them upward, and whether we do or not depends absolutely on the kind of sires that we use.

And then in selecting sires we wish that they be long and straight from the hip bone back to the pinbone. When we drop a plumb bob down in front of the cow's hip it falls just in front of the udder, and a line dropped down from the pinbone drops just behind the udder of the fresh cow when it is full. A cow that drops from hip bone to pinbone has an udder which cuts up in front, and whenever we cut away any portion of a cow's udder we reduce the capacity. Now if we use prepotent sires that are long from the hip to the pinbone, and straight, they will transmit through the cows we are milking today to the cows which we will be milking in the future, this characteristic of

length and straightness. Then the heifer calves will be long from the hip to the pinbone and they will grow into cows with udders that will distinguish the profitable cow from the unprofitable one.

Especially do we desire that our sires be well arched out between the thighs and thin there, because they will then sire heifer calves that are well arched out with thin thighs, and when the calves grow up there will be plenty of room for a broad, long udder.

Every one within reach of my voice knows very well that success in breeding any class of livestock depends upon the use of good sires. You can breed your cattle upward or you can breed them downward. Whichever way you go depends absolutely upon the kind of sires you use and the manner in which you raise and grow and develop your heifer calves.

I want to thank you very much for the kind attention you have given me. If there are any questions I can answer for you, I will be glad to do so. Has anyone a question?

President O'Hair: Professor, you are invited out for dinner, and they are waiting for you.

Mr. Van Pelt: All right. Let's go.

Whereupon the meeting adjourned till 1:40 P. M.

THURSDAY AFTERNOON SESSION

January 28, 1926—1:30 P. M.

President O'Hair: The meeting will please come to order.

It is just too bad to bring a man four hundred miles, that absolutely knows what he is talking about, and not have a thousand people here to hear him. Professor Caldwell talked over in our home community last year, at the farmers' institute, and they are still talking about it over there, men and women. I don't think any man ever talked in our county, who made a bigger hit, if you will excuse the expression, with the people, than Professor Caldwell. Now he is here and going to talk to you folks. There are only a few here, but I am sure he will feel repaid by the good-looking folks that are here.

Now we have two more men to talk to you this afternoon; and this program we have had puts me in mind of two boys, a town boy and a country boy, the town boy a well-dressed little chap who always got good marks in school, and the country boy a freckle-faced, tow-headed, bare-footed nimble youngster. The country boy had a stone-bruise on his heel and the town boy went out to see him. They went out through an old field and in an apple orchard. There was one apple in that old orchard. They knocked it off, it went in the rag-weeds, the country boy was after it, picked it up and began to eat it. The other little fellow sat there watching him every time he took a bite. Finally he said, wistfully, "Give me the core." And the other boy stuffed it all in his mouth and said, "There ain't goin' to be no core." (Laughter.) This is the best program we have ever had, and I will just say without any fear of contradiction that this has been the best array of speakers that has been or will be in Illinois this year at any meeting. (Applause.) We have brought them here, and as I said this morning, the three or four boys that were

in here, about fourteen or fifteen years old, who were paying strict attention to what was being said, would get enough to in years pay big for what they had heard here.

This afternoon closes our program as you know. I want you to get all we have to say. Now we will begin by introducing Professor R. E. Caldwell, the man that is second to nobody in the dairy business—Professor Caldwell. (Applause.)

DAIRY INDUSTRY DEVELOPMENT

Professor R. E. Caldwell, Waukegan

Mr. O'Hair, ladies and gentlemen: We have such a scattering audience here that it makes it very, very difficult indeed, to speak, and if those few of you who are present would assist me a little I believe I could perform for you much better. There are three of you over there; come right on down, boys, because I certainly like to be more intimate with my crowd than I can be with ninety per cent empty seats.

Your President has just stated that you have had quite an extensive array of speakers. I think the program of yesterday was one of the most unusual dairy programs that was ever staged any place, considering the type of topics that was presented, and I believe just for the few minutes that I want to take your time, that I would best just review some of the various points that have been stressed here at this convention, and pick out if I can, or renew and emphasize in your mind some of the points that should be kept uppermost from a practical standpoint.

Take the dairy industry in the first place; what has been the cause of its development? There is only one thing that is back of the dairy industry, and that is the need of a good type of human food. When our forefathers settled in New England, what did they do? They began

to grow grain, and wherever they grew grain, grain crops, the grain crops depleted the soils of those bleak New England hills, until finally no more grain could be grown and they had to move west in vegetation soils, which they did; and in their place came the beef cattle man, and the grain farmer moved farther west and farther west until he came to New York, across Ohio, Indiana, Illinois, and today he is making his last stand in western Kansas, Nebraska, Oklahoma, North and South Dakota. Now across this entire process you find a few of the grain farmers still staying put. You have in this locality a very, very rich soil, a soil that is very hard to deplete, very hard to starve out the exclusive grain man, unfortunately so from the standpoint of the most successful agricultural program.

However, gradually the beef man and the hog man has come in and now as the population becomes heavier, more dense, as large cities grow closer, you are going to the more intensive types of production, which is the dairy and the old hen. I may have a good part to say this afternoon in regard to poultry as a subsidiary line to dairying, because I think, analyzing it more closely, that the dairy industry in its program causes the most intensive type of dairy business to be located near our large cities. This is gradually moving farther and farther out into the country.

We have heard a great deal in the last ten years in Illinois, regarding the dairy business. It is a prosperous industry in the state; taking during the past six years, I suppose the dairyman has been the most prosperous of all classes of farmers. I do not believe there is a single general class in that general line of products that has been more prosperous, better fed, less prone to complain, than has the dairyman. Now it all must be based upon some very sound thing, which is the use of good cows, intelligent feeding, and intelligent marketing.

Many people, especially in new countries—just a point that I wish to make, and I will speak very much at random this afternoon—after hearing a program such as you have had here this week are apt to become over-enthusiastic on the dairy business. If I offer one word of caution,

it is not to become over-enthusiastic. Don't go into the dairy business; grow into the dairy business. Remember that the farm as a farm must always be major. No matter how extensive a dairy industry you develop on your farm, make it always a subordinated part of the farm and the farm a unit in the support of that industry so far as the feeds are concerned chiefly.

The next point to keep clear in the mind is the matter of using good cattle. Now we have four or five great breeds of dairy cattle. You will find one man very much enthused as regards one breed and another man enthusiastic in regard to another. There is no really superior breed of dairy cattle. They are all good. You remember there is greater variations between individuals within a breed than there is between the average of breeds, so the mere selection of a breed does not guarantee you salvation in the development of your dairy business. Select the breed that most nearly fits into the type of dairy industry you want to carry on. If you are selling cream for the making of butter or for the making of ice cream, naturally a breed of cattle that will produce butter fat and cream most economically should be selected. If you are producing whole milk and desire volume, if your proposition is a matter of volume and you must naturally supply milk of standard nutrients, use breeds of cows bred and developed for centuries for that purpose.

Do not fuse one with another breed of cattle. That is not the point at all. Make use of the breed that most nearly fits the business in which you are entering, then select the breed you like best personally, then select the breed you can most economically make use of in getting into the business, then go into the business very slowly, not necessarily with pure-bred cattle. Always keep a pure-bred sire, a sire of proven worth from the standpoint of production, and gradually increase the performance of the offspring through the use of this sire and add more individuals to your herd as your farm produces, as your market develops, as your understanding of dairying increases; and if you do that you are building slowly, conservatively,

firmly, but successfully, because you can attend these sort of conventions which are right at your doors today, and there is only one way you will ever know anything about the dairy industry in its details, and that is the actual experiencing of it as you operate it day by day. So go into the dairy business slowly. Make use of the good breeds, increasing and improving as you can. Eventually, naturally, you will get into the use of pure-bred animals and so you will go along in a good, conservative way. There is no particular magic about it. There is no panacea that any one can pass out to you. The development of the business on the farm must be exactly the same as the development of a business in a factory. You see a manufacturer running a factory that spends millions in advertising, in sales force, millions in buildings, and you soon find an outfit that is bankrupt. Seldom if ever do you find them jumping from nothing to an enormous size and find them permanent. It takes the slow-growing tree to make the hard wood, and a slow-growing business to make a permanent business, whether your business as a dairyman or my business in running a factory, we have got to make a slow, conservative start, and only in that way will it be a permanent industry, and a successful thing to you.

Now we have gradually grown into the dairy business. We have understood the value of the breeds, of improvement, then by the use of pure-bred sires. We come now to the problem of feeding. Feed is only one of the wheels. On this fourth wheel we go, that carries our load of the dairy industry to success. If you take any one of these wheels away, this thing is a wreck. You will not progress. That wheel may be the production of cattle, it may be your abominable housing of your cattle, it may be the feeding of them, or it may be neglect in regard to disease. Any one of those points will cause your industry to be a wreck, so you may have the best cattle in the world and if you neglect any one of the other three, your business will be a failure. I speak in that way simply, that you will always visualize this business, remembering that no one point is superior to any other point. One is related to the other,

that is true, but you must keep them all functioning, all the same size and turning the same way, fastened on to your vehicle, and in that way if you continuously keep after it you will gradually grow up the hill toward success.

I am going to take up just briefly the subject of feeding. After what you heard from Professor Morrison, Professor Fraser, Mr. Foss and others, it seems almost foolish that I should say anything, and what I am saying has already been said and I am simply merely trying to boil it down and get together a few threads as I see it, that should be learned from this convention.

First of all the dairy cow is kept because she can convert things that we can't eat into a product that we can. If we could eat corn silage and fodder and alfalfa hay and all these things, perhaps we might be just as well off without the dairy cow, but she is constructed to use those things and convert them into one of the most wonderful products that we have, and so we use her for that purpose, therefore we must primarily look upon the dairy cow as an animal or a machine to convert the farm-grown feeds into these things, chiefly those farm-grown feeds that are not marketable, such as corn, fodder, hays, straws, and the general type of farm products that are not naturally of the highest market value. Therefore I want to build up just some rations, a ration, for you, really, analyzing it as practically as I can from the standpoint of the feeder.

You have heard a great deal in regard to sweet clover and alfalfa hay, and of course we usually consider a legume, soy beans, cowpeas, clover, and all of these things as one of the most fundamental foundation stones in the building up of a ration for a dairy cow, and you can't always have those, although not many successful dairymen are succeeding without an abundance of these. Usually the fellow who uses them most abundantly is the most successful, so have that as your guide; start first on your feeding proposition with getting some sort of a legume.

The next thing a cow must have some sort of succulence in the winter. When does the cow give the most milk? When are they the most content and in the best physical condition? Let me paint you just a little picture.

We have here a bluegrass, side-hill pasture in the month of June. The bluegrass is knee high; upon the side of the hill is the big maple tree, and under that maple tree stands a well bred, high producing dairy cow. Down at the bottom of the hill runs the sparkling brook, and under that tree the old cow lies chewing her cud. When you drive her home at night to milk her, you usually get the most milk you get any time during the year.

Let us analyze conditions surrounding that cow out there, and try to reproduce them in the barn in the winter time, and see if we can get the same results. First of all she has had out in that pasture the most unusual thing for a dairy cow to have. What is that? That is all she can eat. The most unusual thing there is on the dairy farm or on the average farm is to find a dairy cow really full fed. Professor Van Pelt several years ago went to, I believe, Arkansas, wasn't it? and got a bunch of Arkansas calves and brought them up to an Iowa state county, and they ran a test to determine something as to the effect of under-feeding and full feeding, on a number of ordinary cattle, a number of ordinary stock such as these, which is extremely ordinary, also the effect of pure-bred breeding, and they found that you can practically double the production of ordinary farm cows or of cows of that caliber, by a proper feeding and full feeding. So the first point to keep in mind in keeping dairy cattle is to feed them all they will eat.

That is what this old cow had. Her belly was full of lucious bluegrass. What was the next point? She had water at proper temperature, and convenient. Next point, the water was neither too hot nor too cold. She wasn't bothered with flies, she had shade, a soft place to lie down, and she was at peace with the world in general.

Let us reproduce that in the barn, on a day like today. All right. We must first of all give her a barn that is comfortable and has plenty of straw on the floor, so she can lie down and be comfortable. We must keep her clean and not put stuff all over her hips as you find so many dairy cows. You know there is really no crime against currying

a cow. Many people think they can curry a horse but that it is sacrilege to curry a cow. It isn't. You can curry a cow with perfect peace of mind. She will appreciate it. And you can save many, many pounds of cream by currying her and keeping her clean.

What else must you do? Give her water, easily and frequently available, not too cold. It doesn't need to be warm water, but she shouldn't have to poke her nose through a six-inch layer of ice like thousands of cows are doing in this country today. She ought to be able to drink volumes of it, one hundred pounds a day anyway. Let her fill herself full of water, because milk is 88 per cent water. Give her all the water she can drink, and in a way that she will use large quantities of it.

The next thing is bluegrass, juicy and palatable, so we have got to make a feed that is palatable, juicy and rich, so we make up a ration. In order to get the nutrients, we use alfalfa hay and grains. In order to get something that is soft and juicy, we usually have to use root crops or silage, and as a result if you surround the cow with those things, pure air in the barn, with good ventilation in the barn, lots of straw on the floor, water, plenty of succulent feed, plenty nutrition, protein-carrying feed, the old cow will give from ten to twenty-five per cent more milk a day than she will the fifteenth of June out there in the pasture, simply because you have the climatic conditions at this season of the year that stimulate a much more extensive maximum appetite, so they will eat more at this season of the year than they will in the spring or summer.

Now how could you make up that ration? Just a little simple ration. I would use alfalfa, clover, cowpeas, first, and then add—I would use corn silage. That is the other part of the roughage. I would not take corn fodder, turn her outside like you did last fall, and expect her to produce. She won't. I wouldn't turn her outdoors today and let her run in a stock field and expect her to produce. I would give her silage and alfalfa, then make up a green mixture. I will give you a suggested one:

400 pounds ground corn, leaving the cob all out of it

and when you grind that corn grind it down to the finest sort of a meal.

200 pounds of wheat bran.

Pour on top of that 100 pounds of cottonseed meal, then put the whole thing together. Then take that mixture and feed one pound of it for each three to four pounds of milk the cow gives in a day, give her all the hay and silage she will eat and this grain mixture I have just suggested, make her comfortable in the barn, curry her, keep her clean, make her at peace and happy in the world, plenty of water, treat her kindly, milk her regularly, and if you started out with a good cow you will have a profitable cow, there is no doubt about that.

There is just one other phase of feeding I want to mention then I am going to give way to Mr. Barney. That is in regard to what is known as the vitamine D in the feeding of dairy cows. Now vitamine D, as you heard yesterday from Professor Morrison, is really a point of new discovery, a point that has not been definitely determined. I will mention a point that has not been definitely proven, but I am giving it to you for what it is worth as a suggestion.

You take up in northern Illinois and southern Wisconsin, there you will find most dairymen put their cows in the barn as soon as the weather begins to get cool in the fall, put drinking fountains in front of the cows, and do all these things in quite a thorough way, as I have suggested, then along about this season of the year or a little later they begin to lose lots of calves through abortion. Lots and lots of farmers lose their calves from what they term contagious abortion. Investigators on this subject are beginning to tell us more and more that it may be caused due to the method of feeding, and I am giving you this not as a final statement on it but for consideration, and in order for me to prove this point or to present it before you in the best way, I must go back and bring up a little more evidence on another line, and that is at the University of Wisconsin they took chickens and put six birds and a cockerel in a coop, and they reproduced that experiment

time after time in a half dozen tests, all running at once. They put these coops on a table down in the basement in the agricultural chemistry building at Madison, with not very much light coming in through the windows. These chickens were all related, fed alike, of the same age; in every regard they were nearly alike one with the other. Three hens in each coop had red neckbands, and three of them had white neckbands. Only one point was altered. Every day the hens with the red neckbands were picked out, put in a little cage a foot square covered with ordinary chicken net, taken outside and left out for ten minutes. They were then brought back and the chickens turned in the coop with the rest of them. Along one side of this coop was a string of nests. These hens would go in these nests and lay their eggs. They were trap nests, so each egg was marked showing the hen that produced it. They put those eggs in an incubator and allowed them to incubate, and not yet have they been able to grow a chicken to the age of eight weeks from the hens that remained in that pen continuously, and they can take the chicks hatched from the other group and they have no difficulty at all in growing them. They seem to have the constitutional vigor and ability to grow. The feeding was alike, environment alike, breeding was alike, everything was alike except each day the three with the red neckbands were taken out and allowed the sun to shine on their backs for ten minutes, if there was any sunshine.

What has that to do with the dairy business? Just this. The dairyman who builds his beautiful barns, puts lots of windows along the walls, installs a good ventilating system, drinking fountains along the stanchions, and keeps his cows in there continuously, the dairy cow gradually starves her body, gradually starves for the minerals needed in making milk. Those minerals go out in the form of milk, and she robs her body and robs it more and more and more, and after she is pregnant she finds that she has not constructive material enough to build a foetus, and nature enables her to lose her load by eliminating that, and she aborts.

I am not saying that there is not infectious abortion because there is, and it is very prevalent, but it is at least an assisting cause in bringing that condition about.

Now why has the sunlight any relation there? Why not feed more minerals? Simply for this reason: you can take a dairy cow and feed her all the mineral in the world. You can take your own children and feed them all the mineral feeds in the world, such as the girls here this week have been telling you about, spinach and carrots and eggs and milk and everything in the world that you want to feed that child, and keep her inside, and that child will have ricketts. That child will become bowlegged, have large joints, be stunted, undersize, undeveloped. Why? Simply because the human system has not the ability to assimilate minerals without the presence of an activating agent. What is that activating agent? It is known technically as the ultra-violet ray of sunlight; so all you need to do to make your children grow is to fill them full of mineral-carrying feed, then take that child out in God's free sunlight and let the sunlight shine upon that child's body. The bloodstream being loaded with minerals, it activates that in the same way and causes those minerals to be deposited upon the skeleton of the body. As a result, a good, big, strong, straight skeleton is built and constitutional vigor is carried on through life.

Now with the dairy cow you keep her inside and deprive her of the activating agent of sunlight, I care not what you feed, that cow will gradually rob her skeleton in the making of the product that nature has bred her to produce and as a result she will break down frequently, either in low milk production, the elimination of the foetus or the general breaking down in the skeleton, as you see in older cows so often, which is the by-product of poor management ninety-nine times out of a hundred. What are you going to do?

Build more windows along the barn so that your cow can get that sunlight. If you do, remember this one thing: ordinary window glass is made from silica, and whenever sunlight passes through glass it filters out that wave known

as the ultra-violet wave. And so you can take the dairy cow or take your own children, for example, and build a beautiful sun parlor of solid glass, give the child playthings and allow that child to play in that room and the child will have ricketts, because there is not one particle of the ultra-violet ray that has ever been able to go through that glass into that child's system to activate the development and digestion and assimilation of minerals. So the building of windows in your barn will not do the trick. It will be necessary for you to get these cows out in the open ten or fifteen or twenty or thirty minutes a day at least, three or four times a week, and allow the unfiltered sunlight to strike upon the backs and to activate the minerals in the food which you have given her, and as a result you will guard against and ward off many ills. You will increase your production, your build, constitution, and especially is this true in the handling of your breeding stock. How many of you put the sire back in an old box-stall in the northeast corner of a barn, and you keep him there month after month, month after month, and then you wonder why he is not profitable. It is simply because you have robbed him of one of the elements necessary to vitalize him and enable him to reproduce. So if you are breeding stock, if you are growing stock, that producing stock must all in some way be activated by the freest thing in the world—sunlight, plus good common sense in feeding, which is one of the important drive wheels in carrying forward this wagon which is loaded with your ambitions to become more successful in the dairying business.

Now I beg your pardon for giving you such a rambling talk on the subject of material. It is a pleasure for me to be with you here this afternoon. I am an old friend of the Dairy Association of Illinois, having worked with it for years, and trust it may be my pleasure as years go on to still continue working with you.

I wish to thank you very cordially for the splendid attention that you have given me. (Applause.)

President O'Hair: Everybody likes to hear Professor

Caldwell talk, and I am sure the next time we come back here you folks will give him a bigger crowd.

Now we have probably the best known man in the Holstein world, known as a judge of dairy cattle. I don't know just what his official job is now, but he is now with the Holstein folks: Mr. Barney. I want him to talk to you at this time.

