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DEVELOPMENT OF RURAL ELECTRIFICATION
IN THE TERRITORY SERVED BY THE
PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS

THESIS FOR DEGREE OF M. E.
RICHARD BOONSTRA
1931

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**Thesis Prepared for the Degree
of Mechanical Engineer by**

**Richard Boonstra, Agricultural Engineer
Public Service Company of Northern Illinois**

May 6, 1931.

**The Problem: Development of Rural Electri-
fication in the Territory Served
by the Public Service Company of
Northern Illinois**

- A. The Initial Period of Development -
1925 - 1927, inclusive.**
- B. The Second Period of Development -
1928 - 1929, inclusive.**
- C. Present Stage of Development -
1930 - 1931.**

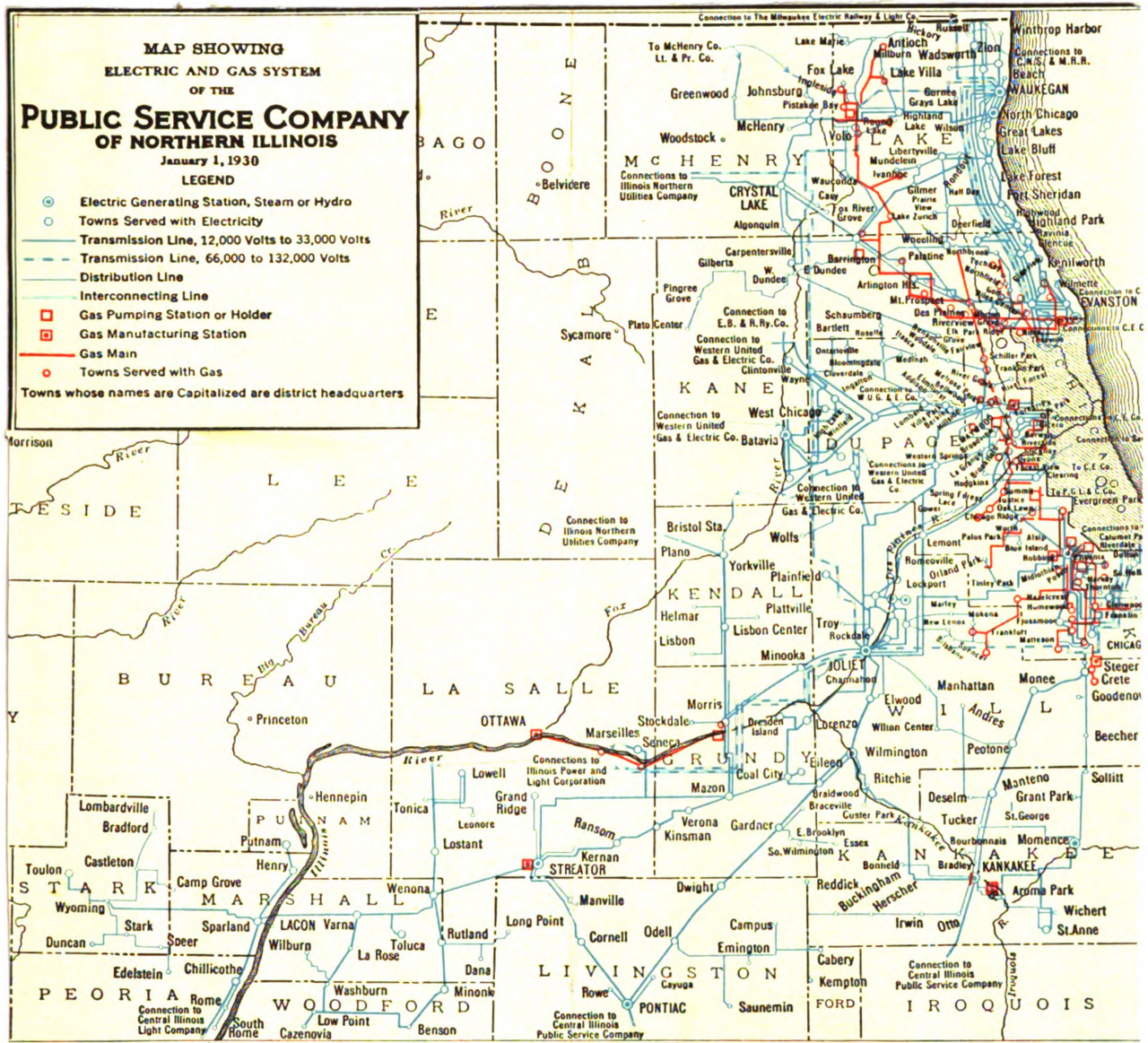
A. INITIAL PERIOD OF DEVELOPMENT

1925 - 1927 INCLUSIVE

Previous to September, 1925, no special efforts had been put forth to supply the farmers living in the rural areas of the territory served by the Public Service Company of Northern Illinois with Central Station service. At that time the Company decided that someone should be appointed to develop the rural electrification business, and I received the appointment as Agricultural Engineer on the date above mentioned. Previous to my appointment, I had two years' experience in all branches of public utility business within the companies under the general direction of Samuel Insull, Esq.

The plan of bringing electric service to farmers living in an area approximately 6,000 square miles has proven to be a most interesting one to me, and I have now spent five years in the development of this problem.

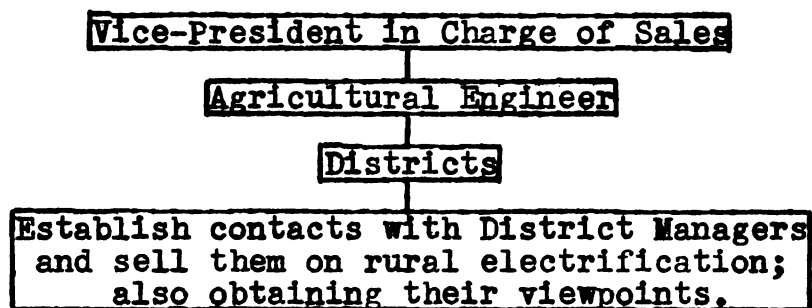
Development of Rural Electrification in the Territory Served by the Public Service Company of Northern Illinois



The territory served by the Public Service Company of Northern Illinois is approximately 6,000 square miles in extent. The number of farmers living in this area is 28,253 (according to U.S. Post Office maps, 1925), of which 1,758 were receiving electric service in 1925 - being served from 700 miles of line.

