opinion often recently expressed that the interest of the farm separator is ever on the increase.

CHAS. L. HILL,
S. M. INGALLS,
Committee.

A resolution, offered by Mr. Foster, received the unanimous vote of the Association in the following language:

Resolved, By this convention of the State Dairymen's Association, That we approve of and request that the appropriation asked for by the Agricultural College management this year, from the Legislature, be granted in full, as being to the best interests of the whole people of the State of Wisconsin. And be it further

Resolved, That the Secretary of this Association be and is hereby instructed to forward a copy of this resolution to the President of the Senate and to the Speaker of the Assembly of the State of Wisconsin.

DAIRY POSSIBILITIES IN NORTHERN WISCONSIN.

Fred Reitbrock, Milwaukee, Wis.

Mr. President, Ladies and Gentlemen:—

It has been assigned to me to read a paper on the dairy possibilities of northern Wisconsin. By direction of your Secretary it is to be "terse, succinct and accurate."

There is implied in this subject pastures, cows, men and women, and markets.

Northern Wisconsin is no new territory or unknown district. Indeed, northern Wisconsin was land when southern Wisconsin and all the territory directly south of it to the Gulf of Mexico was covered with water, so the geologists would have us understand. At the same time to most people that we meet in southern Wisconsin the northern half of the state is a new country
but little understood by them, and in order to form an idea as to its desirability for dairying it is necessary to some extent to study its location, its accessibility, character of soil, water and climate. This we will undertake to do as briefly as possible.

Northern Wisconsin embraces practically one-half of the area of the state, or about 17,000,000 acres of land, and extends from east to west at its greatest width about 225 miles, and in its greatest extent from north to south about 160 miles. To the east of it is Lake Michigan; to the north of it Lake Superior; to the west of it the Mississippi and St. Croix rivers.

In the northern border we have what is known as the Penokee range, an elevated territory, extending east and west, the summit of which is not more than 25 to 50 miles from Lake Superior.

The whole territory south of this elevated range is an inclined plane sloping to the eastward, to the westward, but mainly to the southward. The surface of this plane in most parts is gently rolling.

There are numerous small lakes, especially in the northeastern parts, and innumerable springs, creeks and rivers which discharge their waters into Lakes Michigan and Superior but mainly into the Mississippi river.

The water in this territory is clear and in most places soft. Trout, bass, perch, muskallonge and other game fish abound in the lakes and rivers.

The soil, according to location, varies from a light sand to a heavy clay, but by far the largest portion of this territory has a clay loam soil. It is safe to say that the soil of two-thirds of the whole territory is clay and that one-third of it is sandy.

The sandy districts are mostly in the southwestern part of this territory in the lower valleys of the great rivers, as the Wisconsin, the Black and the Chippewa, and these sand valleys are so wide that they run into each other, making, as it were, a sandy belt, extending from Waupaca county west to the Mississippi river.

There are also considerable sand patches in the upper tributaries of the Wisconsin river. Then for about 50 miles in the course of that stream the sand valley is narrow, being not more
than about 5 miles wide, with great stretches of territory, on either side, of rolling clay loam land.

Throughout the most part of northern Wisconsin the soil rests on rock bottom, the underlying rock being a fire rock, of a granite nature, said to be of the first incrustation of the earth.

An abundance of water is found in this rock. The upper surface of the rock for a distance of 4 to 6, and sometimes 10 feet, is very much broken. This upper surface is soft. There are innumerable depressions in this rock surface all of which are filled with water.

The overlying clay bed is generally from 12 to 20 feet deep, so that it may be said the soil is in connection with the soil water without an intervening strata of sand or gravel, as is so common in southern Wisconsin and northern Illinois.

In its primeval state the most part of northern Wisconsin was covered with a dense growth of timber, the sandy territory being occupied by pine, and the clay loam territory mostly by what is called hardwood timber, such as maple, basswood, elm, oak, birch, ash and butternut.

Northern Wisconsin was first explored by the lumbermen, who entered by way of the streams that were large enough to float logs and lumber. The timber thus obtained was mostly pine, cut from the sandy regions, in consequence whereof it was quite easy and natural for the impression to go out that northern Wisconsin was a pinery, and its soil was only sand and unfit for agriculture.

As the woodsman penetrated further inland, and especially since the coming in of railroads, the true character of the country has become more generally known.

The climate of northern Wisconsin is not essentially different from that of southern Wisconsin. It has a little greater altitude, lies some northerly, but it also extends more westerly. The lines of equal temperature run in Wisconsin about from the southeast to the northwest, and not east and west as some people might suppose.