DAIRY LEGISLATION

Mr. W. B. Barney, Holstein-Friesian Association of America

Mr. President, and ladies and gentlemen: I want to assure you that I am greatly pleased to be with you today, and truthfully say, that in an experience of about fifty years in attending conventions, I have never visited one that had the array of talent on its program up to this time, that you have had here in Illinois.

Now I want to say that I was president of the State Dairymen's Association of Iowa for three years, and I was never able to get out a bunch of men such as you have here.

I am going to be much like the last speaker—I may have a sort of a rambling talk for you this afternoon. There has been so many good things said during these meetings, that it doesn't seem to me that there is a great deal left for me to say this afternoon.

There is one feature, though, which seems to me hasn't been touched on. Perhaps many of you will not agree with me on what I have to say on this matter. I think it has a great deal to do with the dairy industry; I think it has a greater deal to do with the pure-bred live-stock industry, and what I mean by that is the condition of the farmers in this country today.

It just happened that I heard President Coolidge when he was in Chicago, just a little later I went out to my home state, Iowa, and I was at the meeting that was held at Des Moines. Now naturally I should be pretty strong for Coolidge, due to the fact that I was born in his state, or he born in mine. We are natives of Vermont, both of us, and I liked his principles of economy. I have always been a pretty good Republican, therefore we shouldn't disagree, but I do wish to call your attention to a few of the things this afternoon that I believe are important.

I have said for a long time that the pure-bred industry—and when I say the pure-bred industry I mean cat-

tle, hogs, and all the pure-bred breeds—would come back when agriculture came back. I do not know of anything that has suffered more through the depression period than agriculture, and I want to call your attention to a few things this afternoon that seem to me have been done for the railroads and for the industries, which put us on a different basis from what they are at this time.

Now when I pick up a time table, perhaps wanting to go to New York, I look it over, pick up the Pennsylvania time table or the New York Central, what do I find? Instead of a charge of two cents a mile as we formerly had before the war, I find a charge of three-sixty a mile, and then I find besides that out of about eleven trains running over each of those roads an extra charge for extra fare, for anywhere around three to eight dollars, is made. Then besides that, when you buy your Pullman, sleeper, what do you find there? Still an extra charge. And now why? Because legislation has permitted these people to put that on.

Now take up for instance the man who sells me my shoes or my clothes or anything of that kind. What do I find? I find that extra price. All of this is brought about by legislation. Labor, that is the average laboring man of the country is getting pretty near double what he was before the war. What is the man on the farm getting?

You know I am reminded of a story, sometimes, when I think of the condition of the railroads and the industries as compared with the farmer. I don't know just what can be done to help in this fight that we are in. I want to say in the beginning I have got to a point when I am willing to almost try anything to help out the farmer and the dairymen of this country, and the story that I wish to mention is this:

It was said that a negro made up his mind that he would go bear hunting, so he fixed up his gun in fine shape and started out. It was along about four or five o'clock in the evening, and he went down the road a ways. He didn't see a bear for a considerable time. It got along toward dusk and he looked down the road a little ways and

saw a big black bear coming down the road. He was paralyzed with fright. He dropped his gun, stood there for a moment, and he made up his mind that about the best thing he could do was to turn tail and go back. Well, he turned around, and after he went down the road a ways he could hear the bear's feet coming nearer and nearer all the time. He concluded that his time had come. He thought he better offer prayer. He started out about this way: "Oh, Lord A'mighty, for God's sake help his here nigger dis time. I can hear dat bear gettin' nearer and nearer all de time. Now then, if he should catch me, for God's sake if you can't help me don't help de bear." (Laughter.)

I think that is just the condition we are in now. If they can't help the farmer and the dairyman, for God's sake don't help the railroads and the industries quite so much. I think this has a close relationship to our prosperity. I have maintained for the last three or four years that when agriculture was prosperous the dairy industry would be prosperous. The dairy industry has been more prosperous than most any other branch of agriculture all through the depreciation period, but I want to say the time has come or I feel that it has, when we need a little help, if they are going to help the industries and the railroads in the manner they are doing.

I want to say in considering the entire matter, I think well of the Dickinson Bill, I wouldn't be surprised if with modifications it would be put through, and I think it should be put through, and I hope it may be.

I am not going to speak at any great length this afternoon. I didn't notice the time when I started, but I want to say a few things about legislation. I presume that some of you heard what was said the other night at the banquet, but I will have to repeat part of it. I have been employed for the last three years by the Holstein-Friesian Association, looking after general legislation and extension work. Now it just happened that while I was dairy and food commissioner of Iowa, that I saw the necessity of having a law put through there, and I want to tell you how I came to see the need of that law. About twenty-five years ago I began

showing cattle and I was fortunate enough to own a cow that was a prize-winner at our State Fair and at some of the other fairs, and at the National Dairy Show two years. That was before I became commissioner of Iowa. After I became commissioner I discontinued showing. One day Mr. H. R. Wright, my predecessor, came to me and said, "Barney, did you ever see this circular?" "What circular?" I asked him. "This one." He handed me out a circular gotten out by Mr. Jelke up there at Elgin, and lo and behold, there was the picture of a head of Holsteins, and right in the foreground of that picture was my cow! What had happened? He had had the photograph taken at his barnyard, then he got a small picture of my cow and pasted on to that photograph and re-photographed it, and underneath the picture it read: "This is the celebrated herd of Holstein-Friesian from which Good Luck Oleo is made." Well, I didn't feel that that cow was in very good company. He didn't put a cotton plant in his barnyard, or a hog or a steer. Those were the products at that time that oleo was made from. That is not true at this time. I put a stop to that, and finally about that time I had become commissioner of Iowa, and I went to the Attorney-General and I said to him, "Isn't there something we can do to do away with that sort of thing?" "It is unfair to the public, it is unfair to the breeders of cattle, it is unfair to everybody to use that sort of advertising." He said, "Well, what would you want to do?" I said, "I would like to have a law drawn that would prohibit the use of the pictures of dairy animals or the use of dairy terms in advertising oleo." "Well," he said, "draw up something of that kind and I will look it over." "I think we can get by with it." "Have it enacted." I did. I drew up a law and he looked it over and fixed it up a little, and I went to the legislature with it. I didn't advertise the fact that I was going to do that, and it passed almost before the oleo people knew about it. Later on Governor Lowden was elected governor of Illinois and still later on he was made president of our Association. He thought very well of that measure. It is just as helpful to the Jersey, the Guernsey or the man who owns a red cow, as it is for the man who owns our breed,

but he thought we would come in for part of the benefit by the enactment of a law of that kind, and he took up the matter of my going out to the farmers of the state and having that and the filled milk bill put through, and I want to say that for the last three years I have been working on things of that kind, and at this time have been successful in having that law enacted in twenty-four states and have been instrumental in the way of helping to have the filled milk bill enacted in twenty-seven states.

I think they have done a lot of good. If I hadn't made a case in Iowa against the Jelke people, the people that used my cow, I wouldn't have known whether the law had done any good or not, but I made a very careful survey in the department when, just before I made this case, they had come to Des Moines and engaged half-page space in three daily papers, advertising this product. I didn't notify them, I simply made the case against them, and when this advertising was at its height I sent an inspector out over Des Moines and had him find out how much oleo was being sold there, then after the case had been made and they had pleaded guilty and paid their fine, I sent an inspector out again, two or three weeks later with this result, that there was a falling off of about twenty or twenty-five per cent in the amount of oleo sold in the City of Des Moines and an increase of approximately the same amount of butter sold. That showed me it was really worth while.

We have had a lot of trouble in this respect: when we would go into a state having in mind the enactment of this law, the cottonseed people, that is the oleo people would come in and say, "If you enact that law, especially as you get further south, what are you going to do? You are going to cripple the cottonseed industries. Why? Because of the fact that they use so much cottonseed oil in the manufacture of oleo." I want to say that I have looked into this matter carefully, and I find this, that there are about three hundred million pounds of the different oils that are produced and used yearly in the manufacture of oleo. Now after all the story of the amount of cottonseed oil that is used I find this, that there is only about ten per

cent of all that, that is cottonseed oil. Part is cocoanut oil, and yet the oleo people pass out this stuff, that we are ruining the cottonseed industry in the south, and they have been getting by with it.

I think that the time has come perhaps, when it will be very well to retaliate. There are other things that we can use in the way of protein feeds for our cattle up in this country, and I think they should be used. Why not use corn gluten? That is produced here in Illinois, and it is produced all over the central west, and in a general way we can say that we do want to make those people come across. I think it would be fair to remember that there are other proteins that can be used besides those that we find in cottonseed oil.

Now I am wondering if a lot of people here aren't asking themselves this question, "Aren't we going to overdo the dairy industry?" I remember when I was down in southwestern Missouri about a year and a half ago, I talked to quite a good sized crowd there. When I had finished a gentleman in the back, by the door, got up and said, "Mr. Barney, aren't we going to overdo the dairy industry?" I said I will have to answer that by telling you a short story. I am old enough so that I remember the time over fifty years ago, that my father owned a farm in southern Wisconsin, and we had four or five cows on the farm. We had a spring house and we sat our milk in pans, in crocks, and we raised the water around it as we needed to by the use of a stone in the outlet, had a flagstone floor in the spring house, and we skimmed the milk with a hand skimmer. It was my part of the job to do the churning with a dash churn, and I can well remember the days that I wanted to go fishing the butter was always very much longer in coming. (Laughter.) We didn't have thermometers then to tell whether the temperature of the cream was right or not, and we didn't have many of the things that we have today.

I recall that just a little later my father came to me one day and he said—we were getting about six to eight

cents a pound for that butter delivered at the country store. Now remember, this was about fifty years ago, and it was good butter, too. It was all right. And he said to me, "I understand that some of our neighbors here are getting in cows, and I am wondering whether we are going to have a market for our butter very much longer at six or eight cents a pound. Won't we have to take less?" What was on his mind? Wasn't it this overproduction proposition? Wasn't he thinking of that? I have thought of it since that, and I believe he was thinking of over-production then. There isn't a man in this audience, I have put this proposition up from California to Maine, and I have asked somebody in these audiences to answer me this question, is there another product that you can think of, another agricultural product, in which the price has been more stable than it has on dairy products in the last fifty years? No. I don't know, we may have over-production in time, but I believe that if we make a good, clean, wholesome product and go on with the work such as the National Dairy Council is doing, that we are not going to be troubled by over-production in the lives of almost any of us here in this room. You know there have a lot of us been asleep at the switch, the dairymen have, in the past, up to about four or five years ago. What has happened, so far as soft drinks are concerned? You go to the south especially, and you see there and all over this country, advertising, advertising everwhere, millions of dollars spent in the advertising of Coca Cola. What has the dairyman done as compared with that? Very little. When you see this wonderful advertisement that they put up of the fine looking young lady with the blush on her cheek, passing out a glass of Coca Cola you want to remember that Coca Cola never put that blush there. Never in the world. It was milk. She must have been a milk-drinker, because Coca Cola would never do it, but yet we kind of sit around and don't advertise our product as we should, or anything like the way we should.

Of course I will admit that the profits on our products are not as great as on some of the products like oleo. I know what oleo costs. It costs about twelve cents a pound

and we have got that to compete with. Of course they have an advantage over the butter people, from the fact that they have the biggest margin of profit, and yet at the same time the dairy industry is so large that if the dairy people would get in, just in a small way, there wouldn't be any trouble about putting this thing over. I said last night I was very grateful to the people in Illinois, to your Commissioner of Agriculture, your present Commissioner of Agriculture and President O'Hair, for the service rendeed in getting this law through in Illinois. I have spent quite a little time in Springfield, three years ago this winter, in having the law enacted. One of the reasons that I tackled Illinois among the first states was on this account, the very fact that there was so much oleo made here, I knew we would have a lot of opposition and I felt that if we could get the law enacted here in Illinois, that I could go out and say, "Well, we got by in Illinois, and if we can there, there is every reason to believe we should enact it in this state," and it has been a wonderful help as I have gone from one place to another.

What happened over in Indiana? I went over there two years ago and through some miscue the bill was not introduced. Last winter I was west, in Idaho, through the entire west, and I didn't get down there, but the bill was introduced. I went down and we had a Jersey association, the Holstein people, and the general dairy crowd down there, and I gave them what information I could as to what to do to get by with it, and they did. But what happened later? The speaker of the house signed the bill and it went over to the president of the senate. He signed it, and what happened then? It disappeared before it got to the governor. Well, I don't believe any of the dairymen stole it, but I do think I know who had something to do with its disappearing.

Now, gentlemen, I speak of that only to show the importance of this measure, and why it should be enacted in many of the states all over the country. Now it is getting late and I have talked quite a little, and I want to thank you very much to have had the opportunity of speaking to you this afternoon. (Applause.)

ECONOMICAL MILK PRODUCTION

Charles Foss, Freeport, Illinois

Any one engaged in milking cows on a commercial scale does so with the intention of making money at the dairy business. No one wants to keep cows at a loss or for pleasure. It is true, however, that not every one engaged in dairying is making money at it.

There are two ways in which the farmer can market the crops he grows on his farm. One way is to sell them for cash and the other way is to feed them to livestock. To the man who is engaged in dairying, the cow is the market to which he sells his crops.

The price he will receive for his crops he grows on his farm will depend on the price he will receive for his milk or butter fat, and upon the ability of the cow to convert the feed he grows on his farm into milk and butter fat economically. The efficient cow is an important factor in economical milk production. There are two ways to increase the profits in the dairy business. One is to get an increased price for our dairy products and the other is to decrease the cost of production. Generally speaking, dairymen do not control the price they get for their milk and butter fat, but they can control the cost of production so far as feed and care and efficiency of the dairy cow is concerned.

The Department of Dairy Husbandry of the University of Illinois has found from data secured from cost accounting records kept on farms in the Chicago milk district, that 44 pounds of grain, 188 pounds of silage, 50 pounds of hay, 39 pounds of bedding and 2.42 hours of man labor enter into the average cost of producing one hundred pounds of milk. The cost accounting records from which this data was secured represented approximately one thousand cows and is the average cost of pro-

ducing one hundred pounds of milk by these cows. If this was the average cost of producing one hundred pounds of milk, there were approximately 500 cows, or one-half of them, that produced one hundred pounds of milk for less feed than the average and about 500 cows that required more than this average to produce one hundred pounds of milk. If a dairyman, by weighing the milk from each individual cow, would sell all the low producing cows in the herd and keep only the best ones, he could reduce the cost of producing milk materially and thereby increase the profits. Generally speaking, the cow that will produce the largest flow of milk in a year will return the largest returns above the cost of feed.

In one particular cow testing association, the best cows in the association returned seven times as much net profits in a year as did the poorest cows in the association. In another association, the best herd of ten cows returned $1,475.20 above the cost of the feed they consumed, while the poorest two herds in the association, comprising thirty-six cows, only returned $1,213.95 above feed cost. In this association, the ten best cows returned $265.25 more net profit than did the thirty-six poorest cows. The average production of the thirty-six poorest cows in this particular cow-testing association is over fifty per cent higher than the average production of all the cows in the state.

The average of all cow-test associations will show practically the same degree of difference in the production of the best and poorest cows.

There are two essentials that are necessary for economical milk production. The first one is good cows and the second is to feed the good dairy cow the proper feed and give her the proper care that she needs to produce milk. There is only one way by which you can determine the good cow from the poor one in a herd, and that is by weighing the milk and testing it for its butter fat content, by which the average production can be determined for the year and the poor cows eliminated from the herd.

The testing can be done either by the dairyman himself or he can join a cow test association, if there is one in

his county, and have a tester do the testing. Where the testing is done by the dairymen, it does not necessarily require much time. A milk scales should be procured which are so arranged that when the pail of milk is hung upon the scales it will record the net weight of the milk in pounds and tenths of pounds. A lead pencil and milk sheet should be placed at a convenient place and the pounds and tenth pounds recorded on the scales placed on the milk sheet. After the weight of the milk has been recorded on the milk sheet, the milk in the pail is thoroughly stirred and a small sample taken to be tested. The milk should be weighed and a sample taken of each milking for the two milkings in one day. The pounds of milk and butter fat produced by each cow should be multiplied by the number of days in that particular month.

The milk must be weighed one day in each month and at the end of the year you have an approximate record of the production of each cow in the herd. Each cow in the herd should have a name or number. The testing can be done by any ordinary dairyman provided he has a Babcock tester, or usually his buttermaker or creameryman will do the testing for him. Wherever it can be done, it is better to join a cow test association and have the testing done by a tester who runs the association.

If you are a member of a cow-test association, you will not only have the average milk and butter fat production of each cow but you will also have the amount of feed consumed by each cow in a year as well as the returns above feed cost. These records will show whether a cow is making a profit or losing money for you.

It is not only essential to have good cows to make a profit, but it is just as necessary to feed the good cow the right kind of feed and all she will consume at a profit.

About fifty or sixty per cent of the feed the cow eats goes for body maintenance and energy used in milk production. Whatever a cow consumes over this amount goes for milk production. If she is fed only enough to furnish what is required for maintenance and energy, she can produce very little milk.

When cows are on good pasture during the month of June, conditions are ideal for economical milk production. Grass is the natural food for the cow. It not only contains all the necessary nutriment the cow needs for maintenance and milk production, but it also furnishes succulence without which no cow can produce very much milk. Another important factor in milk production is contentment and comfort of the cow. To secure the largest production it is necessary to provide the ideal conditions, that the cow enjoys when on good pasture during the month of June, the year around as nearly as we can. Succulence for the ration can be supplied either in silage or roots. The barn during the winter must be comfortable. It must have plenty of sunlight, fresh air and must neither be too hot nor too cold.

The feed the cow gets must have the required nutrients in the right proportions. It must have milk, be digestible and palatable so that the cow will consume a large amount of food.

It is just as necessary that a cow drink a large amount of water in a day as it is that she consume a large amount of feed, if she is to produce economically. Eighty-seven per cent of milk is water. A cow that produces a large amount of milk necessarily needs to drink a large amount of water. Limit the water supply and the cow will drop in milk production in the same proportion.

During the summer months it is not difficult to get the cow to drink all the water she needs. All that is necessary is to give her free access to clean water. It is during cold weather when she is compelled to drink out of a tank that is frozen with ice that she refuses to drink all that she needs. The water for the cow should be warmed to about fifty degrees Fahrenheit during cold weather.

The cow should be milked quietly and quickly. A cow is largely a creature of habit. If usually fed at the time of her milking, she cannot be milked satisfactorily until she has her feed. Special care should be taken to get all of the strippings. The first milk drawn may con-

tain as little as one per cent of fat, while the last drawn may run from five to ten per cent.

Under ordinary conditions, the usual practice of milking twice daily is sufficient. The intervals should be as nearly equal as possible. By milking cows that are heavy producers three times a day the yield can be materially increased, depending upon the amount of milk they produce. Three times milking will increase the production about ten per cent for cows giving from forty to fifty pounds of milk, while those giving sixty pounds, the increase is about twenty per cent. Ordinarily the increase in production of the average cow by milking three times does not pay for the extra time and labor required to do the extra milking.

Building Up an Efficient Dairy Herd

One of the essentials to economical milk production and profits in the dairy business is good cows, that can convert the feed we grow on our farms into milk and butter fat at a profit. Naturally the question arises, where can we get good cows?

There are two ways to get good cows. One way is to go out and buy them from dairymen and breeders who have been in the breeding game for a long time and the other way is to raise them. While the first method is the quickest way to get an efficient herd of dairy cows, it is not the cheapest way. It is also true that when you depend on buying your cows, there is more danger of getting contagious abortion and tuberculosis into your herd. It is also true that most good dairymen and breeders know which are their best cows and it is usually the rule that they sell the poorest cows in the herd. While it is true that some of the best cows in a herd can be bought, you will be required to pay a premium to get them. Then, if every one would want to buy good cows, there would not be enough to go around.

The best way to get an efficient herd is to raise your cows. Keep a record of the production of each cow and then raise the heifer calves from the best cows. After

these heifers come fresh, sell off the lowest producers. Where this method of improving a herd is followed, a very efficient herd can be built up in a few years. I have followed this method of improvement for nearly twenty-one years. Some of the cows raised in this way have averaged nearly 3,000 pounds of milk, more than their dams have produced.

The herd from which we built our herd averaged only 3,500 pounds of milk and 190 pounds of butter fat. In three years' time, the average production of the herd was increased to 8,000 pounds of milk and 307 pounds of butter fat.