The Company's operations are directed from one central General Office located at 72 West Adams Street, Chicago, Illinois. The territory is divided into eleven districts--each one supervised by a District Manager. The Agricultural Engineer reports directly to the Vice-President in Charge of Sales in the General Office.

The Sales Plan - 1925



After calling on all the District Managers and reviewing the rural electric field with them, it was quite apparent that they unanimously agreed that electrifying the farms in this territory would be unprofitable for some time to come, and that they were not anxious to begin the development. Consequently, in order to sell the organization on rural development, it was essential to gather some facts which would indicate to some extent the use made of the service by present farmers. Business surveys are very expensive--costing as much as \$2.00 per customer.

Therefore it was decided to call on a group of farmers that would be fairly representative of all. This group numbered four hundred and eighty-six (486) farmers. This survey (Figure #1) brought out the interesting facts that the Company had many miles of lines out in the country that were not even paying operating costs. The District Managers, when shown the results of this survey became interested, because their primary function is to make electric lines pay a dividend to the stockholders of the company. Several months were spent in reviewing the equipment and load building possibilities with the sales forces in the districts.

The rural extension policies in effect at this time, although in keeping with what other utility companies were doing, required that the prospective farmer customers advance the cost of the line extension in cash under what is known as a Rural Electric Line Extension - Advance Deposit Agreement. (Figure #2)

No special rates for farmers were put into effect as it was felt that one schedule of rates throughout the entire territory was entirely satisfactory. The present plan, however, had its disadvantages because it was difficult for the farmers to obtain the cost outlay