The climate is healthy, as is general in Wisconsin. The people are strong, active and progressive, as people generally are in a country that has a snug winter in its change of seasons.
During the winter the ground is covered with snow which as a rule comes between the middle of November and the 10th of December, and remains on the ground until the fore part of March, so that during the entire cold period the ground is so covered that frost seldom penetrates deeper than about two feet, and which is no where under this snow cover frozen as hard as it is in the southern sections that are not so covered.

In the summer time it does not become so excessively hot and dry as we often experience it in southern Wisconsin, showers are more frequent. The excessively dry and hot winds from the southwest do not seem to penetrate northern Wisconsin, but when the wind does prevail from that quarter it is generally followed by rain.

Until recently the abundance of timber was often assigned as the cause for this difference in rainfall, but Dr. Wilson, director of the United States Weather Bureau at Milwaukee, in his lecture at the closing Farmers' Institute at Oconomowoc last year, effectually exploded the notion that timber had very much to do with the abundance of rainfall, and asserted that our rains come almost exclusively from the Gulf of Mexico. Thus we are compelled to seek out another theory for this summer climatic difference. It may be that it is on account of its peculiar triangular position between the two great lakes, so that when the wind prevails from the southwest, driving the air in between rising cooler currents from Lakes Superior and Michigan, a condensation of moisture is effected and rain the consequence.

This theory seems to me plausible, but certain it is that during the growing season there is a more even rainfall in northern Wisconsin than there is in southern Wisconsin. This, together with the great depth of soil, accounts abundantly for the greater growth of vegetation throughout this section.

While some portions of northern Wisconsin have been settled pretty nearly as long as the southern part of the state, the great clay loam domain, however, has been too little occupied until within a recent period. The surplus population of 20 and 25 years ago was altogether too prone to go to the western prairie country. The northern part of the state thus lost a class of people that it would have been very desirable to have had and whose
condition would have undoubtedly been very much better had they stayed in the state rather than to have gone to the treeless, windswept prairies beyond the Mississippi. The people who settled upon the hardwood timber sections of northern Wisconsin have never suffered the privations and vicissitudes that have befallen so many people who did go to the western prairie country.

During the last few years there has been a very rapid increase of population in northern Wisconsin, and it is only a question of a short time when the rural population of northern Wisconsin will be greater, upon any given area, than in southern Wisconsin, or neighboring states.

To determine the desirability of any section of country for any particular industry, its avenues to markets is always of great importance.

Northern Wisconsin is not only well provided with water communication with the rest of the world through Lakes Superior and Michigan, but the great railroad systems of the country have taken in the importance of the territory and have built their several lines pretty nearly in all directions through it, so that the Chicago & Northwestern Railroad, the Chicago, Milwaukee & St. Paul, the Chicago, St. Paul, Minneapolis & Omaha, the Wisconsin Central Railroad, the Green Bay & Western, the Duluth, South Shore & Atlantic, the Minneapolis, St. Paul & Sault Ste. Marie, and other roads; all have their various lines of railroads running throughout the length and breadth of this section of country, thus making easy communication between it and the great centers of population to the east, the south and to the west of it.

From Chicago, Milwaukee, St. Paul, Minneapolis, Duluth, Ashland and Sault Ste. Marie most any part of northern Wisconsin can be traversed in a day in a comfortable palace car, and all the productions of this territory are easily and cheaply landed in the best markets of the country.

In the valleys of the large rivers and on the lines of these various railroads, cities have been built, water powers have been improved, factories have been established and employment is given to thousands of people.

The farming industry is also largely on the increase. The
farms are generally small, running from 80 to 160 acres, but such as have been established are in good condition with good buildings, and show a high degree of prosperity.

Had there been any doubt of the desirability of northern Wisconsin for general farming this doubt was most effectually dispelled when some of the northern counties exhibited their agricultural productions at the state fairs during the last few years. Marathon county for three years in succession won first prize, upon the merit of its various forage plants, grains and fruit, when put in comparison with the exhibits presented by such agricultural counties as Waukesha, Kenosha, Walworth and Jefferson.

While Marathon county had no exhibit at the state fair last year, its neighboring counties of Lincoln, Taylor, Price, Ashland and Douglas, did have, and the first prize, based upon the merit of their agricultural exhibits went again to the northern part of the state.

The question has often been asked, can they raise fruit in the northern part of the state? Of course they can; but you might say does that affect the dairy possibilities of the country? In a way, yes. A country that produces good fruit is more attractive to people than one that does not.