In building up a good dairy herd, the first essential is to decide which one of the dairy breeds you want to keep and then put a sire of exceptionally good breeding at the head of the herd. This is very important, since the sire is more than one-half of the herd. Whatever improvement is made in milk and butter fat production of the daughters over their dams must come from the sire. Improvement cannot come from any other source except from the sire.

In selecting a sire, attention should be given not only to the individuality of the bull, but his dams should have very good milk and butter fat records for four or five generations back of him if you expect to make very much improvement in the herd.

There are five leading dairy breeds and they are all good. If a record of production of each individual cow is kept and only the best cows retained in the herd, it will make very little difference which breed you have.

Some of the factors to be taken into consideration in deciding which particular dairy breed you want, are:

1. Breed of cattle most common in the community.
2. Form in which product is to be marketed.
3. Average production of milk and fat.
4. Original cost and probable demand for surplus stock.
5. Preference of the breeder.

It is generally always better to have a breed of dairy cows which are common in your community, because any surplus stock you may have for sale can be disposed of to much better advantage than would be the case if the breed you have were not common in your community. Another advantage is that when you once have had a good sire and can no longer use him, you can dispose of him to your neighbors. In many cases neighbors can exchange sires or where the herd is too small to have a good sire, two or three neighbors can club together and purchase a much better sire than one with a small herd can afford to buy.

If one is selling butter fat only and the skim milk is fed to young stock, it will not make very much difference which one of the dairy breeds you have. Generally speaking, Guernseys or Jerseys are a little more economical producers of butter fat than the other breeds. In part this is offset, however, by the fact that the other breeds will produce more skim milk, which is a very valuable feed for growing stock.

Wherever whole milk is sold either to cheese factories, condenseries or for city milk trade, the Holstein cow predominates on account of the large flow of milk she produces. While Holstein milk tests are lowest in butter fat of all dairy breeds, the Holstein cow will produce enough milk in a year to equal and, in many cases, to exceed the butter fat production of the other breeds.

It costs more to produce one hundred pounds of high-testing milk than it does to produce one hundred pounds of low-testing milk and, until the consuming public will be educated to be willing to pay for this difference in production cost, the Holstein cow will predominate where whole milk is sold for city consumption. So far as the average yearly production of butter fat is concerned, the difference is not so great between the different breeds. Of the average of all the official records of each breed up to several years ago, the Holstein led in both milk and butter fat production, averaging 14,974 pounds of milk and 505 pounds of butter fat with an average test of 3.42 per cent

fat. The Guernsey breed averaged 9,030 pounds of milk and 453 pounds of fat with an average of a little over five per cent fat.

The Jersey breed averaged 7,931 pounds of milk and 424 pounds of butter fat with an average of 5.35 per cent fat.

The Brown Swiss averaged 10,931 pounds of milk and 437 pounds of fat with an average of about four per cent fat.

The Ayrshire breed averaged 9,621 pounds of milk and 381 pounds of fat with an average of nearly four per cent fat.

To successfully raise a good dairy calf, it is essential to keep the calf growing from the time it is born until it becomes a mature cow.

Feed and Care of the Dairy Calf

Allow the new-born calf to be with its mother for the first four days, or until the mother's milk has become normal. After the fourth day remove the calf from its mother, giving it a clean, dry and well-lighted box stall. Feed the calf six pounds of the mother's milk, both morning and evening, in a clean pail. The temperature of the milk must be no lower than ninety degrees Fahrenheit. Feed this ration until the calf is a month old.

On farms where skim milk is available, the whole milk can gradually be changed to skim milk after the calf is a month old. On farms where whole milk is sold and no skim milk is available, the whole milk can be gradually substituted with commercial calf meals that are sold on the market, or a home mixed milk supplement may be fed, consisting of equal parts of oil meal, blood meal, hominy and flour. Make a gruel of this mixture, feeding about one-fourth pound of the dry meal daily at the beginning, the amount being increased one-fourth of a pound daily each week for four weeks.

As a rule, the use of milk should be continued until the calf is sixty days old.

Calf meals alone, or calf meals, hay and grain, do not

form a complete ration for the young calf, since they do not supply the necessary nutrients in a form readily digested and assimilated.

To produce satisfactory growth when feeding a calf meal, it is best to use the meal as a supplement to milk, rather than a complete substitute for it. It is doubtful if, under average conditions, good gains will be made unless some milk is fed until the calf is about sixty days old.

When the calf is about four weeks old, it will begin to nibble at hay and grain. A good quality of clover or alfalfa hay should be placed in easy reach of the calf at this age.

As soon as the calf begins to eat grain, it should have free access to the following mixtures:

30 pounds ground corn or hominy,
30 pounds ground oats,
30 pounds wheat bran,
10 pounds oil meal.

Corn silage can be fed as soon as the calf will eat it. Silage will not be consumed to any great extent until the calf is two months old. It is important that the silage is of a good quality.

The calf must also have free access to clean water after it is a few weeks old. This is very necessary, since water is just as essential an element entering into the feed of the calf as any other feed.

In order that the heifer calf will develop into a good cow, it must be kept growing from birth to maturity.

The age at which a heifer should be bred will vary somewhat in the different breeds. The smaller breeds can be bred a little younger than the larger breeds. The state of development must also be taken into consideration.

Heifers that have been slow in developing should not be bred as soon as those that have developed more rapidly. Normally developed animals should be bred at the following ages:

Holsteins at the age of 19-21 months.
Aqrshires at the age of 18-20 months.

Guernseys at the age of 17-19 months.
Jerseys at the age of 15-17 months.

Value of a Good Sire

The question of getting for immediate use a herd that may be kept at a profit is a question of the selection of the individual cow.

It is generally conceded that, taking all dairy cattle into account, about one-third of those raised are unsatisfactory and have to be culled out as unprofitable where records are kept. This results in an enormous loss of food in the aggregate, not only in raising unprofitable animals but in keeping them until their worthlessness is proven.

In this connection one of the first questions to arise is whether these inferior animals which must be culled are the result of inheritance or of environment. In other words is a good or an inferior cow born what she is, or is she made what she is by feed and management when young? The results of experiments of our Experiment Stations along this line lead to the conclusion that the ability of the cow to produce milk—the dairy temperament as it is sometimes called—is almost entirely a matter of inheritance. The high class or the inferior cow are born that way and not made so by special treatment when young. In fact, within the limits of ordinary practice the manner of feeding and management of the growing heifer has little if any relation to the efficiency of the mature cow as a milk producer. In other words, if a heifer that is well bred does not receive the proper and the right amount of feed needed for the proper development, she will be slow in maturing, but after she is fully matured she will have the capacity to produce milk as efficiently as she would if she had been fed to mature more rapidly. On the other hand, a heifer born of low producing parents cannot be made to produce a large flow of milk no matter how well she has been fed or how rapidly she has matured.

If the difference between a cow having a capacity of 10,000 pounds of milk a year and another that will produce only 3,000 pounds is a question of parents, it certainly

becomes a matter of no small importance to see that the proper parents are provided.

We must depend on the selection of good cows to insure a satisfactory herd and the problem of getting a better herd for the future is a question of having good young stock coming on and is a matter of breeding.

The selection of breeding is primarily that of the selection of the right sire, because it has been a long-recognized fact that the sire is half the herd, since practically all the improvement must come from the sire. One of the most striking demonstrations regarding the value of a good bull as a means of improving the productive capacity of a dairy herd is shown by results obtained at the Iowa Experiment Station. A group of typical native cows was brought from an isolated locality in the Ozark regions in Arizona. After reaching the experiment station these cows received the same treatment as that given the regular dairy herd. The cows were divided into three groups for breeding purposes. The original cows in group one and their descendants were bred to Holstein bulls, another group to Guenrseys and the third to Jerseys.

The thirteen original cows with a total of 74 lactation periods averaging 3,991 pounds of milk and 187 pounds of fat. Thirteen daughters of these cows by pure-bred bulls representing the three breeds for a total of 40 lactation periods averaged 5,556 pounds of milk and 253 pounds of fat, an increase in milk of 39 per cent. Five cows of the second generation of grades carrying 75 per cent of improved blood, including a total of six lactation periods, averaged 8,401 pounds of milk and 358 pounds of fat, an increase of 130 per cent in milk yield and 109 per cent in fat production. The improved blood resulted in a decided increase in persistency of milk flow.

A member in one of the Illinois Cow Test Associations increased the average production of the herd from 5,760 pounds of milk and 193 pounds butter fat to 11,195 pounds of milk and 377 pounds of butter fat in eight years. This improvement was made possible by the use of well-bred bulls and by keeping a record of production of each cow

in the herd and then eliminating the low-producing cows and raising the heifer calves from the best cows.

The value of a good bull to increase the profits in a herd during the lifetime of his daughters is not given the consideration it should receive. The fact is that most farmers give this question very little consideration. If this question would receive the consideration it deserves, the practice of using scrub bulls would soon go out of existence.

A good illustration in the use of a good pure-bred bull to grade up a herd of low producing cows is in the record of the Sub-Station Herd of Minnesota . In 1915 a group of cows of native and mixed blood was purchased as a foundation for a herd. The purpose was to demonstrate the possibility and the methods of building up a grade herd under practical farm conditions.

Complete milk and fat records were kept from the beginning. The average production of the original herd was 196 pounds of fat and 4,666 pounds of milk per cow. Only pure-bred bulls were used in this herd. Thirteen years later the herd averaged 7,184 pounds of milk and 358 pounds of fat, an increase of 2,518 pounds of milk and 162 pounds of fat. Assuming these cows were milked six years each, the total increase in production per cow for those having the improved blood would be 15,108 pounds of milk and 972 pounds of fat over the average of the original herd. At $2.50 per hundred pounds the additional milk would be worth $377.70. If the 972 pounds of fat were sold at 45 cents a pound the increased income would be $437.40. The additional feed that these improved cows consumed was $95.00 a cow, leaving a net gain of $272.70 if the milk was sold at $2.50 per hundred pounds, or $342.40 if the fat was sold at 45 cents a pound. The use of pure-bred bulls in this herd made possible an annual income of $57.06 more per cow for each cow in the herd than would have been realized from the original stock.

The improvement in this herd has been duplicated wherever a real effort has been made to grade up a herd by the use of good pure-bred sires, both by our Experiment Stations and on practical dairy farms.

The first essential in grading up a herd is to decide which one of the dairy breeds is best suited for the kind of a market we have for our dairy products and then stick to this particular breed. Changing from one breed to another will get us nowhere.

While it is true that in selecting a sire some consideration should be given to type and appearance, it is of more importance to carefully consider the milk and fat records of his ancestors. This is especially true of the dam of the bull we expect to buy. A sire that has had high-producing ancestors for four or five generations back of him is most likely to make the largest improvement in the production of his daughters over their dams and will increase the net profits in the business.

The surest way to get a sire that will increase the production of his daughters over their dams is to buy a proven sire, one that is old enough to have daughters in milk and which are good producers. Many of our best sires in all the dairy breeds were sold over the block before their value as good breeders was known.

The bull calf designed for breeding purposes should be well fed during the growing period in order that he may develop to the full limits of his inheritance. If he is poorly fed during the growing period he may fail to reach his full size. His offspring may be smaller on account of the sire being undersize.

Until he is five months old he can be with heifer calves and receive the usual ration of the calves in the herd. He should receive skim milk until he is six months old and a liberal allowance of grain composed of a mixture of thirty pounds of corn or barley, thirty pounds of ground oats, thirty pounds of wheat bran and ten pounds of oil meal. He should have free access to good legume hay.

At six months the skim milk can be discontinued, or if more skim milk is available it can be fed at a profit until the calf is a year old. After six months old he should be separated from the other calves and placed in clean quarters where he can get sunlight and exercise. At the age of twelve to fifteen months he can be used for light service.

The sire should never be allowed to run with the herd. He should be broke to lead and should always be handled with a staff.

All good dairy animals have a highly developed nervous system which has the tendency to make the bulls cross. The practice of letting the sire run with the herd is dangerous on this account.

It is a common occurrence that people get hurt or killed by a cross bull. To be on the safe side, the bull must always be handled as a dangerous animal.

President O'Hair: Now, folks, this closes our Fifty-Second Anniversary. I want to just say to you that if you will let your minds go back to the time when you were a boy, as the girl said today at the table, and think along the line of what has been done by the men who have given their time, without pay, to keep this State Dairymen's Association going, they have been a lot of mighty good men, but very few of those men that made it possible have lived to see the results of their efforts today. I have been in it since my twenties, and this is the fifty-second season. It won't be long till somebody else, maybe some of the boys who sit here today, will be the officers of this Association, but I do hope, whether it is next year or five years from now, that when we give this over that it will be better than it is today, better every year.

We are going to try to make it the best convention in the state, and we just have. There is no use talking, there is no convention, it would be impossible for any convention to have better talent than we have had here, not only in this state but any place in the world as far as that is concerned. We have had the best and the biggest, and hundreds and hundreds of farmers that are in this country around here should have been here. I don't care if they feed mules or horses or pigs, whatever it is they would have got their money's worth to come here and listen to these men.

Next year we will have the convention some place else in Illinois, probably in the southern part of the state, and you are all invited to come and attend our banquet,

and if you don't get the worth of your money it will be because the chair isn't strong enough to take you. I think anybody who missed that banquet last night missed a year's fun anyway.

I especially want to say to the folks in Galesburg that never in my life have I been so royally entertained. I have never come up against men like there are in Galesburg. And I want to especially thank Mr. Christy for his co-operation. He has worked with me every time I have come into this county to make every success possible. I can see a great improvement over two years ago in the dairy business, and I am sure it is going to grow, because you have men here, you have a market here, the best market in the United States; the milk supply is right here in this state. I only wish I lived within twenty miles of this town, believe me Henry Hawkinson would get my milk. You have got the market here. Mr. Estcremer (?) the man that makes butter, nobody gets a corner on him because he is on the market every day.

The dairy cow is the backbone of the finances of the State of Illinois today, and it is going to be bigger and better in the future than it is today. I want to thank one and all of you folks and invite you to come wherever we have it next year. When you get these programs, there will be just a program sent out. We have always had more than we need. Next year you will have the report of this convention that this lady has taken, and every word about it she has put down, questions and discussions and addresses, and we will send every person who is a member of this Association a copy. You will get one, and we will try to get it to you early in the spring, then we will write you and invite you to take another membership next year, because every one who gets this report will attend this meeting—for a dollar. If you have only got one cow, three cows or a bunch of cows, it will be worth ten to fifty dollars to you to come. You can't afford to miss it.

Now we again invite you to come next year, and if this is all we stand adjourned.

(The meeting adjourned.)

CARE AND MANAGEMENT OF DAIRY COWS

By T. E. Woodward, Dairy Husbandman, and J. R. Dawson, Dairy Husbandman, Bureau of Dairying, U. S. Department of Agriculture

There are two methods of obtaining a high-producing herd of dairy cows. One method is to buy them, the other is to breed them. There are comparatively few men starting in the dairy business who can afford to purchase outright a high-producing herd. Although it is possible to buy good cows at reasonable prices in sections where there is a surplus of purebred or high-grade cattle for sale, it is only in exceptional cases that it is good business for a beginner to purchase a large number. As a rule the beginner is limited in funds, he does not understand the fundamentals of breeding and feeding, and in a majority of cases does not realize that high-producing cows must have better care and management than ordinary cattle.

It is usually better practice to start with a smaller number of cows and use a desirable purebred bull. These cows must be handled properly and the heifers selected from the best cows to build up the herd. After a time, when finances permit, one or two purebred females can be purchased as a foundation for a purebred herd. In the meantime considerable knowledge will have been gained in the care and management of dairy cattle, and the chance for financial loss will have been reduced to a minimum. This may seem like a slow method, but it is sure. It takes several years of intelligent effort and thought to build up and maintain a good herd of cows—either purebreds or grades—and the business can not be learned in a few months.

Several breeds of dairy cattle are being used in the United States and have proved satisfactory. There are good cows and poor cows in all breeds. For this reason, individual selection should receive as much attention as the breed.

Breeds of dairy cattle should never be crossed. The present breeds of dairy cattle are the result of many years of intelligent breeding along definite lines. By this method breeders have developed certain valuable characteristics which are transmitted when animals of the same breed are mated. When two animals of different breeds are crossed, the characteristics of both breeds are so mixed that they are not passed on to future generations with any degree of certainty.

A purebred sire should always be used. The bull is the sire of all the calves in a herd, therefore his influence will be multiplied a great many times faster than that of any one cow. The better the bull, the better the future herd will be.

Purebred cattle on the average produce more than grades. A tabulation of 17,405 yearly records of cow-testing association cows, made by the Bureau of Dairying of the United States Department of Agriculture, shows the relative production of purebreds and grades. Table 1 gives the results of this study.

Table 1.—Comparative Production of Purebred and Grade Cows

	Purebreds	Grades
Number of records	2,919	14,486
Average pounds of milk	7,182	6,261
Average pounds of butterfat	288	258

The purebred cattle excelled the grades by almost 1,000 pounds of milk and 30 pounds of butterfat. All these cows were in cowtesting associations and probably received much the same care and management. However, purity of breeding does not always insure greater or more economical production. There are many herds of carefully selected grade cows that produce as well as or better than many purebreds of the same breed. Over 90 per cent of the dairy products of this country are produced by grade cows, and this will continue to be the case for many years to come. However, it is the blood of the purebred in our grade cows that makes them the high producers they are.

THE DRY COW

It is generally considered that a cow should be dry for a period before calving, for four principal reasons: (1) To give the organs concerned in milk secretion a rest; (2) to permit the nutrients of the feed to be used for the development of the fetus instead of for the production of milk; (3) to enable the cow to replenish any stores of minerals which may have become depleted through the production of milk; and (4) to permit the cow to build up a reserve of body tissue before calving.

Length of Dry Period

That a cow should be dry for a certain period has been demonstrated to be sound economic practice. The proper length of the dry period seems to depend on the quantity of milk which the cow has produced and her condition as regards flesh. It is probable that the greater the yield of milk the greater is the depletion of the stores of nutrients used in the secretion of milk and the longer the dry period required. Cows of low or medium production are not thought to require so long a dry period as high producers. Such cows should be dry a month or six weeks, provided they are in a good state of flesh. Thin cows may need a somewhat longer period. High producers may require two months or more to permit them to get in proper condition for calving.

Feeding the Dry Cow

Cows normally lose flesh for three or four weeks after calving because they can not consume sufficient feed to provide adequately for both the milk flow and the maintenance of body weight. In order, therefore, that the cow may not become too thin after calving, it is necessary that she carry considerable flesh at time of parturition. It is well known also that cows in good condition at time of calving will start off the lactation period at a higher level of production than thin cows; this results in a larger yield of milk for the year. There is no economy in having a cow thin at calving time.

The feed during the dry period should be high in minerals, especially calcium (lime), since it has been shown by investigations at several experiment stations that this is the element most likely to be depleted. Good pasture in the summer and properly cured leguminous hay in the winter will supply this calcium. Considerable protein is required for the development of the fetus. For this reason and because most of the high-protein feeds such as the oil meals are likewise rich in phosphorus, which is used along with the calcium in storing up minerals in the animal body, the ration should contain considerable protein. The quantity of feed supplied should be sufficient to bring the cow to a proper state of flesh at calving time.

Drying Off

Most cows can be dried off by merely lessening gradually the frequency of milking. That is, first miss one milking, then miss two, then three, etc. When the daily production is only 6 or 8 pounds milking may be stopped entirely. The udder of the cow should then be let alone and nothing done to stimulate the secretion of milk. It is probably best after several days to draw out the milk that has accumulated, though the necessity for this has never been proved, as this milk will be absorbed in a short time. With persistent producers it is often necessary to reduce the allowance of feed, especially grain. With any cow the time required for drying off may be shortened by withholding a portion of the feed.

THE FRESH COW

Care at Calving Time

In handling dry cows that are heavy with calf care should be taken to prevent injury by slipping on stable floors or ice, by two or more cows crowding through doorways, and by pregnant cows mounting other cows that may be in heat. All cows in heat should be confined, or at least separated from the cows that are heavily pregnant. In other particulars the pregnant cow can be handled like the rest of the herd.