SURVEY OF 486 FARMS IN ALL PARTS OF THE TERRITORY

Number of:	D I S T R I C T S									
	E	K	O	A	J	F	R	S	L	
Reported Farm Cust.	22	62	18	25	82	121	36	56	64	
Electric Flat Irons	21	56	15	23	73	108	32	52	57	
" Washing Machines	13	35	9	18	60	75	24	36	49	
" Vacuum Cleaners	6	11	2	13	32	21	11	29	15	
" Water Pumps	12	20	4	11	37	28	11	17	23	
" Ranges	2	3	2	4	10	4	2	3	3	
" Refrigerators	0	1	0	1	1	1	1	0	3	
" Feed Grinders	2	2	0	0	4	2	1	1	1	
" Corn Shellers	0	0	0	0	0	1	1	0	0	
" Grain Elevators	0	2	3	0	2	1	0	0	1	
Yrly. Consumption in KWH.										
Lighting per Cust.	600	269	349	650	335	315	395	310	270	
Yrly. Consumption in KWH.										
Cooking per Cust.	370	65	125	127	155	110	125	260	105	
Yrly. Consumption in KWH.										
Power per Cust.	450	207	70	500	50	210	35	260	45	
Connected Load in Watts										
per Cust.-Lighting	1,800	1,625	1,300	1,700	1,340	940	1,250	1,260	1,060	
Connected Load in Watts										
per Cust.-Cooking	1,100	250	610	2,050	800	300	350	220	380	
Connected Load in Watts										
per Cust.-Power	1,900	325	666	2,260	360	420	500	110	220	
KWH. Used per Year										
per Acre	8.50	5.00	5.30	10.00	3.50	15.30	3.68	2.17	4.30	
KW.Connected per Acre	.028	.022	.003	.052	.016	.040	.014	.009	.010	
Revenue per Cust.	\$105.85	\$40.91	\$46.35	\$80.54	\$41.93	\$45.88	\$35.56	\$29.93	\$32.68	
per year										
Appraised Line In-										
vestment per Cust.	\$410.00	\$548.00	\$326.00	\$500.00	\$467.00	\$295.00	\$466.00	\$472.00	\$268.00	
Total Acreage	3,691	6,607	1,825	2,910	12,616	4,977	5,443	9,296	10,675	

(Figure #1)

RURAL ELECTRIC LINE EXTENSION—ADVANCE DEPOSIT AGREEMENT

(Applicable to Rural Customers.)

A Rural Customer is herein defined as any customer, except an industrial light or power customer, whose premises are located outside the corporate limits of any city, town or village, or territory reasonably contiguous thereto, where the density of population or other conditions are similar to those in a city, town or village.

THE SUBSCRIBER herewith deposits with PUBLIC SERVICE COMPANY of Northern

Illinois (hereinafter called the "Company") the sum of.....

.....Dollars (\$.....) to cover the Company's cost of extending its lines, as shown on sketch on the reverse side hereof, to supply electricity at

the premises described as.....

in.....County, Illinois.

In consideration of said deposit the Company agrees to extend its lines to said premises, and said deposit shall be held and disposed of by the Company on the following terms and conditions:

What Deposit Covers.

Said deposit represents (1) the cost to the Company of furnishing and installing any extension of the Company's lines required on the highway, and, in the event the Subscriber hereto is an additional customer to be served over or from a previous extension made under a refunding agreement with another customer, (2) that amount equal to the cost of an average two-pole extension, as hereinafter described, which is to be refunded to the Subscriber who made deposit of cost of said previous extension.

Refund of Deposit.

Subject to the conditions hereof, the Company shall repay said deposit by paying or crediting to the Subscriber from time to time, until the same shall be exhausted or otherwise repaid, an amount equal to twenty-five per cent (25%) of each monthly bill rendered for electricity consumed at said premises; and the Company shall also refund to the Subscriber from said deposit an amount equal to the cost of an average two-pole extension of new construction in the same community for each additional customer whose service shall be taken from the extension made under this agreement or from any extension thereof within a period of ten (10) years from the time of making the extension hereunder; **provided**, however, that in the event the extension covered by this agreement is an extension from a previous extension made under a refunding agreement with another customer, no refund shall accrue to the benefit of this agreement covering service to additional customers until total refund has been made under the terms of said refunding agreement covering said previous extension, and **provided, further**, that in any event the total amount repaid or refunded to the Subscriber hereunder shall not exceed the amount of the original deposit hereunder.