All the small fruits, as strawberries, raspberries, currants and the like, grow wild and do ever so much better in the cultivated state. Native plums are also found in considerable quantity. While pineapples, bananas and oranges do not grow there any better than in southern Wisconsin, apples are very successfully grown.

In its exhibit at the state fair Marathon county showed, in 1901, forty-three varieties of standard apples, the quality of which was pronounced to be excellent and was awarded first prizes on the same.

The apple is a northern fruit. The tree does best upon a deep clay soil with a northern exposure. The northern slope of the Penokee range is large enough to grow apples and will undoubtedly grow them, as the section gets cleared up and the industry well on its feet, to supply apples for Wisconsin and every adjoining state,
While the sandy sections of northern Wisconsin are not particularly desirable for dairy farming the territory is sufficiently valuable, however, for the root crops, especially for potato culture, to make it attractive for permanent and successful settlement. No better potatoes go into the southern markets than come from northern Wisconsin.

In this discussion we have, however, particularly to do with the clay loam and clay sections which make the ideal pasture lands for the dairy cow.

Upon these lands the clovers, blue grass, red top and other grasses grow luxuriantly and produce regular, heavy yields. On account of the abundance of rain and the snows of winter, with the great depth of soil, and the connection with soil water, these forage plants root deeply, suffer little during the winter and start to grow with an extraordinary vigor in the spring, and grow continuously through the summer, and are therefore not so much affected by slight frost in early fall as are the grasses which have started to grow afresh after a summer's rest.

Oats, peas, barley, wheat, rye and corn all do well. The oat, pea and barley crops are entitled to special mention. These crops do not ripen so quickly, but seem to grow to full maturity, so that the yield is heavy. From 50 to 60 bushels per acre is the ordinary average crop of oats, while 80 to 110 bushels have been frequently harvested, oats weighing about 44 pounds to the struck bushel measure.

Barley is successfully grown, but it is not very much used for feeding purposes. It is sought after too sharply by the brewers, and by the farmers who produce it it is held sacred, as it were, for the production of beer; but considering how readily a good crop of barley is produced, the farmers will in time forget sentiment and use the barley in connection with oats and peas for the purpose of feeding cows and pigs.

Peas are a very good crop in northern Wisconsin. The vine grows luxuriantly and matures a heavy crop of the grain, which is without the bug which commonly affects the pea crop in southern Wisconsin. The value of it in balancing a cow ration and especially for pork production, is hardly appreciated.

Dairymen will concede that with an abundance of oats, barley,
peas, clover and red top hay a fairly well balanced and good feeding ration can be made for the dairy cow, especially if this is supplemented by corn and corn silage.

While the dent corns on the purely clay and clay loam soils have not ripened as successfully as on the warmer sandy and sandy loam soils, flint corn matures well, and either variety matures sufficiently for first-class silage. As the country has become older and more cleared up in larger areas the corn has done very much better.

Some say that blue grass is indigenous to the soil. Be that as it may, in the older sections you find it everywhere, in the pastures and along the road sides, the genuine so-called Kentucky blue grass or *poa pratensis*.

For grazing, where it does well, nothing better has yet been found. A blue grass pasture, with a mixture of white and alsike clover, some red top and orchard grass cannot be excelled for the growth of young animals and for milk and butter fat production.

Blue Joint is a native grass of this region and makes the finest quality of hay. It is not found in large areas, but is found in considerable quantities in the valleys of the small streams and on the so-called alder bottoms, but the main reliance for pasture and for hay and grain crop must be put upon the higher land, which in its primeval state is covered with timber.

The lumbermen and the farmers have worked together in clearing off such lands, and as the condition now is the land is cheaply cleared of its wealth of timber inasmuch as every variety of timber is valuable in a commercial sense; the logs for lumber, either for house building or for furniture and other mechanic arts; the hemlock bark for the tanneries; the trees for pulpwood, the smaller sticks for railroad ties, the maple and birch for cordwood, the small and inferior basswood trees for barrel stock, the black ash for hoops; so that with the present facilities for transportation and the demand for the timber product, all in all the labor in the clearing up of the land is well and fully compensated for by the prices obtained for these various products.

As this clearing up process goes on the thrifty husbandman works the land up into desirable farms. The stock business and
dairying is already well upon its feet. Of the 2,700 creameries and cheese factories represented upon the dairy map of Wisconsin of 1901 nearly 800 of them are located in the northern half.