A week or two before the cow is due to calve she should be kept under rather close observation, as she may need special attention when calving occurs. If the cow has been running on pasture, she may continue to do so; but her condition should be observed at least twice daily. If calving occurs during the winter, the cow should be placed in a clean, roomy, well-bedded box stall. Sometimes the udder becomes so large and swollen that it appears desirable to draw out some of the milk previous to calving; however, this is seldom necessary and should be avoided if possible, because it stimulates further secretion and because the first milk or colostrum is beneficial to the calf. The cow should be kept as quiet as possible and fed a laxative ration, wheat bran and linseed oil meal being especially desirable. The ration should not contain too much roughage, which on account of its bulk adds to the discomfort of the cow.

Immediately after the cow has calved it is a good practice to give her warm water to drink, and follow this with a warm bran mash, the idea being that if the cow becomes chilled at such a time the afterbirth may not be passed so readily, and the animal may be predisposed to other ailments. It is also thought best not to draw all the milk from the udder for a day or two after calving. This may help in the prevention of milk fever. After a couple of days, provided everything is proceeding normally, the calf may be removed and the cow placed in the stable with the milking herd. As much roughage may be allowed as the cow will consume, but the concentrates should be fed sparingly at first and gradually increased. With good producers not less than three weeks should be taken to get them up to full feed. The grain fed to poor or medium producers may reach the full quantity a little earlier. Too much concentrated feed at this time is likely to cause digestive disturbances and hinder the reduction of swelling in the udder. In general, it is better to err in not giving sufficient concentrates than in giving too much. The quantity to be given just after calving will depend upon the size of the cow, her production, and the condition of her udder; and will usually be from 4 to 7 pounds per day.

Cows should always be treated with kindness. No person fit to be a dairyman will treat them otherwise. The character of a person is shown by the way he handles cows and other livestock. Kindness pays in dollars and cents, but such incentive should not be necessary to obtain for the cow the treatment that is justly due her.

Season of Year for Freshening

The influence of the season of freshening on the production of dairy cows has been the basis of considerable investigation. The Bureau of Dairying has compiled some facts in regard to the most profitable season for cows to freshen, and these are published in Department Bulletin 1071. The conclusions are based on a study of 10,870 yearly records in 64 cow-testing associations, and are summarized in Table 2.

Table 2.—Date of freshening, by seasons, with average yearly feed and production records, per cow

Season	Number of cows	Milk production	Butterfat production	Cost of roughage	Cost of grain	Cost of feed	Income over cost of feed
		Pounds	Pounds				
Spring (March, April, and May)	3,196	5,842	236	$37.51	$19.22	$56.73	$70.73
Summer (June, July, and August)	1,328	5,941	236	37.62	22.48	60.10	66.59
Fall (September, October, and November)	2,862	6,689	268	38.94	28.45	67.39	76.65
Winter (December, January, and February)	3,484	6,439	258	37.65	25.51	63.16	75.66
Total and averages	10,870	6,269	252	37.95	24.06	62.01	73.36

Cows that freshened in the fall months ranked highest in average yearly production of milk and butterfat, in cost of feed, and in income over cost of feed; the cows that freshened in the winter months ranked second in these respects; on the average, those that calved in the spring and summer produced the least milk and butterfat and returned the smallest income over cost of feed.

The cost of feed was considerably higher for the winter-freshening cows than for the cows freshening in the summer months. This is no doubt owing to the fact that the former produced the most milk and therefore required the heaviest ration when the cost of feed was highest. However, in the feed cost per unit of milk there was little difference between the cows freshening in the different seasons.

The cost of roughage was found to be practically the same per cow for all seasons of freshening; but the grain cost was $9.23 more for those freshening in the fall than for those which freshened in the spring. However, this increased feed cost was more than offset by the 32 pounds more butterfat produced by the fall-freshening cows.

Cows that calve in the spring usually give a big flow of milk during the summer months when feed is cheap. Butterfat is also usually low in price at that season. Then, too, the spring-freshening cow is very likely to receive a severe setback in milk production when the heat, flies, and short pasture appear. It is difficult to get her back to high production during the fall and winter; consequently she must be carried through the winter on expensive feeds with a very small margin of profit.

There are several advantages in having cows freshen in the fall. Butterfat usually brings a higher price during the fall and winter months. Labor is easier to obtain then, and there is more time to care for the calves and a large supply of milk. The fall-freshening cow, if properly fed and handled, will, as a rule, produce well during the winter months, falling off as spring opens. At this time the spring pasture grass will act as a stimulus and cause increased production during the spring and early summer. The period of low production will come during July and August, when conditions are extremely unfavorable for high production. It is undesirable to have cows freshen during the hot summer months, because of hos weather, flies, and dried-up pastures. Fall-dropped calves are easier to raise and usually less subject to diseases.

The dairyman who sells his milk to a city retail trade should have his cows freshen at all seasons of the year in

order to keep up a steady, constant flow of milk. However, this point is not so important for dairymen who seperate the milk, sell cream, and use the skim milk for feeding purposes.

MILKING

Regularity

Of all dairy operations, milking on most farms takes the most time and to many persons is the most irksome. It has commonly been assumed that cows should not only be milked regularly but that they should also be milked each time by the same man. Doubtless this has had much to do with many persons' distaste for dairy work.

Experiments at the Bureau of Dairying experimental farm at Beltsville, Md., show that with cows that are average to good, milking may take place at irregular hours without any marked effect upon production. Whether very high producers would show similar results has not been determined. It was also found that when irregular milking was accompanied by irregular feeding the production was lessened about 5 per cent. Apparently cows are more sensitive to changes in the feeding routine than to variation in the hours of milking. The conclusion is not to be drawn from these experiments that regularity in doing the dairy work is a matter of little importance, but rather that cows can occasionally be milked earlier or later than usual if there is something else to which the dairyman desires to give his time.

Though it is generally believed that a cow will produce more when milked always by the same person, the practice in many large dairies where there are several milkers is to milk the cows as they come, rather than to reserve certain cows for each man. At the Beltsville station, 12 cows were divided into three groups of four cows each, and each group was milked regularly by the same man for 40 days. The 12 cows were then milked by the same three men in such a way that no cow was milked twice in succession by the same man. After 40 days the cows were changed to regular milking again for 40 days. The results show an increase of about

0.05 per cent in the milk and fat through steady milking by the same man. This is so little as to be almost negligible.

Frequency

The oftener a cow is milked, within certain limits, the greater the production. This accounts for the fact that many cows on test for the advanced registry or register of merit are milked oftener than is the practice with the ordinary herd. The increase that may be expected by milking three times a day instead of twice has not yet been definitely determined. While some estimate the increase as high as 25 per cent, experiments at Beltsville show the average increase in the yield of good cows for short periods (40 days) to be about 12 per cent. Preliminary figures also show the increase for long periods (one year) to be about 18 per cent. The cows milked three times a day were more persistent in their yield of milk than those milked twice a day.

The amount of increase due to more frequent milking seems to be dependent upon the quantity of production and the capacity of the udder. When the udder becomes much distended, milk secretion is checked, and if the production and udder capacity are such that this occurs on twice a day milking, a greater percentage increase may be obtained by milking three times than would be obtained by an extra milking of cows with larger udders. Similar experiments comparing three and four times a day milking for short periods show an increase of slightly over 6 per cent by milking four times.

In a few dairies all the cows are milked three times a day; in a few others only some of the higher producers are milked three times a day. The economy of milking more than twice a day is a matter which must be figured out by the individual dairyman from the actual cost of the extra milking and the value of the product, bearing in mind that approximately 1 pound more of concentrated feed will be required for each 2 or 3 pounds of extra milk produced. In the absence of more extended experimental data, one can safely estimate the increase in production for short periods, from milking three times a day, as 12 per cent more than

the production from milking twice a day; and the increase by milking four times, as 6 or 7 per cent over milking three times a day. One can also estimate the increase from milking three times instead of twice, for long periods, at 18 per cent.

Milking By Hand

Proper hand milking should have for its objects, aside from sanitation, to draw the milk with the least discomfort to the cow, to draw it as quickly as possible, and to get all the milk. Some milkers, through unnecessary roughness, an unusually strong grip, or long finger nails, keep the cow uneasy during milking. This may lead to kicking. There is no advantage in slow milking, and experiments at the Wisconsin station showed that the percentage of fat may be lowered by prolonging the milking operation.

Unless all the milk is removed from the udder, it is thought that the milk remaining will interfere with the functioning of the gland and result in a diminished production. When the calf runs with the cow, probably this is the way in which nature adjusts the supply to meet the demand. In order to get all the milk certain manipulations of the udder have been practiced. These manipulations apparently increase the production slightly, but they have never come into general use, although an abbreviated modification of the method is practical. An upward pressure on each quarter of the udder for a few times when milking is nearly completed will help to bring the milk into the teats where it can be drawn.

The Mechanical Milker

The mechanical milker is a success on many dairy farms. It saves labor, is easier, and to many persons its proper sanitary condition make them impractical if the operation is more agreeable than hand milking. The cost of installation and the labor of keeping the machines in herds are very small.

It is possible to have milk with a low bacteria count when machine drawn by giving proper attention to cleans-

ing and sterilizing. In many instances, however, just as with cream separators, this matter has been neglected or carelessly done. Theoretically, machine-drawn milk should be cleaner than that drawn by hand, because it is better protected from contamination by the cow, the milker, and the stable air.

So far as quantity of production is concerned, the mechanical milker seems to give as good results as ordinary hand milking. It is the general practice for a hand milker to follow the machine to see that the milking is completely done and to draw any milk that is left.

It has been claimed that machine milking causes udder troubles, and with the earlier models there was doubtless some ground for such a claim, especially if they were left on the teats too long. More recent makes and styles, which are constructed so as not to interfere with the circulation of blood through the teats, are thought to lessen the likelihood of such trouble. Failures with the mechanical milker can usually be traced to a lack of mechanical knowledge on the part of the operator, carelessness of operation, or lack of attention to proper cleaning of the machine. The increased use of the milking machine indicates its practicability.

Keeping Records

In order properly to manage a herd of dairy cows, it is necessary to keep records. The system need not be elaborate, but should be sufficient to furnish accurate information on milk and butterfat production of individual animals and quantity of feed consumed. In addition, breeding dates should be recorded and a plan of identification and registration of the purebred animals should be followed. One should not rely on memory for such records, but should put every item down in writing in such a manner that it can be easily referred to when need arises. Whatever system is adopted should be continued. The records should not be allowed to lapse.

Production Records

The principal reason for keeping milk-production records is to show definitely which cows are profitable and which are not. The inferior cows can then be disposed of and the better ones kept for production and breeding purposes.

Another important reason for keeping daily records is that they furnish information which is used as a basis for feeding. Cows should be fed according to the quantity of milk or butterfat produced, and the daily production must be known. Sickness or other abnormal conditions are generally accompanied and often preceded by a decline in milk production. This decline can easily be noticed if the practice of weighing and recording the milk daily is followed.

A spring-balance scales is necessary. These scales are equipped with adjustable hands, one of which is set at zero when an empty pail is hung on the scale. The quantity of milk then may be read without subtracting the weight of the bucket. The milk scales should be graduated to tenths of a pound. If milk pails of different sizes are used by the milkers, it is a good idea to keep a weight pail at the scales to avoid confusion. The scales should be hung in a convenient place in the barn or milk room.

A suitable sheet for recording the daily weight should be placed in a clean, protected place near the scales. These sheets may be so arranged that spaces are provided for writing the name or number of the cow and spaces for recording the weights of the milk both morning and evening. Some use sheets with spaces for seven days only, but the more common way is to have spaces for the entire month. Scales and milk sheets can be obtained from dairy supply houses. Many publishers of dairy periodicals also distribute milk sheets for a nominal price.

At regular intervals samples of milk from individual animals should be tested for butterfat. A common practice is to take a composite sample of milk from each cow for three consecutive days, about the middle of each month, and test this for butterfat. The butterfat percentage thus

obtained is used as the average test for the month and the monthly butterfat production is computed from this.

There are other methods that can be used, such as weighing and testing the milk for one day during the month. The total yearly production for each cow, as shown by such tests, will be close enough to actual production for practical purposes. In some cases the milk is weighed and tested one day every two or three months. This method is not so accurate, but it is better than no test at all.

In many sections of the country cow-testing associations are in operation. If a dairyman is a member of a cow-testing association the detailed production records of his cows are kept by the tester, who is hired by the association. The tester visits each member's herd one day out of each month, weighs and tests the milk of individual cows for that day, weighs the feed, and figures the total quantity of milk and butterfat given and the feed consumed for the month. This system has proved to be an inexpensive and reliable method of keeping herd-production records for a number of dairymen in a community.

Breeding Records

A record should be made of date of breeding, the bull to which bred, and date of expected calving. The gestation period for cows is approximately 280 days. For convenience it is well to have a gestation table handy for reference in estimating date of calving. If a gestation table is not available, count back three months from date of breeding and add 10 days. For example, if a cow is bred on March 10, by counting back three months and adding 10 days, the probable date of calving is found to be December 20. It is well to have this record in a small pocket-size notebook that can be carried in the work clothes. Most of the national dairy-breed associations distribute record books and blanks of this kind. Such books are especially helpful where the herd includes purebreds.

Registration and Identification

A good plan is to assign a number and name to each animal in the herd. If a calf is dropped, or a new animal is added to the herd, it should likewise be assigned a number. Many breeders use fiber-disk ear tags on which the herd number is stamped. These tags are about the size of a quarter and are durable. They are attached to the ear with an ordinary hog ringer, and if put on properly are not easily torn out. Then, too, they are not easily confused with the small metal tag that is placed in the ears for identification in tuberculin testing.

A strap around the neck, to which is attached a metal tag with a number on it, is also used. The strap will last for several years and there is little likelihood of its being lost. However, straps are somewhat more expensive than fiber ear tags. The practice of slitting the ears for identification is not recommended. It is not only a cruel practice but also gives the animal a bad appearance.

Tattooing numbers in the ears is practiced by some breeders and is required by some breed associations for identification purposes in connection with advanced register testing. There are tattooing outfits on the market for doing this work. If the tattooing is properly done, it is reliable and will last for the lifetime of the animal. However, the tattoo marks do not show up distinctly on animals having dark skins. Even on light skins the tattoo numbers are often difficult to make out, and it becomes necessary to catch and hold the animal in order to see the numbers.

A diagram of each animal can be drawn on loose-leaf forms provided by the various breed associations. On the opposite side of this sheet is usually a three or four generation blank pedigree. Forms of this kind filled out for each animal in the herd and kept in a holder will be of great help to the owner, especially if he has purebreds.

Registration papers on all purebred animals should be on hand. Calves should be registered as soon as practicable. The various national dairy-breed associations fur-

nish directions and advice for registration. Their names and addresses are as follows:

American Guernsey Cattle Club, Peterboro, N. H.
American Jersey Cattle Club, 324 West Twenty-third Street, New York, N. Y.
Ayrshire Breeders' Association, Brandon, Vt.
Brown Swiss Cattle Breeders' Association, Beloit, Wis.
Dutch Belted Cattle Association of America, Rockville, Conn.
Holstein-Friesian Association of America, Brattleboro, Vt.

In addition to the dairy-cattle names above, some breeds primarily developed for beef production are occasionally bred and used as dairy cattle. Their associations are as follows:

American Devon Cattle Club, 51 Cornhill, Boston, Mass.
American Shorthorn Breeders' Association, 13 Dexter Park Avenue, Stock Yards, Chicago, Ill.
Milking Shorthorn Society, Independence, Iowa.
Red Polled Cattle Club of America, Richland Center, Wis.

Advanced Register Testing

The various national breed associations for dairy cattle have established advanced-register classes for purebred cows. Animals are entitled to entry in these classes when their production has reached a certain standard set by the association. Such tests are usually conducted by representatives of the State agricultural colleges or experiment stations. Rules and regulations for conducting these tests differ according to the breed and the kind of test undertaken. Information can be obtained by writing the breed association or the State agricultural experiment stations.

STABLE AND YARD

The main essentials in housing dairy cows in the winter seem to be to keep them dry and out of the wind and drafts and to provide plenty of fresh air and sunlight. Apparently the matter of temperature in itself is not a vital consideration, except perhaps in the most severe portions of the United States. It has been noted at the Beltsville station (in Maryland) that cows do their best in the coldest weather

and their poorest during the hot summer months. Probably there is no advantage in keeping the stable temperature much above freezing, and there may be a disadvantage if the temperature rises above 60° F.

Types of Barn

Types of barns which can be made suitable for dairy cows are the basement barn, one-story stable, two-story barn, round barn, and open shed or covered barnyard.

In the basement barn the cows usually are housed on the lower floor. Owing to the greater protection from the weather afforded by such a barn, it is likely to be warmer than other types in the winter, and it is probably for this reason that more such barns are to be found in the North than in the South. Many basement barns may be criticized for lack of sufficient light and for being so low that the slope away from the stable is not enough to afford proper drainage of the cow yards. The ventilation and lighting of such barns is generally poorer than that of other types, but they can be remodeled so as to be satisfactory in these respects.

The one-story and two-story barns can be well lighted and ventilated and can be kept in a sanitary condition more easily than a basement barn. However, with a one-story barn other facilities must be provided for the storage of hay. For this reason the expense of housing both cows and feed will in most cases be greater with the one-story than with the two-story barn in which the same roof covers both the cows and the feed. The fire hazard is usually greater in the two-story barn.

In the round barn more space can be inclosed with the same amount of building material than in other types, and it appears that this is the chief advantage which may be claimed for it. The practice of locating the silo in the center of the barn may put the silage in the most convenient place for feeding, but it is likely to fill the stable with odors which may taint the milk; and certainly a silo so located is not so easily filled as one outside the barn.

Open Shed or Covered Barnyard

The open shed or covered barnyard is a practical method of housing dairy cows. It provides the best known method of saving and preserving all the fertilizing constituents of the manure; it permits the feeding under shelter of rough materials such as cornstalks and makes possible their utilization for bedding; when there is plenty of bedding, cows so housed keep cleaner than those confined in stanchions. These are the principal points in favor of the open-shed system.

In an experiment at the Beltsville station it was found that the cows in the open shed produced a little more milk, but at a greater cost for feed, than the cows in the closed barn. The more timid cows were fought away from the feed racks in the shed, which resulted in a much lower production from such cows. Probably it would be a matter of economy to confine the cows at feeding time. Cows so housed should be dehorned.

The labor required under the two systems was slightly greater with the open shed. Had the cows been milked in the open shed this would not have been the case, but since this practice is not recommended in the production of market milk, the cows in this experiment were taken to a separate stable for milking. Sixty-eight per cent more bedding was used in the open shed.

Stall Equipment

Of the various methods of confining cows, the swinging stanchion which allows considerable freedom, has met with the greatest popular approval. The old-fashioned rigid stanchion is being replaced with this more humane device. But even the swinging stanchion fails to allow enough freedom to meet the desires of many dairymen who are trying to get maximum production regardless of expense. These dairymen use box stalls.

By confining in stanchions less space is required, the labor of feeding, milking, and cleaning the stable is materially lessened, and the bedding needed is only one-fourth

to one-third as much as box stalls require. However, cows so confined are more liable to have their teats injured by being stepped on, either by themselves or by other cows. In experiments at the Beltsville station in which 12 cows were kept in box stalls and stanchions in alternate periods, it was found that the cows in box stalls produced less than 4 per cent more milk than those kept in stanchions. The increase was not enough to pay for the extra labor and bedding required.

Dirt floors should not be used in a dairy stable. They are insanitary, they can not be flushed, and holes soon appear. A stable floor should be durable and easy to keep clean. Concrete should be neither so smooth as to be slippery nor so rough as to make thorough cleaning difficult.

Paint and Whitewash

If the inside of the cow stable is to be painted, the woodwork or plastering should be as smooth as possible to avoid the use of excessive quantities of paint. If it is to be whitewashed a rough surface is preferable, as whitewash will not adhere so well to smooth surfaces. White paint made of white lead and linseed oil when used in the cow stable will turn yellow. If the cow stable is to be painted white, therefore, it is better to use some kind of paint which does not contain linseed oil. If the stable is painted gray or some color other than white, the change in color will not be so noticeable. In such cases linseed-oil paint can be used more advantageously.

Cow stables are usually whitewashed once or twice a year. There are many whitewash formulas which call for the addition to the lime and water of other substances, such as salt or skim milk. Just how much advantage there is in adding such materials is a matter of conjecture. Satisfactory whitewash can be made by the use of only lime and water. The ordinary hydrated lime when mixed with water makes a good whitewash; or the quicklime ordinarly called lump lime may be slacked with a minimum quantity of water and this used in place of the commercially prepared hydrate of lime. Only freshly burned lump lime should be

used, and any that is air-slacked should be discarded, as whitewash made from such lime will not stick.

Whitewash may be applied with a brush or with a spray pump. It can be applied more heavily with a brush, and sometimes one coat will give as good results as two with the sprayer. Spraying, of course, is quicker, but smears up the floor and equipment more than the brush method. But no matter what method of application is used, it will save time in cleaning if the equipment is covered with old bags or similar material. If the floor is kept wet while the whitewashing is in progress, the whitewash that is dropped will not stick so tight but that it can be dislodged readily with water and a brush or broom.

Exercise

Exercising cows by making them walk 3 miles a day was found at the Beltsville station to cause a greater feed consumption and a slightly higher percentage of fat in the milk, but the quantity of milk remained about the same. The extra feed consumed cost more than the increased quantity of fat was worth. So far as production is concerned, a cow needs no more exercise than she will get by walking at will about a small yard. The writers know of no experiment on the influence of exercise upon the health that has been conducted over a long enough period to warrant any conclusions regarding it.

It is thought good practice to let the cows out of the stable at least once a day, even if this is not necessary for the purpose of watering. The stables are more easily cleaned and bedded when the cows are out, and opportunity is afforded for convenient observation of any cows that may be in heat.

CLEANLINESS

Grooming

No dairyman should permit his cows to remain in a dirty condition. Pride in his stock and stable should be sufficient incentive to keep his cows and stable clean.

Manure or litter should not be allowed to remain on the cows, and for this reason grooming should be a part of the regular dairy work. Grooming not only adds to the appearance of cows by keeping them clean and improving the condition of their coats, but also makes possible the production of cleaner milk. Washing and carding the tails occasionally adds much to the appearance of the herd.

Bedding

Bedding is used for three reasons: (1) To provide a comfortable bed, (2) to keep the cow clean, and (3) to absorb the liquid manure. The common bedding materials are wheat straw, oat straw, corn stover, shavings, and sawdust. The desirable qualities of a bedding material are bulkiness, large water-holding capacity, high content of fertilizing constituents, and freedom from dust which would contaminate the milk. As regards bulkiness, the straws and shredded corn stover are superior to shavings or sawdust. Experiments at the Illinois station show that 40 per cent more shavings than oat straw are required to keep the animals bedded.

The water-holding capacity of various materials was determined at the Illinois station and verified by work at the Beltsville station. With dry materials they rank as follows: Shredded or cut corn stover, straw, with little choice between shavings and sawdust for last place.

The fertilizing value is greatest with the corn stover. This is followed by oat straw and wheat straw in the order named. Sawdust and shavings have only a slight fertilizing value.

Shavings are superior to other forms of bedding as regards cleanliness and for this reason are much used in dairies where very clean milk is produced. In daries where this extra sanitation is not a matter of great importance, it appears that pound for pound shredded stover or straw is worth at least 50 per cent more than sawdust or shavings. Records at the Beltsville station show that when wheat straw is used as the bedding material, about 4 pounds per cow per day will be used by cows confined in stanchions,

and about 14 pounds will be used by cows in box stalls. Although 4 pounds a day will provide a suitable bed and keep the cows clean when confined in stanchions, this quantity is not sufficient to absorb all the liquid manure; to do this, about 8 pounds per cow would be required for an average producing herd.

Manure Disposal

The advice generally given for handling manure on the dairy farm is to spread it on the land as soon as possible after it is made. With certain reservations this seems to be sound advice. It is questionable whether one obtains greater returns from the manure handled in this way during the winter than by proper storage, but it does give better distribution to farm labor and obviates the necessity of a building to hold large quantities of manure. Spreading manure on snow, though often advised, is a questionable practice on account of washing, especially if the land is rolling. Probably it is also inadvisable to haul manure on the fields when the ground is so soft that the wagon makes deep ruts.

At certain other seasons, when farm work is pressing, manure hauling must be delayed. It appears, therefore, that storage of manure can not well be entirely avoided, and a suitable storage place should be provided to prevent excessive loss of fertilizing ingredients through leaching. In storing manure plenty of moisture and thorough packing are the main things to consider. Where bedding is cheap, sufficient can be used to absorb the liquid manure; where is is scarce and high in price, the liquid can be drained into a cistern, or by using a water-tight manure pit the liquid can be stored with the solid manure. All manure should be removed from the stable at least once a day.

The equipment used in removing manure ranges from a wheelbarrow to a power conveyor running in the gutter behind the cows. In dairies of medium to large size the most popular method of removing manure is the litter carrier with overhead track, such as is manufactured by several barn-equipment firms. The carrier may discharge di-

rectly into a manure spreader or wagon or may go to a manure pit. Inclosing or screening the manure pit will help in controlling the fly nuisance.

FEEDING

Method and Order of Feeding

The quantities of grain to be fed should be determined for each individual cow wherever possible. A general herd mixture can be made up and proper quantities weighed out to each cow. A number of methods for feeding the grain are in use, but the most practical is to place a sufficient quantity in a truck or cart that is pushed through the feeding alley, where the quantity for each animal is weighed or measured out. If this method is used, there may be certain cows that will need some feed not in the general herd mixture, and these can easily be fed later. There should be a feeding card or sheet available showing the quantity of feed each cow is to get. A small blackboard can be attached to the feed cart and the figures placed on this board with chalk every two or three days. A spring balance scale suspended above the cart on an arm will be of great help.

Silage can be fed from the same or a similar cart. If a scoopful of silage is weighed occasionally as a check, the quantity can be measured with a fair degree of accuracy.

Baled hay is convenient for feeding. If loose hay is fed, the hay chutes should be conveniently placed so as to require as little work as possible. The allowance of hay should also be weighed occasionally.

Feeding should be done regularly, because, as has already been pointed out, cows are probably more sensitive to change in the feeding routine than to variation in the hours of milking. Grain is usually fed first, leaving the roughage until after milking. This practice wll tend to keep down the dust and dirt during milking. Silage and other feeds that might taint the milk should be fed after milking. About half the grain and roughage should be fed in the morning and half in the evening. If cows are milked oftener than twice a day, the grain feedings should corres-

pond, but the roughage can be fed twice a day. Some dairymen feed grain on the silage.

Water

A plentiful supply of fresh, clean water is essential on the dairy farm. The demand for water by the dairy cow depends mainly upon the air temperature, the quantity of milk produced and of succulent feed in the ration. The quantity of water drunk in cold weather is about the same as in moderate weather, but is much less than in hot weather. If large quantities of such feeds as beets or mangels are fed, very little water is required.

In experiments at the Beltsville station cows were watered once, twice and at will from watering cups. Cows watered once a day drank less and produced less than when watered twice a day or at will. Cows watered twice a day drank as much but produced less than when watered at will. The cows used were average producers and the maximum difference found in production, between watering once a day and at will, was only about 5 per cent. The higher the production the greater the benefit to be derived from frequent watering. Some low-producing cows fed silage, hay, and grain refused to drink more than once a day in cold weather. With cows similar in production and receiving the same kind of feed, water consumption was 80 per cent greater in hot summer than in cold winter weather. The demand for water was greatest after eating hay. In cold weather cows prefer water than has been warmed and will drink more of it, though experiments at several stations show that the amount of production is influenced but little by warming the drinking water.

Salt

Dairy cows should have all the salt they want. The quantity consumed will vary with the kind of feed and size of the animal. Experiments have shown that ordinary cows in milk will require about 1 ounce of salt a day. Heavy producers should get more. Many dairymen mix salt with

the grain mixture, incorporating from 1 to 2 pounds of salt with each 100 pounds of concentrates. In addition, salt is provided so that the cows can have access to it and take more if they desire. Stock salt can be purchased in several forms. In cake form, salt may be kept in each feed box in the barn where the animal can lick it, or it may be placed in convenient places in the lot or pasture. It should be in some sheltered place, to prevent the rain from dissolving it.

FITTING FOR SHOW

The showing of dairy cattle is very common and serves many useful purposes. It is a guide to more constructive breeding and helps to familiarize breeders with the better type of dairy cattle. Probably the most important reason for showing is the advertising that it brings. To exhibit widely is expensive and one should consider fully the benefits as compared with the cost and effort. However, the owner of a few cattle can exhibit at local shows and fairs to advantage without much trouble and expense. The following suggestions are made for his guidance.

1. Fitting cows for show should begin a year before the exhibition, for only in that way can they be made to show most advantageously. The cows can then be selected and bred so as to calve a short time before the first showing. By this plan each cow is at her best, has a large udder, and has had a few weeks in which to recover from freshening.

2. With bulls and young heifers early preparation is unnecessary. When animals are to be shown in classes under 1 year of age, it is well to choose calves that were born just after the date used in figuring age (usually August 1 and February 1) so that they may have the greatest development. Large, growthy young animals always appear to better advantage in the show ring than smaller ones.

3. Animals to be shown should be in good flesh, not fat, but smoothly covered over all parts. Thin animals in poor condition will be discriminated against in the ring. No particular system of feeding is necessary for dairy an-

imals, but the feed should be somewhat laxative and should be fed in abundance. The teaching or training of animals to walk, stand, and act so as to appear to the best advantage, is a very essential part of fitting for show. They should be taught to walk in an elert, active manner, and, above all, they must be trained to stand erect for long periods without slouching. The training should be so thorough that practically nothing will excite the animals and make them hard to manage.

4. For a month or two before the show the animals should be kept in the barn. After being thoroughly washed and scrubbed with soap and thoroughly rinsed, they should be blanketed with light burlap blankets. From that time on the animals should not be allowed to remain out of doors in the sun without blankets, if their hides are to be kept mellow and soft. Clipping is an important operation, and there are many different methods. The extent of clipping depends upon the conformation of the animal and its quality of hide and hair. In any case, the face, ears, udder, milk veins, and tail should be clipped, the switch, of course, being left. Clipping gives an appearance of trimness and quality to the animal that is difficult to obtain in any other manner. Clipping several weeks before the show allows the hair to grow out somewhat and makes the coat look softer. Much time should be spent daily in brushing, first with a stiff, coarse brush, then with a lighter, softer one, and finally rubbing with a woolen cloth moistened with linseed oil. Such treatment will bring a gloss and softness even to the coarsest hair. If the hide is thick and tight or has a tendency to be coarse, occasional scrubbings with hot suds made from green soap, followed by a heavy blanketing and sweating, will aid greatly in producing a loose, pliable skin.

5. Hoofs must be trimmed so as to be symmetrical. This can easily be done with a hoof knife, pincers, rasp, wood chisel, and mallet. After trimming, the hoofs should be rasped smooth. Care should be exercised in all this work not to cut or rasp the hoofs too thin. If the hoof is so hard that a hoof knife can not be used, the animal may be placed

on a wooden floor and the hoof trimmed by means of a chisel and mallet. The hoof should be oiled and rubbed to a gloss after final smoothing.

6. If animals have horns, these should be scraped with a steel scraper or glass lengthwise until nearly smooth and then finished off with fine sandpaper or emery cloth. When as smooth as they can be made, the horns should be polished frequently before the show with powdered pumice stone and sweet oil. It is very common to make leather, chamois, or flannel horn coverings to protect the polished horns.

7. The tail should be washed several times. The day before showing it can be bleached with blueing, if light in color, and then braided into three or four small braids and left overnight. When ready to show, open the braids and brush out the tail, thus giving it a clean, fluffy appearance.

DISEASES AND COMMON AILMENTS

Tuberculosis

In most cases this infectious disease is of a chronic nature, taking a number of years to run its course, often with no visable symptoms. Consequently the more chronic its character the more dangerous as spreaders of the disease are animals affected with tuberculosis.

The disease may be introduced into a herd by bringing in diseased animals, by feeding calves milk from tuberculous cows (this may happen by using unpasteurized skim milk from a creamery), by showing cattle at fairs, by shipping cattle in infected cars, and by pasturing with other cattle that have the disease. The most reliable way to tell whether living cows have tuberculosis is to have them tuberculin tested by a competent veterinarian.

Of all the plans tried out for the eradication of tuberculosis, the accredited-herd plan and the accredited-area plan offer the most promise and are accomplishing the best results.

Infectious Abortion

Infectious abortion is a disease very prevalent in dairy herds and causes excessive losses to dairymen each year.

The symptoms which denote its presence in a herd are rather indefinite and inconstant. The act of abortion is probably the symptom which is most widely known and readily observed, but may easily be misinterpreted, since not all cows which abort are affected with the infectious disease. Its prompt recognition in diseased herds is rendered difficult by the fact that many animals which acquire the disease may never abort.

Cows that abort as a result of the disease often retain their afterbirths.

It has been observed that barrenness is usually a troublesome factor in herds in which the disease has gained entrance. Often cows that have aborted conceive promptly, but it is not infrequently necessary to breed an aborter five or six times before conception takes place.

The presence of the disease in herds not only causes loss of calves but may seriously interfere with milk production as well.

At the present time no specific cure for infectious abortion is known. The proper course to pursue is dependent in a measure upon how extensively the disease has spread. The disposal of aborters may afford but slight relief, since their elimination from the herd usually means that only a portion of the affected animals have been removed.

Abortion losses in infected herds may be prevented to no small degree by appropriate sanitary measures, such as (1) isolation of aborting animals or those about to abort, as long as they continue to have uterine discharges; (2) disposal of fetuses, afterbirths, and bedding contaminated with uterine discharges in such a manner that they will be inaccessible to the rest of the herd; (3) precautions against tracking discharges about premises; and (4) liberal use of disinfectants about stables.

Maternity stalls should be provided for all cows in the herd at time of calving, in which they should be confined

following calving as long as they have uterine discharges. The infected cow which produces a seemingly normal calf may be as great a source of danger to healthy stock at time of calving as though she had aborted.

Experimental studies have indicated that animals acquire the disease mainly through the mouth by consuming feed or water that has been contaminated with material from the generative organs of infected animals either at or near times of calving or aborting. It is at these times, therefore, that extreme precautions should be taken in so handling the animals that their discharges may be confined to as small an area as possible, where they may be gathered up and proper disposition made of them.

Difficult Calving

Usually a cow will calve without assistance if kept quiet and not excited. Strangers, children, and particularly dogs, should be kept away from the cow. The stall or other place where the calf is to be born should be clean. Before labor has progressed to any great extent it is well to see that the presentation is normal; that is, that the front feet and nose are first to appear. Sometimes one or both feet or the head is doubled back. When this occurs, calving without assistance is difficult or impossible. The calf should be placed in proper position for it to be born, and this usually means pushing the calf back into the uterus, which is sometimes rather difficult to do. Unless a person is skilled in such work it is better to call a veterinarian. A bungled job may mean serious laceration of the uterus, a loss of the cow, or the death of the calf. Calves can also be born hind feet first. When this occurs, some one should be on hand to see that delivery is hastened at the critical moment; that is, when it has so progressed that the blood supply to the calf through the naval cord is shut off. The calf must then be able to start breathing or it will smother.

Sometimes assistance is needed, especially with the young cows, even when the presentation is normal. Hence the cow should be watched rather closely, but no help should be given unless it is necessary. Time must be al-

lowed for the relaxation of the openings from the uterus and vagina. In general, labor should continue for two hours or more before any help is given, although the condition of the cow should be taken into consideration. She should not be allowed to become too much exhausted before help is given.

The way to help is to take hold of the calf's feet, if they protrude, otherwise pass cotton ropes around them, and pull hard every time the cow strains. Do not pull at any other time and do not be in a hurry about getting the calf. Too much haste or excessive pulling may injure both cow and calf.

As soon as the calf is born, the navel cord should be clipped about an inch from the belly, the few drops of blood squeezed out, and tincture of iodine or full-strength compound solution of cresol or other coal-tar preparation applied.

The afterbirth is usually passed in a few hours, but if not expelled naturally within two days it is thought best by most veterinarians to remove it by hand. This should not be attempted by an unskilled person, as care must be taken to avoid injury in disengaging the cotyledons which attach the afterbirth to the uterus, and special effort must be made to get all the afterbirth. It is also necessary to avoid introducing infection into the uterus by dirty hands or irrigating tube. The irrigating tube should be sterilized by boiling before and after use. Very mild antiseptic solutions, in large quantities, or salt solution (1 tablespoonful to a gallon of boiled water), are then used to flush out the uterus. If the cow does not expel all the liquid herself, it should be siphoned out. Flushing of the uterus should take place daily as long as a sterilized rubber tube can be inserted into uterus. When the opening closes, so that a tube can not be inserted, the vagina should be flushed every day or so until all discharges cease.

Milk Fever

This is a disease that generally attacks mature cows from the fourth to the sixth calf. High producers are more

subject to it than low producers, and fat cows are more subject to it than thin cows. It nearly always occurs within two days after calving, and seems to be caused by an overfed condition of the animal. Plenty of water and salt and a minimum quantity of concentrated feed for several days before and after calving will help to prevent this disease.

The disease may be recognized by a staggering gait and lack of control of the hind legs. As the disease progresses the cow goes down in a stupor, lying in a normal position, except that her head is usually turned to her flank. Later, paralysis may become general and then the cow lies on her side.

The treatment consists of inflating each quarter of the udder with air filtered through a liquid or cotton. Almost any sort of air pump will serve to force the air into the udder. Satisfactory milk-fever outfits are on the market, or can be made up at little expense, using a bicycle pump, rubber tubing, a piece of large glass tubing in which to place the cotton, and a milk tube. Care must be exercised to have the milk tube sterile and the ends of the teats should be cleansed with a disinfecting solution. After inflation the teats should be tied with tape in order to prevent escape of the air. Ordinarily one inflation is sufficient, but in case the cow shows no improvement in two hours the inflation should be repeated. Every dairyman should keep a milk-fever outfit on hand for quick use.

Garget

"Garget," "mastitis," and "mammitis" are terms which denote inflammation of the udder. One or more quarters may become swollen, hard, hot, and tender. The milk is reduced in quantity and may be of watery consistency or contain clots or strings of curd. In severe cases the contents of the udder may become foulsmelling. Cows with large udders are more susceptible than those with small udders. Some of the conditions which seem to cause or at least predispose the animal to garget are (1) exposure to drafts or cold weather, (2) bruises of the udder, (3) injuries to the teats, (4) the use of a milk tube, and (5) excessive feed-

ing on rich feeds. Sometimes garget seems to develop without any apparent cause. Very often a sore on the end of the teat will lead to udder infection and garget.

Treatment consists of giving a dose of Epsom salt or other purgative, and putting hot applications on the affected parts several times a day for at least 30 minutes at a time. The Epsom salt should be given as a drench. (Page 230.) After these applications the udder should be wiped dry, and camphorated oil applied and rubbed in thoroughly.

Cowpox

This is an infectious disease which causes characteristic sores on the udder and teats. Tenderness and redness of the teats are first noticed, which is followed by eruption of grayish-red nodules. A vesicle or blister forms in the center of the nodule in about 10 days and in another 3 days the blister breaks, discharges a yellowish serum, and then a scab forms.

Treatment consists of healing the sores left by the blisters. Zinc ointment is a very good remedy, acting not only as a disinfectant but also keeping the affected parts soft, thus preventing cracking and bleeding. Since this disease is commonly carried from one cow to another by the milkers, the affected animal or animals should be milked last; and, as a further safeguard, the hands should be disinfected after milking each cow in the herd.

Foul Foot

This trouble is experienced in many herds. It is thought to be most frequently caused by infections from stable filth while standing in wet, dirty places, or from foreign matter becoming wedged between the claws. The hind feet are most likely to be affected. The animal seems to suffer when walking on the sore foot, and the region of the foot is inflamed and swollen. When the soreness has advanced, there may be sloughing off of the membrane between the claws, which has an offensive odor. The foot should be thoroughly cleaned, and if only slightly inflamed can be washed in a

solution of carbolic acid, 1 part of pure acid to 20 parts of water. Cresol compound liquor cresolis compositus U. S. P.), undiluted, is also good. The animal should be kept in a clean, dry place. In persistent or aggravated cases, the foot should be washed well with the solution and a wad of absorbent cotton smeared with pine tar placed in the cleft. This can be held in place by taking a strip of strong cloth, 2 inches wide, passing the middle between the claws, and then tying the ends after winding them above the hoof. The corner of a grain sack with strips left attached for tying makes a good outside bandage.