The erection of creameries and cheese factories has been going on within the past two years with double the rapidity ever before witnessed in that territory. As this process continues the people will still more and more go into the dairy business, and it is only a question of time, and a short time at that, when northern Wisconsin will be one of the greatest and most successful dairy sections in the United States.

Land of the very best quality for general farming, and which cannot be excelled for dairy farming, can still be had for a very small price and that is why farmers, largely of the so-called renters, of southern Wisconsin and adjoining states are migrating there in such great numbers. Not that great settlements are picking up and going there in a body, but one family from here and another from there, and thus the aggregate whole amounts to many. There are people enough there already so that by the natural increase one generation more will completely settle the country.

With reference to the cow it can be said that the people settled there are just as much in the fog as to what they ought to have for the best results as they are elsewhere in the state.

As you drive through the country you will see all kinds of breeding. Sometimes in one bunch you will see Jersey, Holstein, Ayrshire and Guernsey breeding, and always some of no breeding at all—just common cows in which you can detect no particular known breed. The idea is gaining strength, however, that for dairy purposes you want the special dairy cow.

The conditions are such that best results will be attained by raising pigs in connection with the dairy herd rather than to raise cattle, other than cows, for sale. It will always be profitable to raise good heifers because for good cows there will always be a demand; and the feed stuffs for pork making when supplemented with the skim milk are so abundantly and easily raised that much more money will be made out of the sale of pork than if steers were attempted to be raised in connection with the
dairy. Hence, if a herd is started with cows showing dairy breeding it is easy to produce a good paying milking herd by the use of a pure bred dairy sire.

People learn more quickly by example than by precept. If an object lesson is brought before their eyes they can study that much more correctly than if they tried to get the information through volumes of print.

There is perhaps no better example that could be cited in this line than is found in the herd and workings of Mr. H. D. Griswold of West Salem, La Crosse county, this state. This dairyman, upon a farm of 50 acres, supplemented by 25 acres of rented pasture, has in the period of a little better than 10 years produced from common stock, by the use of pure bred Guernsey sires, a herd of cows, numbering upwards of 20, that have averaged him over 400 pounds of butter during last year.

Surely with such herd of cows together with the pig industry to be carried on with it on account of the skim milk, very much greater results can be attained than from a common herd, or a half and half dairy and beef herd whose average would not be one-half of the amount.

In carrying on a dairy business there is much work implied, and it must be mainly the work of the family owning the land. It is a home business that families can carry on within themselves most profitably, and with reasonable care and diligence will support a family much more comfortably and provide a surer surplus than will most any other undertaking.

Having stated the conditions as we find them in northern Wisconsin upon which to predicate its dairy possibilities—that means what it will do in the dairy line in the future—we may be permitted now to figure out the number and size of our dairy farms, and plant thereon the kind, gentle and accommodating cow which is to eat the grains, grasses and clovers and extract therefrom that element of human food so necessary for the growth and comfortable existence of man.

Out of the whole domain of northern Wisconsin take 3,000,000 acres for example; divide the same into farms of an average size of 120 acres. This will give us 25,000 farms. Set apart 40 acres for a wood lot. This will amply supply the needs of
the farm in the shape of firewood, building material, etc., and give a little park for the family and shade for the herd and at the same time maple sugar for the children. This will also leave to the country that romantic and park-like appearance which does so much to make it a desirable and attractive place for a home. Cultivate and pasture 80 acres of the farm. Upon this there will be no difficulty in maintaining 20 cows in milk the year round, and to raise the desirable young stock for the maintenance and improvement of the herd. There will also be ample room for the raising of 50 to 60 pigs to be annually turned off.

Twenty cows, on 25,000 farms will give us 500,000 cows, and it seems to me the great majority of the farmers in northern Wisconsin, after the example of Mr. Griswold, will grade up to a perfect dairy herd from the common cows of the country by the use of pure bred dairy sires. In doing this they should not mix the breeds. Keep the breeds separate, as it were, by fences “horse high and bull tight.” The pure bred bull has dairy heredity; the half blood has it not, and is therefore a scrub. The pure bred of the same breed should always be used.

Let them work on these lines, with good judgment and care, and success will be theirs.

Here then we have the country with sparkling water, a delightful and bracing climate, a deep and productive soil, carrying the humus shed annually by the forests for a thousand years, unrivaled railroad and water communication with the great centers of population and to which are coming the young, the intelligent, the active and energetic. To them we can safely commit the dairy possibilities of northern Wisconsin.