Choke

Choking is usually caused by a cow trying to swallow too large an object, like an apple, potato, or turnip. It may occasionally result from the collecting of soft feed into a ball. It is most likely to occur in cows that are greedy feeders.

The animal stops eating, coughs, and saliva runs from the mouth. When attempting to drink, water runs from the mouth. If the choke is high in the throat it may be felt as a lump on the left side of the neck. When the cause of the choke can be located in the throat it may be forced up into the mouth or crushed by pressing with the hand. A pint of raw linseed oil or olive oil will aid by acting as a lubricant. In severe cases a competent veterinarian should be called.

Bloat

Bloat may be caused by any kind of feed which produces indigestion and forms gas in the paunch. It can be caused by pasturing on young clover or alfalfa, especially with the dew on, or by feeding spoiled silage, roots, etc. The paunch is inflated most noticeably on the left side. In severe cases this distention may extend above the back. When tapped with the fingers the paunch gives a drum-like sound. When bloat is pronounced, difficulty in breathing is noticed.

Exercise the animal by walking. If this does not help, give 2 tablespoonfuls of liquor cresolis compositus (U. S. P.), mixed with 2 quarts of warm water as a drench. After bloating has subsided, give 1 pound of Epsom salt in 3 pints of warm water as a drench. If these remedies are not effective, and in urgent cases where the gas must be allowed to escape without delay, it may be necessary to puncture the paunch. This is best done with a trocar and canula. The trocar is a sharp-pointed instrument which fits smoothly into a hollow tube called the canula, leaving the sharp point exposed. After inserting the trocar and canula, by a quick, firm thrust inward, downward, and forward, the trocar is pulled out and the canula left in the opening. This will allow the gas to escape. The paunch is punctured on the left side with the trocar at the center of a triangle formed by the last rib, the hip bone, and the loin.

The animal should be fed sparingly on easily digested feed for several days after bloating has stopped, so that all fermenting material may pass out of the stomach.

Drenching

Medicine is usually given to cattle by "drenching." This is commonly done by mixing the medicine with water and giving this by the aid of a long-necked bottle or drenching horn through the mouth. The medicine should be given slowly, to prevent choking. A simple drenching tube can be made by using an ordinary tin funnel with a piece of rubber hose.

Care must be used in drenching to prevent the medicine from passing down the animal's windpipe to the lungs, causing pneumonia. In giving a drench the head of the animal should be held in an elevated position. The mouth of the bottle is inserted at the side of the mouth in front of the jaw teeth and on top of the tongue. If the animal coughs, the head should be immediately lowered, to prevent the liquid from passing to the lungs. Care should also be taken in holding the animal, to avoid stopping breathing through the nose. Unless one has had considerable ex-

perience in this practice it is best to call a veterinarian, especially if other than ordinary medicines are to be given.

Nails or Wire in the Stomach

On farms where much baled hay or mill feed is used many cows are killed as a result of sharp-pointed wires or nails puncturing the wall of the stomach, piercing the heart, or setting up infection. There is one compartment of the stomach in which such material is collected and held. Most of it usually does no harm, but occasionally a sharp-pointed object reaches a vital organ with fatal results.

Some farms have provided magnets over which all ground feed is passed. Pliers are used for cutting the wire on the baled hay instead of a hatchet or ax. Since the pliers sever the wire at one cut there is less danger of short pieces of wire being broken off and mixed with the hay. If the hatchet always severed the wire at the first stroke it would be as good an instrument as any for cutting the wire, but usually more than one stroke is used.

When a cow is suffering from a nail or wire coming in contact with the heart, breathing becomes short and is accompanied usually by a gentle grunt at each respiration. The appetite and general health are also affected, and in severe cases the brisket may become swollen. The trouble is usually first noticed by general depression and refusal of feed.

Operations to remove the foreign objects have been successfully performed by skilled veterinarians. The usual treatment consists in keeping the cow as quiet as possible and avoiding the feeding of excessive quantities of roughage. Violent exercise or a greatly distended paunch may push the wire into the heart and cause death.

Warbles

Warbles or grubs are the larval stage of the heel fly. The larva is about one-half to 1 inch in length and is whitish or brown in color. The grubs weaken cattle, causing them to fall off in flesh and milk, and also lower the value of the hide because of the holes they make in it.

Application of fly repellents during the summer is probably of little value in keeping off warble flies. When the grubs appear they cause lumps beneath the skin of the back. They should be forced out by pressure beneath the lump, or may be killed by forcing a little ointment, consisting of 1 part of iodoform to 5 parts of vaseline, into the opening of the lump. The former method is preferable, because it does not leave the dead grub beneath the skin.

Lice

The effects of lice are usually first noticed by patches of hair falling out around the tail-head or the withers. Careful examination will reveal the presence of lice. Unless the lice are killed, the animal will become thin and lose much of its hair. Young calves are especially affected. Lice are easily destroyed by a solution of standard coal-tar creosote stock dips. The strength of the solution as indicated on the container may be followed with safety. The dipping vat is the most effective means of applying the solution, but is not recommended to be used in cold weather. Lice can be destroyed on valuable or high-producing cows by hand treatment, without resorting to the dipping vat. It is no great job to go over the herd with a brush and disinfecting solution. A warm day should be selected for the work. A compressed-air or other type of sprayer can be used successfully in applying the solution.

Flies

Flies are one of the greatest nuisances around a dairy; house flies because they contaminate the milk, and stable flies because they torment the cattle. Both are objectionable in that they soil the walls and equipment. House flies are not provided with biting mouth parts, but they may annoy cattle by feeding on eye and other body secretions. Their food is milk, soiled feed, etc. Stable flies have piercing mouth parts; their food is blood, and for this reason they are not attracted by milk. These two kinds of flies look much alike. In addition to these, there are the small

black horn flies, which are especially bothersome on account of their great numbers.

Flies breed in filth or decomposing matter of various kinds, horse manure appearing to be the most favorable material for house flies, wet and rotting straw or other vegetation for stable flies, and cow manure for horn flies. Cleaning up, treating, or screening their breeding places is an effective method of combating flies. This is especially true if a large area is covered, such as a whole community. The individual farmer can do much to lessen the number of flies on his farm, as the major part of them, under usual farm conditions, are produced there. Since flies will travel for miles, however, the effectiveness of this method depends to some extent on the distance from other favorable breeding places.

One of the most effective methods of decreasing the trouble from house flies is to keep all food away from them. See that there is no spilled milk for them to feed on; also that all soiled mangers that attract flies are cleaned. If there is nothing for a house fly to eat it will not stay around. Fly traps will catch a great number if properly baited. They will also attract flies into the barn, and for this reason it is better to set the traps outside rather than inside the buildings. Poison made by using a solution of formalin and milk in the proportion of 3 teaspoonfuls of commercial 40 per cent formalin to 1 pint of sweetened milk gives good results. In using this poison, blotting paper may be placed in the bottom of shallow pans and the paper barely covered with liquid. As the liquid dries out it should be renewed.

Since stable flies are not attracted by bait of any kind, the method of combating them is to keep them away from the stock by darkening the stable, blanketing the cattle, or using some sort of fly repellent on the animals. No repellent has yet been devised that will protect the animals for more than a few hours. A repellent composed of the following is probably as effective as any: Oil of tar, 10 parts; cottonseed oil, 10 parts; and paraffin oil, 80 parts. Although flies worry cows considerably, the presence of limited numbers does not materially effect milk production.

Warts on the Teats

Sometimes warts attain sufficient size to interfere with milking. One method of removing them is to apply castor oil or pure olive oil after each milking for a week. If this treatment fails, the warts can be touched with a stick of lunar caustic and the oil applied after that. Long warts that are not too large at the base may be removed by tying a silk thread tightly around the wart near the teat and allowing it to remain until the wart drops off.

Cracked Teats

Sometimes a cow's teats will chap in the winter. The cause is exposure to cold when the teats are still moist. The remedy is to milk with dry hands and to see that the teats are dry when the cows are turned out in the cold. Wet milking and the sucking of calves make the teats more liable to chap. In case cracking occurs, the main treatment consists in keeping the teats soft with applications of oil or salve. This will help to protect the teats from excessive drying and continued cracking.

Kicking

Kicking during milking is largely due to poor management. Many cows will kick when they are being broken to milk, and they must be carefully handled so that they will not form the habit. Sore or cracked teats will also cause cows to kick. One should never strike a cow for kicking. Such practice will get her excited and make her worse. Some animals must be restrained while being milked. This is best accomplished by placing a heavy strap or rope around the rear legs just above the hocks. Pass this strap around one leg, cross between the legs, and then around the other, drawing them close together. Unless crossed in the middle the strap will slip down when the cow struggles.

Self-Sucking

Every dairyman has had experience with cows that suck themselves. There seems to be no satisfactory ex-

planation as to why they do this. To prevent the habit many devices and methods have been tried with varying degrees of success. One device may work successfully on one cow and fail on another. One method that has been used successfully is to fasten one end of a strong stick about 3 feet long to the ring of the halter, passing the stick between the front legs and fastening the other end to a ring in a strap that extends around the cow's body. This device allows the cow to raise and lower her head but prevents turning her head toward the body. Muzzles placed over the animals' noses, cradles around their necks, bits in the mouth, and various other methods have been used. Applications such as quinine or red pepper have been placed on the teats. If a cow is a confirmed self-sucker, she should be sent to the butcher unless she is especially valuable as a breeding animal.

Dehorning

Horns are of no use to the animal. It is no longer necessary for the cow to fight for self-protection or for the protection of her young. Cows with horns oftentimes injure one another in the stable or lot, and they sometimes accidentally injure the attendants. Bulls with horns are decidedly more dangerous than those without horns. There is only one excuse for allowing animals to retain horns, and that is for the sake of appearances; and it is very questionable whether a large proportion of horns as found really add to an animal's appearance. Still they do sometimes increase the selling price of an animal and may increase its chances in the show ring, and so long as these conditions exist it is advisable to let the horns remain on at least some of the purebred animals.

The main thing to consider in dehorning or in prevention of horn growth is to destroy or remove the skin from which the horn grows. In the calf this skin covers the horn button and can be destroyed by treatment with caustic soda or potash. In a few weeks thereafter this skin lies at the base of the horn and entirely surrounds it. Proper dehorning therefore includes the removal of this skin, which is

accomplished by sawing or clipping the horns close to the head. Unless this skin is removed the horns will grow again and produce what are known as scurs.

The substance usually applied after removal of the horns is pine tar. This helps to keep away flies and probably assists in checking the bleeding. If bleeding persists, it can be stopped by passing a string around the horn stubs and twisting tightly over the poll. This string should be removed as soon as danger of bleeding ceases, or in about 12 hours. To avoid any trouble from flies it is best to dehorn during the late fall, winter, or early spring. Experiments indicate that the milk flow of dairy cows is not seriously affected by dehorning.

SECRETARY'S REPORT

Receipts

Balance	$ 57.07
W. S. O'Hair	150.00
Ill. Butter Mfgrs. Improvement Association	650.00
Advertising	117.00
Memberships	884.00
	$1,858.07

Disbursements

Treas. Foss	$1,356.50
Elgin Trips (8)	26.85
Stamps	41.11
Committees Expenses	18.70
Express, Telephone, Telegrams	3.87
Silver Cup	20.00
Henry Hawkinson	100.00
Cash Prizes to boys	25.00
W. S. O'Hair	20.00
Stenographer at Galesburg	15.00
Miscellaneous	4.25
Engraving Prize Cup	8.18
Chicago to Harrisburg and return	35.86
Banquet	9.00
	$1,684.32
Balance	$ 173.75

TREASURER'S REPORT FOR YEAR ENDING JULY 1, 1926

Receipts

July 1, 1925, Balance on Hand	$ 271.97
Dec. 29, 1925, Received from Geo. Caven	650.00
Feb. 6, 1926, Received from Geo. Caven	487.50
Mar. 4, 1926, Received from Geo. Caven	109.00
July 1, 1926, Received from Geo. Caven	110.00
Total Receipts	$1,628.47

Disbursements

	Voucher No.	Amt.
July 13, 1925, Chicago Produce Co., Printing	603	$ 12.05
Oct. 13, 1925, State Supervisor, Expense State Judging Team at Indianapolis	604	25.00
Oct. 21, 1925, Ley-Cross Printing Co., Envelopes and Letter Heads	605	19.50
Jan. 7, 1926, Barnard & Miller, 4500 Posters Membership Contest	605	58.00
Jan. 18, 1926, Hugh-Curtis Given, Postage, mailing programs, etc.	607	20.00
Feb. 8, 1926, T. P. Smith, Expense John Matthews Calf Contest Winner	608	35.18
Feb. 4, 1926, M. D. Munn, National Dairy Council Expense	609	200.00
Feb. 8, 1926, Harlan See, Three Calves given in contest	610	375.00
Feb. 8, 1926, T. P. Smith, Expense Calf Contest	611	17.57
Feb. 10, 1926, Dick Siems, Brown Swiss Heifer-Calf Contest	612	87.50
Feb. 11, 1926, Ollie Thornsbrough, transportation Calf to Alvin from Danville	613	4.00
Feb. 11, 1926, L. H. Brauer, Transporting Calf Paris to Danville	614	4.00
Feb. 11, 1926, Sugar Creek Creamery Co., Rebate on 227 Memberships at 15%	615	34.05
Feb. 11, 1926, Floyd C. Weakley, Rebate on 32 Memberships	616	4.85
Feb. 23, 1926, Chicago Produce Co., Telegrams, Half-tone for report	618	9.51
Feb. 23, 1926, T. P. Smith, Calf contest expense	619	11.60
Feb. 23, 1926, Hugh-Curtis Given, Stamps and mailing Report	620	20.00
Mar. 4, 1926, F. B. Morrison, Services Galesburg Convention	621	50.00
Mar. 5, 1926, Henry Hawkinson, Collected on Banquet Tickets Galesburg	622	20.00

Mar. 5, 1926, Hugh G. Van Pelt, Services Galesburg Convention	623	100.00
Mar. 15, 1926, Expense	624	50.00
Mar. 15, 1926, Chicago Produce Co., Phone, Telegrams, Calf contest	625	4.65
Mar. 16, 1926, W. S. O'Hair, Calf contest expense	626	18.00
Mar. 16, 1926, Harlan See, Calf contest expense	627	17.50
Mar. 16, 1926, Paul Benthall, Commission on Memberships sold	628	2.00
Mar. 16, 1926, Hugh C. Given, Mailing Reports and Programs	629	12.40
Apr. 6, 1926, F. A. Jorgensen, Galesburg Expense	630	6.34
Apr. 7, 1926, Kressmann & Co., 2 M. Letter Heads (8 changes)	631	18.75
May 21, 1926, Blanche Boring, Stenographic Report Galesburg Convention	1	212.00
June 7, 1926, Stanton Bean, Commission on Memberships sold	2	1.00
July 1, 1926, Pioneer Creamery Co., Calf	3	115.00

Total Disbursements	$1,565.45
Total Cash received for the year to July 1, 1926	$1,628.47
Total Disbursements for year to July 1, 1926	$1,565.45
Balance on Hand July 1, 1926	$ 63.02

Respectfully submitted,

CHAS. FOSS,
Treasurer

MEMBERSHIP LIST

Life Members

ARBUCKLE, ROSCOE, Paris, Ill.
BOLAND, CHESTER, Paris, Ill.
BENTHALL, P. L., Sheller, Ill., Route No. 1.
FRAZIER, EDGAR J., 111 E. Crawford, Paris, Ill.
FRAZIER, BOYES, Paris, Ill.
REDMAN, JOHNNIE, Paris, Ill. Route 5.
ROLL, GEO., Paris, Ill.
SEE, HARLAM, Paris, Ill. R. F. D. 4.
JORGENSON, F. A., Champaign, Ill.
CAVEN, GEO., Chicago, Ill.
O'HAIR, W. S., Paris, Ill.
STANARD, S. J., Springfield, Ill.
FILSON, C. M., Salem, Ill.
MILES, LESLIE, Lawrenceville, Ill.
PHILLIPS, J. R., Sesser, Ill.
FOSS, CHAS., Freeport, Ill. R-6.
BLUE VALLEY CREAMERY CO., Chicago, Ill.
DE LAVAL SEPARATOR CO., Chicago, Ill.
SMITH, T. P., Danville, Ill.
GAL 1 DAILY BOOK NAMES

Members for Year

A

ARMS, C. C., Knoxville.
ALEXANDER, ROBERT S., R. 7, Wataga.
ANDERSON, CARL, Knoxville.
ALEDO FARMERS GRAIN & COAL CO., Aledo.
AVON FARMERS ELEVATOR CO., Avon.
ANDERSON, ELMER, R. 6, Galesburg.
ADCOCK, C. L., Galesburg.
ARMSTRONG, J. E., Seymour, R. 2.
ASTROTH, FRANK B., University Farm, Dairy Div. St. Paul, Minn.
ALLISON, HOWARD, Alvin.
ALLISON, A. T., Alvin.
AUSTIN, W. W., Decatur.
ADAMS, C. W., Cerro Gordo.
ARSNEAU, THOMAS, Beaverville.
ARNOLD, G. E., Watseka.
ALBRIGHT, GEORGE, Martinton.
ANDERSON, F. M., Danville, R. 6.
ATWOOD, J. C., Collision, R. 1.
ALBERT, ROY, Collison, R. 7.
ALLEN, W. A., Oakwood, R. R.
ANDERSON, F. M., Danville, R. 6.
AMBROSE, A. S., Dairy Dept. of U. of I., Urbana.
ADAMS, ROY, Danville, R. 3.
ARNOLD, A. H., 718 Randolph St. Chicago.
ASQUITH, EDGAR, Aron, R. 3.
AVERY, G. G., Barton Salt Co. Hutchinson, Kans.

B

BERGSTROM, AUGUST, Galesburg, R. 1.
BULLMAN, J. J., Alexis.
BENSON, OLAF, 1169 Lombard St., Galesburg.
BURNSIDE, CARL, Galesburg.
BUCKLEY, DEAN, Galesburg, R. 3.
BUCKLEY, LOUIS, Galesburg, R. 3.
VAN BUSKIRK, M. GUY, Onieda.
BUTLER, PAUL, Urbana, R. 3.
BONEFELD, HARRY, 122 N. Logan, Ave., Danville.
BINGHAM, ALFRED, Alvin.
BROWN, C. C., Alvin.
BORDERS, O. P., Rossville.
BUSHNELL FEED CO., East North St., Danville.
BOND, I. F., Rossville.
BROWN, MR. GEO., 806 W. Green St., Urbana.
BUSSING, MR. E. H., Burrows Adding Mch. Co., Bismark.
BELTON CANDY CO., 217 E. NORTH ST., Danville.
BOYER'S ICE CREAM & DAIRY CO., Paris.
BEATTY,. O. H., Paris, R. 4.
BRENNEMAN, W. W., Cerro Gordo.
BOWDLE ACCOUNTING SYSTEM, Cerro Gordo.
BOWNEY, ELMER, Cerro Gordo.
BLAKENEY, L. H., 326 N. Water St., Decatur.
BINKLEY, HAL, Paris.
BALES, GEO., Paris, R. 3.
BAUMAN, H. B., Milmine.
BEMENT GRAIN CO., Bement.
BEMENT LUMBER CO., Bement.
E. B. BOOHN SONS, Cerro Gordo.
BURDICK, ARTHUR, Sugar Creek Creamery Co., Watseka.
BARON, J. J., Martinton.
F. H. BARNUM & SONS, Watseka.
BRUMIGA, B., Cresent City.
BROSNAHAN, M. F., Gilman.
BENTLY, FRANCIS, Longview.
BROWN, THOMAS, Mansfield, R. R.
BALBUCK, O. E., Oakwood, R. R.
BEISELY, THOS., Tuscola, R. R.
BULLARD, W. H., Fairmount, R. R.
BARKMAN, ROY, Collision, R. 1.
BUY, WM., Danville, R. 2.
BIGGS, MRS. JOS., East Lynn, R. R.
BAILESCHKI, HERBERT, Sadorus, R. R.
BRANNAN, J. M., Dairy Dept. U. of I., Urbana.
BOSCH, A., Broadland, R. R.
BAKER, WALTER, Fairland, R. R.
BLOOMSTRAND, H. J., Rankin, R. R.
BARNHART, C. C., Tolono, R. R.
BROWN, C. N., Danville, c. o. Illinois Ice Co.
BEARD, CARL, Collison, R. R.
C. W. BRIDGEFORTH & SON, Jay.
BOYD, ALBERT, DuQuoin.
BJORLING, GUS, Altona.
CLINE, HAROLD V., Abingdon.
BRACKEN, E. M. D., 214 Hill Arcade, Galesburg.
BRUMGTON, EARL, Cameron.

C

CARLSON, J. E., Knoxville.
COURTEA, D. K., Knoxville.
CAMPBELL, GEORGE H., 538 N. Kellogg Street, Galesburg.
CARLSON BROTHERS, Galesburg.
CLEARWATER, J. J., Onieda.
CRISSEY, N. O., 1039 N. Prairie Street, Galesburg.
CAULKINS, CHAS. W., Abingdon.
CHAMBER & McCONNELL, Galesburg.

C

CARR, FRANK, Avon.
COOPER, K. G., 57 E. Water Street, Galesburg.
CARNES, F. L., Urbana, R. 3.
COLEE, HENRY, Urbana, R. 3.
CLARBORNE, D. F., c. o. Pioneer Cmy. Co., Champaign.
CARTER, HOMER, Alvin.
COLBURG, WM., Alvin.
CRAGS, GEO., Rossville.
CRANE, WALTER S., Rossville.
CORNELL, THOS., Rossville.
CREIGHTON, MASTER LEWIS, Alvin.
CRANE, G. C., Pence, Ind., R. 1.
CAMPBELL, L. R., Bismark.
COX, HARRY, Cerro Gordo.
CROWE, M. F., Cerro Gordo.
CERRO GORDO LUMBER CO., Cerro Gordo.
CARMICHALL, C. V., Paris, R. 11.
CLINE, FRED, Paris, R. 4.
CHRISMEN, LOYD, Horace.
CERRO GORDO CO-OP GRAIN CO., Cerro Gordo.
CONSOLIDATED DAIRY CO., Watseka.
CREPPS, DAN, Martinton.
COPE, BOYD, Westville, R. R.
CARPENTER, CARL, Muncie, R. R.
CASE, WM., Ogdon, R. R.
CHERRY, M., St. Joseph, R. R.
CONNORS, M. F., Sadorus, R. R.
CARTER, LESLIE, Alvin, R. R.
CLEVER, R. A., Georgetown, R. R.
COGGESHULL, L. B., Indianola, R. 1.
CRAMER, W. A., Collison, R. R.
CRAWFORD, J. J., Danville, R. 8.
CUNNUNGHAM, T. F., Bismarck, R. 1.
CARLSON, HENRY, Grape Creek, R. R.
CHRISMAN, GEO., Bismarck, R. R.
COLLEY, JAS., Collison, R. R.
CRAWFORD, LEWIS, Danville, R. R.
CIRCLER, O. H., Penfield, R. R.
CROW, CLARENCE, Chrisman, R. R.
CHENOWETH, FRANK, Alvin, R. R.
COLVIN, I. E., 1442 Conway Bldg., Chicago.
COLWELL, C. E., Knoxville.
CALDWELL, R. E., Waukegan.

D

DALTON, FRED, Gilson.
DREDGE, FRED M., Knoxville, R. 2.
DILLON, M. D., Galesburg, R. 5.
DIEHL, STUART, Victoria.
DeMARR, WALTER, 74 N. Chambers Street, Galesburg.
PREMIER DAIRY CO., Galesburg.
DOLLISON, WILSON, Dahinda.
DUNN, HARRY L., Galesburg, R. 6.
DUNN, A. E., Galesburg, R. 5.
DAVIS, A. H., 203 N. Walnut, Champaign.
DONALDSON, V. E., Champaign.
DORNFIELD, FRANK, Hoopeston.
DONOVAN, DR., Rossville.
DUTOUR, R. J., c. o. Sugar Creek Crmy. Co., Pana.
DANVILLE MORNING PRESS, Danville.
DUNCAN, FRED, Potomac.
DAVISON, JOHN, Rossville.
DANVILLE WHOLESALE GRO., Danville.
DEPEW, J. J., Cerro Gordo.
DEPEW, C. L., Cerro Gordo.
DILLOW, C. A., Cerro Gordo.
DOBSON, CHAS. L., Cerro Gordo.
DENNIS, WILL, Paris, R. 11.
DOSS, W. A., Monticello.
DAVIDSON, M. R., County Judge, Monticello, Ill., Piatt Co.
DAVIS, W. W., Bement.

D

DOBSON, MRS. GEO. E., Cerro Gordo.
DIONNE, J. P., Martinton.
DIONNE, M. I., Beaverville.
DIONNE, M. P., Beaverville.
DAVIS, SARAH, Oakwood, R. R.
DANIELS, HAROLD, Catlin, R. R.
DICKSON, ERNEST, Fairmount, R. 3.
DICKSON, ROY, Fairmount, R. R.
DAILY, MRS. MARY, Allerton, R. R.
DEICH, A. E., Danville, R. 4.
DEVORE, FRANK, Georgetown, R. R.
DUNOVAN, FRED, Danville, R. 6.
DARR, HOWARD, Fairmount, R. R.
DUNN, ALFRED, Fithian, R. R.
DAVIS, JOE, Cedar Radips, Iowa, c. o. J. G. Cherry Co.
DICKSON, S. H., Chrisman, R. 1.
DRAKE, W. H., Perryville, Ind.
DE LAVAL SEPARATOR CO., 600 Jackson Blvd., Chicago.
DILLON, H. P., 121 Hazel Street, Oshkosh, Wis.

E

EULER, WM. B., 1021 S. Henderson Street, Galesburg.
EMSTROM, CARL, Galesburg, R. 5.
EIKER, JOHN A., Knoxville, R. 1.
ENGLE, KEITH A., Dahinda.
ERICKSON, SAM, Onieda.
ELLIOTT, R. E., Hoopeston.
ELLIOTT BROTHERS, Hoopeston.
EDWORTHY, FRED, Rossville.
ETNOYER, RUSSELL, Cerro Gordo.
EAST, O. N., Cerro Gordo.
ELLEDGE, FERN, Paris, R. 4.
ELLEDGE, RUSSELL, Paris, R. 3.
EDIE, A. C., Monticello.
EUCHNER, J. F., Martinton.
EDWARDS, J. W., Georgetown, R. R.
EATON, GEO., Catlin, R. R.
EARL, J. W., Danville, R. 6.

F

FOSTER, NORMAN, Knoxville, R. 2.
FAULKNER, HENRY, Wataga.
FARMERS ELEVATOR, Stronghurst.
FARMERS CO-OP COMPANY, Onieda.
L. & G. FEED COMPANY, Galesburg.
FAIRBANKS MORSE & CO., Chicago.
FISHER, SCOTT, Urbana, R. 3.
FISHER, WALTER, Urbana, R. 3.
FISHER, CLYDE E., Sovay.
FRAME, J. W., c. o. Sugar Creek Creamery Co., Danville.
FISCHER & McKEE, Danville.
FRIED, CHARLIE, c. o. Sugar Creek Creamery Co., Danville.
FILSON, GLEN G., Farm Despatcher, C. & I. M. R. R., Taylorville.
FAHLMAN, DUNCAN J., c. o. Buhl Stamping Co., Detroit, Mich.
FIDLER, FRANK, Dudley, R. R.
FRAIZER, J. B., 111 E. Crawford, Paris.
FULK, J. G., Cerro Gordo.
FOLRATH, D. B., 211 N. Water Street, Decatur.
FRAZIER, J. B., Paris, R. 4.
FIDLER, A. D., Paris.
FAY, HARVEY, Monticello.

F

FIRST NATIONAL BANK, Monticello.
FIRST NATIONAL BANK, Bement.
FIELD, J. P. O., Cerro Gordo.
FURGESON, JOHN, Cerro Gordo.
FLESHER, ETHEL, Watseka, Sugar Creek Cmy. Co.
FIRST NATIONAL BANK, Watseka.
FAY DRUG COMPANY, Watseka.
FARBES, M. S., Watseka.
FRANCIS, M. T., Fithian, R. R.
FAIRCHILD, ROBT., Danville, R. R.
FINLEY, G., Danville, R. 2.
FREDERICKSON, FRANK, Clarence, R. R.
FRANSWORTH, J. W., Danville, R. R.
FINLEY, ELMORE, Fairmount, R. R.
FRANCIS, GLEN, Ogden, R. R.
FINLEY, J. M., Fairmount, R. R.
FREEZE, O., Plymouth, Ind.
FITZPATRICK, W. W., Clemson College, S. Carolina.
FRAZER, W. J., Champaign.
FINLEY, J. O., Oneida.
FABERMAN, F. A., Harrisburg.

G

GALESBURG NATIONAL BANK, Galesburg.
TOWNSEND, GRANT, 1142 N. Broad Street, Galesburg.
GEHRING, HARRY, Altona.
GALESBURG MOLASSES & FEED CO., Galesburg.
GARDNER, B. F., 1021 S. Henderson Street, Galesburg.
GARVER, HUGH C., 926 N. Prairie Street, Galesburg.
GEHRING BROTHERS, Galesburg, R. R.
GRIFFITH, DALE, Oneida.
GUNTHERS, IRENE, Knoxville.
GUNTHERS, LOWELL, Knoxville.
GIBBS, REED, Victoria.
GUSCETTI, B. J., Pioneer Cmy. Co., Champaign.
GREEN, CHAS., Rossville.
GEZEL, F. A., 807½ West 4th Street, Sterling.
GUBBINS, JOS. X., c. o. Paterson Parchment Paper Co., Chicago, 1144-46 Conway Bldg.
GORDON, ALLAN T., Chamber of Commerce, Danville.
GILLILAND, C. E., Weltenville.
GLEHMAN, R., 224 E. Wood St., Paris.
GRIFIN, JOE, Paris, R. 4.
GUMM, FRED, Paris, R. 7.
GUNNER, FRED, Paris, R. 7.
GUNNER, ZIESS, Paris.
GLECKER, S. E., Paris.
GRIMM, S. M., Sugar Creek Creamery Co., Watseka.
GILBERT, H. L., Beaverville.
GRAHAM, FRANK, Penfield, R. R.
GREEN, R. E., Fithian, R. R.
GURBER, MARY, Pesotum, R. R.
GOODNER, C. B., Danville, R. 4.
GORDON, EUGENE, Danville, R. 6.
GALLAGHER, J. C., Sadorus, R. R.
GAINES, F. L., Sidell, R. R.
GAINES, W. E., Danville, R. 2.
GUTHRIE, FRANK, Allerton, R. R.
GOODALL, W. M., Allerton, R. R.
GRAY, R. E., Peoria Creamery Co., Peoria.

H

HUGGINS & BROWN, Knoxville.
HENDERSON, A. M., Galesburg, R. 3.
HOLLEMAN, W. M., Champaign, R. 1.
HANSEN, CARL N., 1309 N. Neil, Champaign.
HOY, OLAF, Lombard.
HOUGH, WM. F., 208 W. Penn, Urbana.
HILDEBRANN, L. J., Pioneer Creamery Co., Champaign.
HORNEMAN, H. C., 123 Washington Ave., Danville.
HORNEMAN & COSSEY CO., Danville.
HUSHAW, EDWARD, Rossville.
HANNAH, KENT, Alvin.
HIGHT, VIRGEL, Alvin.
HANSON, FRANK, Rossville.
HARDY, M. J., Hoopeston.
HUGHS, BURT, Hoopeston.
HARRIS, J. J., c. o. J. B. Ford Co., Wyandotte, Mich.
HOFF, GEO. S., 119 Franklin St., Danville.
HOLMES HDW. & SUPPLY CO., Danville.
HOSHAVER, FRANK, Rossville.
HEWITT, W. L., Mattoon.
HESLER, ALFRED J., County Agt., Covington, Ind.
HAYWOOD, GEO. P., c. o. Haywood Tag Co., LaFayette, Ind.
HECKMAN, W. T., Cerro Gordo.
HENNEYBERRY, T. J., Cerro Gordo.
HUFFORD, FRANK, Cerro Gordo.
HICKMAN, I. D., Cerro Gordo.
HYBURGER, FRANK, Paris.
HICK, J. L., Monticello.
HURD, W. S., Cerro Gordo.
HAUBECKER, J. E., Monticello.
HOBSON, E. L., Clifton.
HOLM, DANIEL, Ogden, R. R.
HAMMOND, M. H., Danville, R. 6.
HARRISON, ARTHUR, Danville, R. 4.
HASKINS, MRS. GEO., Grape Creek, R. R.
HUMRICHOUSE, J. C., Georgetown, R. R.
HASKINS, FRED, Danville, R. 6.
HAWKINS, GEO., Danville, R. 1.
HOCH, HARRY, Homer, R. R.
HERTLINE, FRED, Westville, R. R.
HATHAWAY, R., Danville, R. 6.
HOWARD, FRED, Grape Creek. R. R.
HACKETT, JOS. E., Tuscola, R. R.
HIRES, ALVA, Catlin, R. R.
HALL, CHAS., Georgetown, R. R.
HOOPER, J. J., Lexington, Ky., c. o. University.
HARRIER, CHAS., Westville, R. R.
HAZLETT, LOUIS E., 1814 S. 13th St., Springfield.
HEPBURN, MR. N. P., Peoria Creamery Co., Peoria.
HEPBURN, MR. N., Peoria Creamery Co., Peoria.
HENDERSON, W., Galesburg, R. 2.

I

INTER COUNTY TELEPHONE CO., Cerro Gordo.
IROQUOIS HOTEL, Watseka.
IRVIN, JESSE, Muncie, R. R.
INGRAM, MR. WM., Oakwood, R. R.
INGALSBE, O. O., Danville, R. R.

J

JAGGARD, T. J., Knoxville.
JUDSON, O. L., Galesburg.
JORDAN, T. N. SR., Urbana, R. 3.
JORDAN, F. W., Urbana, R. 3.
JUTKINS, L. F., Champaign, R. 1.
JORGENSEN, B. C., Naperville.
JAMES, S. E., N. Y. Desp. Ref. Line, 166 W. Jackson Blvd., Chicago.
JONES, E. E., Paris.
JONES, JONNIE, Cerro Gordo.
JUMPS, HUGH, Grape Creek, R. R.
JINKS, CLAUDE, Homer, R. R.
JOHNSON, ELLIS, Gossett, R. R.
JORDAN, S. O., Georgetown, R. R.
JAMISON, H. E., Dairy Dept. U. of I., Urbana.
JACKSON, W. C., Henning,. R R.
JONES, ED, Oakwood, R. R.
JUMPS, WM., Danville, R. 4.

K

KINNEY, EMORY, Knoxville.
KRAFT, C. W., Galesburg.
KERCHER, OTIS, Ver. Co. Farm Bureau, Danville.
KRUKEWITT, W. F., Alvin.
KOELLING, C. F., 218 Mascoutah Ave., Belleville.
KENNARD, J. L., Sugar Creek Cmy. Co., Evansville, Ind.
KOKEN, R. B., Scharff & Koken, 7900 Michigan Ave., St. Louis, Mo.
KEHTNER, L. O., Bismark.
KERRICK, RALPH, Paris, R. 2.
KELLARMS, CLAUDE, Newman, R. R.
KIESER, WM., West Ridge, R. R.
KEMP, GAIL, 306 Reiker Ct., Danville.
KEES, GUS, Fairmount, R. R.
KELLY, ERNEST, OGDEN, R. 1.
KELLY, ROY, Potomac, R. R.
KELLY, ANDY, Danville, R. 8.
KERRICK, CARL, Sidell, R. R.
KNIGHT, TINA, Georgetown, R. R.
KELLY, MR. WALTER, Wellington, R. R.
KNIGHT, R. W., Danville, R. 2.
KETTERING, GLENN, Monmouth.
KLOSE, A. P., 105 Arthur Ave, Peoria.

L

LARSON, R. S., Galesburg, R. 4.
LARSON, LESTER, Galesburg, R. 4.
LAWRENCE, L. E., 1021 S. Henderson Street, Galesburg.
LARSEN, CARL, 609 E. Fremont Street, Galesburg.
LEASENBY, O. E., Knoxville.
LAMB, G. L., Galva.
L. & G. FEED CO., Galesburg.
LUNGREN, ALBERT, Knoxville.
LESLIE, J. W., Tolono, R. 2.
ery Co., Danville.
LEWIS, DAN JR., 1223 Grant Street, Danville.
LOVE, C. S., Sugar Crek Cream-
LENEVE, SAMUEL, Rossville.
LAMB, C. H., Paris.
LEONARD, MR. STANLEY, Rossville, R. R.
LEVINGS, CHAS., Paris.
LUTHER, KENNETH, Macon, Miss.
LOGAN, W. S., Paris.
LEEDY, IRA G., Cerro Gordo.
LUKKEN, HARTWIG, Farm Bureau Office, Paris.
LARSON, FRED, Community Stores, Galesburg.
LE CLAIR, PETER, Martinton.

L

LINDSLEY, GEO. A., Monticello.
LESCO, JULES, Martinton.
LYKINS, T. E., Mansfield, R. R.
LUMBAUGH, E. R., Rossville, R. 2.
LANE, A. W., Henning, R. R.
LAMSDON, WM., Danville, R. 2.
LEWIS, WM., Fairmont, R. R.
LOHMEYER, LEWIS, Rossville, R. R.
LOVE, H. F., Sidney, R. R.
LUDWICH, M. E., Fithian, R. R.
LIGHTFOOT, G. D., Stonefort, R. R.
LUDWICH, S. L., Muncie, R. R.
LEE, GEO. W., Collison, R. R.
LANE, W. V., Henning, R. R.
LYKINS, JAS. G., Mansfield, R. R.
LANE, C. J., Henning, R. R.
LIGGETT, ROSS H., Muncie, R. R.
LINCOLN, HARRY, Westville.
LOGAN, W. J., Catlin, R. R.
LONG, ALBERT, Villa Grove, R. R.
LEE, GEO. E., Galesburg.
LALLY, W. A., 166 Jackson Blvd., Chicago.

M

MADDEN, CLARENCE, Fithian, R. R.
MACE, F. B., Henning, R. R.
MARTIN, A. C., Georgetown, R. R.
MARTIN, O. L., Georgetown, R. R.
McCUE, R. W., Danville, R. 2.
McIRVIN, GEO., Danville, R. 3.
McINTOSH, W. E., Danville, R. 4.
McMASTERS, CARL, Westville, R. R.
MICHAELS, VAN, Oakwood, R. R.
MILES, C. W., Collison, R. R.
MILLS, FRED, Collison, R. R.
MILLER, DELMER, Sidell.
MOLER, ROY, Armstrong, R. R.
MOORE, A. S., Danville, R. 3.
MORGAN, A. H., Georgetown, R. R.
MORGAN, WALTER, Alvin, R. 1.
MARMAN, C. C., Danville, R. 1.
MORRIS, ED, Danville, R. 2.
MOSS, RAY, Danville, R. 7.
MINOR, L. H., Dairy Dept. U. of I., Urbana.
McDONALD, MARY, Fairmount, R. R.
MAYHEU, S. V., Fithian, R. R.
MAHLE, G., Sugar Creek Cmy. Co., Danville.
MILLER, C. M., J. G. Cherry Co., Cedar Rapids, Mich.
MITCHELL, N. W., Oneida.
MUNSON, CARL, Galesburg, R. 4.
MUCKLEROY, R. E., Carbondale.
MELIN, BERT, Galesburg, R. 2.
MOFFITT, MRS. R. Y., 1025 Grant St., Danville.
MILLES, W. M., McLean.
MOUNT, C. M., McLean.
MARKLEY, ROLLAND, Fulton Co., Avon.
MOORE, G. L., Abingdon.
MILLER, DR. W. E., Abingdon.
McFARLAND, GEO. A., Avon.
MITCHELL, CHAS., Oneida.
CHAMBER & McCONNELL, Galesburg.
MOBERG, ED, Monmouth.
McDOWELL, KIRK, Victoria.
MEYER, CHARLES JR., Appleton.
McTIERNAN, JOHN, Galesburg, R. 4.
MOON, SEATON, Hermon.
MALCOM, CLAUS, Galesburg, R. 6.
MURRAY, MIKE, Galesburg, R. 2.
MATHER, W. E., Galesburg, R. 1.
MATTHEWS, CHAS. W., Rossville, R. 2.
MATTHEWS, T. E., Albin, R. R.
MATTHEWS, J. L., Rossville.
MATTHEWS, EVA F., Rossville, R. 2.
MATTHEWS, J. A., Bismark.
McFERREN, WM., Hoopeston.
MATTHEWS, ELWOOD, Rossville.
MILLARD, F. H., 225 N. Michigan Ave., Chicago.

M

MATTHEWS, MASTER HOWARD, c. o. C. W. Matthews, Rossville.
MAGUIRE, W. R., 1118 Marquette Bldg., 140 S. Dearborn Street, Chicago.
MADSEN, A. W., National Carton Co., Joliet.
MORGAN, CLARENCE, Rossville.
MILLER, S. J., Rossville, R. R.
MATTHEWS, QUAY, Bismark.
MONRAD, K. J., Chr. Hansen Lab. Little Falls, New York.
MILLER, H. L., Danville.
MEEKS, JAMES A., c. o. Rearick & Meeks, First National Bank Bldg., Danville.
MATTHEWS, MR. STANLEY, Rossville.
McCORMICK, J. H., c. o. Commercial Trust & Savings Bank, Danville.
McCORMICK, JAMES, Alvin.
MAANUM MFRG. CO., 2600 27th St., Minneapolis, Minn.
MASON, J. P., Elgin.
McGILL, HOWARD, Paris, R. 4.
McCORD, R. K., Paris.
MOLHER, HERBERT, Cerro Gordo.
McLAUGHLIN, F. R., Cerro Gordo.
MICKLES, M. N., Cerro Gordo.
MOORE, C. E., Cerro Gordo.
MILLER, EARL, Oakley.
McVITTY, ELBERT, Oakley.
MOFFETT, J. S., Paris, R. 5.
MILLER, CHAS., Paris, R. 4.
MYERS, JESSE, Paris.
MOSS, FRANK, Paris, R. 1.
McMAKINEY, W. C., Cerro Gordo.
MILMINE STATE BANK, Milmine.
MILMINE GRAIN CO., Milmine.
THE MOORE STATE BANK, Monticello.
H. P. MARTIN CO., Monticello.
MOORE, C. E., Cerro Gordo.
McINTASH, CHAS., Monticello.

N

NIELSON, LOUIS, 1231 N. Seminary Street, Galesburg.
NEWCOMER, C. D., Galesburg.
NELSON, OLIVER, Altona.
NELSON, HIRAM, Knoxville.
NELSON, J. J., Henderson.
NEWKIRK, J. A., Galesburg, R. 5.
NELSON, PETER, Galesburg.
LOUIS F. NAFIS, INC., 23 N. Desplaines Street, Chicago.
NELSON, C. P., First National Bank, Danville.
NOBES, C. T., c. o. Sugar Creek Cmy. Co., Pana.
NEWELL, W. R., Platsonville.
NEWSTEADS & SONS, Decatur.
THE NATIONAL BANK OF DECATUR, Decatur.
NICHOLAS, J. H., Paris.
NELSON, LEONARD, Knoxville, Box 573.
NEMITZ, FRED H., Pioneer Creamery Co., Galesvurg.
NOURIE, A. I., Martinton.
NIPPER, J. R., Sugar Creek Cmy Co., Watseka.
NEWGENT, JOS., Fairmont, R. R.
NESBITT, CHAS., Westville, R. R.
NEVINS, W. B., Dairy Dept. U. of I., Urbana.
NESBITT, ALFRED, Catlin, R. R.

O

OBERG, STANLEY, Galesburg.
OLSON, NELS, Galesburg, R. 4.
O'CONNOR, WM., Galesburg.
OLSON, CHESTER, Woodhull.
OLSON, AUGUST, Woodhull.
OLSON, ARNOLD, Woodhull.
OLSON, HARTINK, Rio.
OFARRAL, HENRY, Alvin.

O

O'FARRELL, FOREST, 1112 N. Gilbert Street, Danville.
O'HAIR, J. B., Paris.
O'HAIR, ZOLLIE, Paris, R. R.
OAKWOOD, C. H., Oakwood, R. R.
ORENY, HENRY, OGDEN, R. R.
OLSON, CHAS., Grape Creek, R. 1.
OSTERBUR, H. L., Ogden, R. 1.
ODELL, WM., Sadorus, R. R.
O'HAIR, N. F., Paris.
OLSON, H., Reo.

P

PEAKE, LESTER, St. Augustine.
PETERSON, ED, Galesburg, R. R.
PREMIER DAIRY CO., Galesburg.
PACKINGTON, F. F., Galesburg, R. R.
PERRY, W. D., Hermon.
PADEN, A. F., Galesburg.
PUTNAM, B. D., Maquon.
PUTNAM, K. T., Wataga.
PEOPLES TRUST & SAVINGS BANK, Galesburg.
PITTARD, F. C., Oneida.
POLK, MRS. THERESA, Seymour, R. 2.
PRICE, ROBERT, 403 N. Vermilion Street, Danville.
PRATHER, C. R., Rossville.
PRILLAMAN, G. H., Rossville.
PAULSON, J. E., Rossville.
PRINDLE, J. H., 4301 Southwestern Blvd., Chicago.
PLAUT, M. S., c. o. Mike Plant Co., Danville.
PEORIA CREAMERY CO., Peoria.
PASLEY, SHERMAN, Rossville, R. 2.
PASLEY, DONALD, Rossville, R. 2.
POLLARD, J. M., Cerro Gordo.
PHILIPS, H. C., Cerro Gordo.
PIPER, D. F., Cerro Gordo.
PARIS STATE BANK, Paris.
PERISHO, ELBERT, Paris.
PILOTTE, EDWARD A., Martinton.
PINZLY, JOS., Sidell, R. R.
PLOSNER, W. E., Muncie.
PETTIGREE, MARION, Grape Creek, R. R.
PARKS, ROY, Stoneport, R. R.
PRIOR, E. J., Sidney, R. R.
PURDUE, K. H., Grape Creek, R. 1.
PRUCHA, M. J., Dairy Dept. U. of I., Urbana.
PASLEY, DON, Rossville, R. 3.
PETERSON, ALEX, 108 Madison Street, Galesburg.

Q

QUINN, BRUCE, Oliver.

R

RYAN, LELAND, Abingdon.
RHYKERD, ALTON, Cameron, R. 2.
RHYKERD, W. J., Cameron, R. 2.
ROUTH, CHAS. G., Hermon.
ROWAN, CHAS., Galesburg.
REIFSTICK, GEO. SR., Urbana, R. 3.
REIFSTICK, H. F., Urbana, R. 3.
REIFSTICK, CLARENCE, Urbana, R. 3.
RESLER, E. B., Champaign, R. 1.
RODERS, J., Champaign, R. 1. R. 1.
RAY, BEN, Rossville.
REECE, DR. D. E., Rossville.
RAY, G. A., Rossville.

R

ROSSVILLE CREAMERY CO., Rossville.
RIMBOLD, F. C., Rossville.
ROBERTS, W. E., Alvin.
RHODE, PROF. C. S., Div. of Dairy Husbandry, U. of I., Urbana.
RICHARDSON, R. R., 4433 Ogden Avenue, Chicago.
ROBEY, F. P., 416 W. North St., Danville.
RED SPOT PAINT & GLASS CO., Danville.
RAHEL, EARL, 328 E. Madison, Paris.
RADER, U. M., Cerro Gordo.
RITCHIE, J. L., Cerro Gordo.
ROBINSON, HARRY, Paris, R. 9.
REDMAN, SHELVY, Marshall, R. 5.
RIGGS, JOHN, Paris, R. 5.
RAGAINS, R. E., Paris.
RITCHIE, H. L., Cerro Gordo.
RAGLAND, HUGH, Cerro Gordo.
REGINER, LAWRENCE, Pittwood.
ROACH, JOHN, Martinton.
ROACH, W. W., Martinton.
ROACH, JOSEPH, Martinton.
RABIDEAU, C., Danforth.
RICHARDSON, L., Westville, R. R.
RICHARDS, L. L., Georgetown, R. R.
ROCKER, CHRIST, Penfield, R. R.
REDDEN, GEO., Rossville, R. 2.
REITMEIR, MIKE, Armstrong, R. 1.
RICHARDS, MARTIN, Grape Creek, R. R.
REIFSTICK, HERMAN, Sadorus, R. R.
REIFSTICK, FRANK, Sadorus, R. R.
RHODE, C. S., Dairy Dept. U. of I., Urbana.
RUEHE, H. A., Dairy Dept. U. of I., Urbana.
RODGERS, CHAS. E., Homer, R. 3.
ROSENBECK, GEO., St. Joseph, R. R.
RUTAN, A. L., Fairmount, R. R.
ROTHEMUL, J. J., Broadland, R. R.
RUTESHAMER, D., 1442 Conway Bldg., Chicago.
ROSENBECK, S., St. Joseph, R. R.
REESER, GEO., Rio.
RAY, W. R., Galesburg, R. 4.

S

SHEPPARD, ALBERT, Fithian, R .R.
SHANNON, WM., Danville, R. 6.
SEYFEIT, S. S., Danville, R. 7.
SEHLORFF, CHAS., Danville, R. 4.
SCHNEIDER, WM., Danville, R. 2.
SELMEYER, HENRY, Philo, R. R.
STEVENS, E. M., General Frt. Agent, C. & E. I. R. R., Chicago.
SAILOR, W. J., Oakwood, R. R.
STYAN, EDWARD, Sadorus, R. R.
STIRITZ, B. A., Pioneer Cmy. Co., Champaign.
STRUCK, HERMAN, Broadland, R. R.
STUTTZ, J. D., Muncie, R. R.
STEWART, J. P., Sidell, R. R.
SHOEMAKER, J. F., Bismark, R. R.
STALLING, LEE, Fairmount, R. R.
STALLING, JAMES, Fairmount, R. R.
SIMPSON, STUART, Altona.
SIKES, LOIS, 514 N. Griffen St., Danville.
SZERLONG, FRANK, 1231 N. Beecher Ave., Galesburg.
SCHISLER, MARTIN V., St. Augustine.
STAGGS, J. BLAINE, Avon.
SWANSON, C. E., Galesburg.
SWANSON, ERNEST A., Altona.
SWANSON, EARL, Galesburg, R. 2.

S

SWANSON & VEDELL, Gilbert Ave., Galesburg.
SMITH, H. B., Bardolph.
STUCKY, S. V., Pres. Farmers & Merchants Bank, Galesburg.
SWEDLUND, RALPH, Galesburg.
SEIBOLT, HOWARD, Victoria.
SIEBOLDT, ALICE, Victoria.
SIMMONS, HOWARD, Prairie City.
SIMMONS, MARTHA, Prairie City.
SMITH, MR. JOHN T., Urbana, R. 3.
SMITH, MR. G. A., Seymour, R. 2.
SUNDBERG, MR. PAUL, Champaign.
SOMORS, J. B., Urbana.
SMITH, T. P., 213 Orchard Ave., Danville.
SAFFORD, M. C., Sugar Creek Cmy. Co., Danville.
STRAUS, RIES, Danville.
SATTERUKITE, M. B., Rossville.
SELLARS, WM., Rossville, R. 2.
SIMS, J. B., Hoopeston.
SASS, E. W., Hoopeston.
SMITH, E. C., Rossville.
SMITH, W. G., Albin.
SNOW, CHAS. H., Snow & Palmer, Bloomington.
SCHARFF, E. E., Scharff & Koken, 7900 Michigan Ave., St. Louis, Mo.
SMITH, MR. WARREN, 61 W. Kinzie St., Chicago.
SONGER, MRS. LILLIAN, Alvin.
SHEETS, JESS, Bismark.
SMITH, EVERETT, Danville, R. 5.
SMITH, H. P., Buhl Stamping Co., Detroit, Mich.
IGANTZ SCHULZ CO., 5201 Ingleside Ave., Chicago.
SHARKEY, WILL T., Paris, R. 3.
SMITTKAMP, FRED, Paris, R. 3.
SHIELDS, JAMES, Paris, R. 4.
STATE BANK, Cerro Gordo.
SWANDER, W. D., Cerro Gordo.
STUTSMAN, G. O., Cerro Gordo.
SACWRITER, W. H., Cerro Gordo.
SHOAFF, W. P., Paris.
SWANGO, JESSE H., Paris, R. 3.
STEPHENS, RUSSELL, Paris, R. 4.
STROHL, DR. B. L., Paris.
SHONKNELY, F. M., Monticello.
STATE BANK, Bement.
SONCIE, S. W., Beaverville.
SPOLDING, R. E., Sugar Creek Creamery Co., Martinton.
SEGER, L. B., Watseka.
SANITARY DAIRY CO., Watseka.
SWEENEY, MARK M., Watseka, R. 4.
STRICKLET, A. A., Danville, R. 6.
STOREY, A. L., Danville, R. 7.
STICKLER, CHAS. B., Alvin, R. R.
STEWART, M. C., Ogden, R. R.
STARR, H. P., Danville, R. 7.
SOWER, MARGARET, Fairmount, R. R.
SNYDER, H. D., Georgetown, R. R.

T

TOWNSEND, GRANT, 1142 N. Broad Street, Galesburg.
TOWNE, GEORGE, Cameron, R. 2.
TANNY, P. H., Galesburg, R. 5.
TERPENING, E. E., Monmouth, R. 6.
THRASHER, E. E., Altona.
TEEGARDEN, MRS. MAY, 102 Rossford Ave., Ft. Thomas, Ky.
THORNSBORO, OLLIE, Alvin.
TIFLINGER, RAY, 226 W. Court, Paris.
TRIMMER, O. A., Cerro Gordo.
TURNEY, O. R., Cerro Gordo.
TUCKER, WALTER, Horace.

T

H. D. K. THOMAS & SONS, Clinton, R. 7.
THOMAS, JENNIE, Oliver.
TATRO, LeROY, Martinton.
TATRO, JOHN, Martinton.
TALBOT, VICTORIA, Danville, R. 2.
TAYLOR, WM., Danville, R. 3.
TRACY, P. H., U. of I. Dairy Dept., Urbana.
TATE, H. A., Mt. Vernon, R. 10.
TRIMMILL, KELLY, Oakwood, R. R.
TAYLOR, C. A., Harrisburg.
FROHMADER, H. L., 1606 Ridge Ave., Rockford.

U

UNGER, W. E., Knoxville.

V

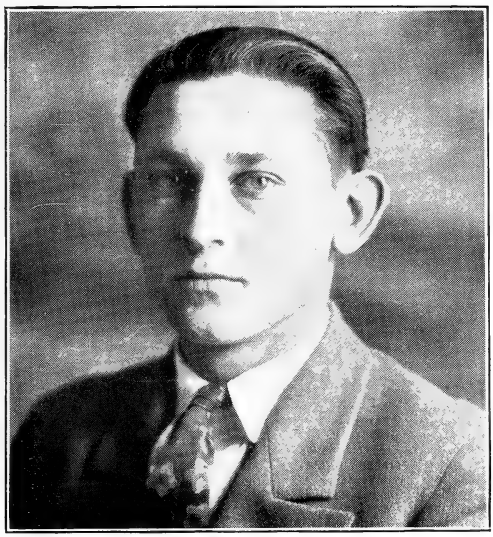
VERENE, C. J., 18 W. Main St., Galesburg.
VAN BUSKIRK, M. GUY, Oneida.
VAN KUREN, S. J., J. G. Cherry Co., Cedar Rapids, Iowa.
VOELCKER, ADAM, Cerro Gordo.
VICE, GEO., Paris, R. 3.
VAN HOOK BROTHERS, Danville, R. 3.
VAUGHAN, J. L., Wataga.
VAN PELT, HUGH G., Waterloo, Iowa.
VEACH, EVERETT M., Norris City.

W

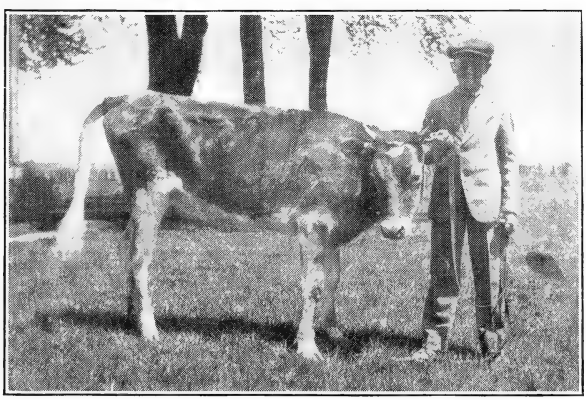
WENZELMAN, G., Galesburg.
WAGONER PRINTING CO., Galesburg.
WEAVER, H. D., Galesburg, R. 2.
WEST, ALVA, Knoxville.
WETMORE, F. J., Oneida.
WILSON,L. D., Urbana, Box 464.
WALTER, C. E., 604 Sherman St., Danville.
WILLIAMSON, H. B., Alvin.
WILBUR, E. D., Waukegan.
WARNER, P. M., Rossville.
WINKLER, W. E., J. B. Ford Co., Chem. Ry. Exchange Bldg., St. Louis, Mo.
WALKER, J. T., Sheller.
THE WADLEY COMPANY, Paris.
WILLIAMS, R. Y., Cerro Gordo.
WHITE, ELBON, Paris, R. 11.
WILLIAMS, VOLLIE, Paris.
WATERS, ENOS, Farm Bureau Office, Paris.
WRIGHT, JOS., Paris, R. 4.
WRIGHT, DR. C. J., Bement.
WEAKLEY, I. L., Cerro Gordo.
WILKINS BROTHERS, Danforth.
WAGNER, J. A., Oakwood, R. 1.
WALKER, C. A., Danville, R. 2.
WHEATLEY, SARAH, Danville, R. 1.
WOLF, HOWARD, Catlin, R. R.
WYMAN, A. J., Danville, R. 7.
WOOD, ROY, Sadorus, R. R.
WOLEVER, JOHN E., West Ridge, R. R.
WHITESIDE, COY V., Vienna, R. R.
WHITESIDE, CHAS. A., Vienna, R. R.
WHITE, J. R., Fairmount, R. 3.
WHITE, D. W., Collison, R. 1.
WALLAN, W. R., Oakwood, R. 1.
WILEY, E. J., J. B. Ford & Co., 427 Vine St., Springfield.
WRIGHT, K. E., Dairy Dept. U. of I., Urbana.
WILLIAMS, HUGH, Fithian, R. R.
WEBORG, C. G., 54 Madison St., Galesburg.
WOOD, F. S., Sharples Separator Co. Gen'l Del., West Chester, Pa.

Y

YEAZEL, ELLEN, Alvin.
YEAZEL, T. E., Alvin.
YEOMANS & SHEDD HDW. CO., 28-30 W. Main St., Danville.
YOUNT, ROY, Fairmount, R. R.
YAPP, W. W., Dairy Dept. U. of I., Urbana.
YOUNG, J. W., Bismark, R. R.



Armel Dionne
Martinton, Ill.



Geo. Riefsteck, Jr.
Urbana, Ill.
R. 10.

Two of the winners of calves in the Association, 1926

WINNERS OF CALVES

Winners of heifer full bred calves in the membership contest of 1925:

John M. Matthews, Rossville.

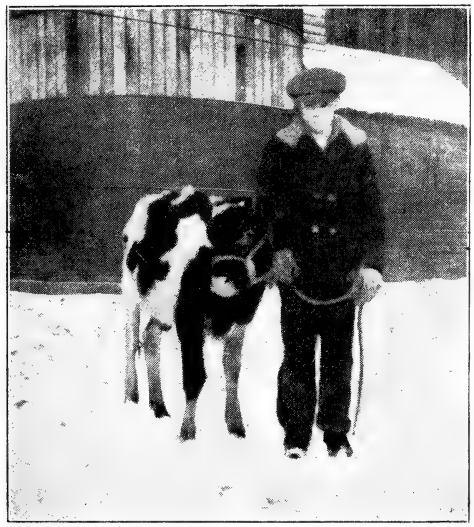
Armel Dionne, Martinton.

Geo. Reefsteck, Champaign.

Roscoe Arbuckle, Paris.

Harrison T. Depew, Cerro Gordo.

Plans are being made for a similar contest for 1926, to start the middle or latter part of October.



John M. Matthews,
Rossville

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