For the purposes of this agreement that "amount equal to the cost of an average two-pole extension of new construction in the same community" shall be considered as \$.....

It is understood and agreed that in the event the extension made under this agreement is made to serve a number of customers and has been covered by several deposits from such customers, any refund made to the Subscriber, on account of an additional customer, shall be the Subscriber's pro rata portion of the total amount refundable on account of such additional customer.

(Figure #2)

Additional Customers.

Any additional customer whose service shall be taken from the extension made under this agreement or from any extension thereof as aforesaid will be required to deposit with the Company a sum of money equal to the cost to the Company of furnishing and installing (1) any additional highway line extension required to serve him, and (2) an amount equivalent to the cost of furnishing and installing a two-pole extension, as above defined.

Terms and Conditions.

It is understood and agreed that if at any time the Company's electricity shall cease to be used in the above described premises before the whole of said deposit shall have been repaid or refunded to the Subscriber as aforesaid, the portion of said deposit then remaining in the Company's possession shall be retained by the Company; and it is further understood and agreed that if at the expiration of ten (10) years from the date of commencement of service said deposit shall not have been wholly repaid or refunded under the provisions hereof the Company shall cease to make repayments or refunds hereunder and the portion of said deposit then remaining in the Company's possession shall be retained by the Company.

Nothing herein contained shall be construed as conferring upon the Subscriber any title to or right of property in said extension.

The completion of said extension is contingent upon strikes, fires, accidents, delays of carriers, or other delays unavoidable or beyond the Company's control.

This agreement is submitted to the Subscriber by the Company on _____, 19____, and is void unless accepted by the Subscriber within thirty (30) days from said date, and is further subject to the approval of an Officer of the Company and shall not be binding upon the Company until endorsed with his approval.

Dated _____ 19____
Subscriber

Received \$ _____ Date _____ 19____ By _____

Public Service Company of Northern Illinois

Official Capacity

Per _____
Cashier

Approved _____ 19____

Public Service Company of Northern Illinois

By _____

Subscriber's Mailing Address

Print Name

Street

Town

Pl. No. _____

**RURAL ELECTRIC LINE EXTENSION
ADVANCE DEPOSIT AGREEMENT**

BETWEEN

Public Service Company of Northern Illinois

AND

.....

.....

.....

Premises

.....

Dated 19

Salesman

District

.....

required for the extension, and when obtained, there was little money left for buying equipment, which the survey clearly indicated.

At this time it was decided that I make an inspection trip to California, Washington, Vancouver, British Columbia, and Winnipeg, Canada to see how rural development was carried on. I visited many utility properties, reviewing many types of rural electric projects that were the means through which many ideas on my problems were solved.

While the first survey made in 1925 was used for the purpose of getting the interest of the district organizations aroused, the information was not sufficient for the development of a comprehensive plan which would facilitate the building of rural lines on a larger scale. Therefore a survey of the entire territory was made.
(Figure #3)

Upon the completion of this survey, rural electric development enters into the second stage of its progress. With full knowledge of the practicality of our rates, line extension policies, and the district personnel whole-heartedly supporting the work, a study revealed that it would be advisable to build up a network

Addison
Algonquin
Antioch
Argo
Arlington Heights
Aroma Park
Asbestos
Barrington
Bartlett
*Batavia
Beach
Beecher
Bellwood
Bensenville
Benson
Berkeley
Berwyn
Bloomington
Blue Island
Bluff Lake
Bourbonnais
Braceville
Bradford
Bradley
Braidwood
Bristol
Bristol Station
Broadview
Brookfield
Buckingham
Buffalo Grove

*Electricity furnished by

Electric Co.
Electric Co.
Electric Co.
Community



(Figure #3)

of so-called "distribution feeders" along the arterial highways throughout the territory--such lines to be built under a plan known as the Five-Year Rural Construction Program, calling for an expenditure of one million dollars (\$1,000,000.00), or two hundred fifty thousand dollars (\$250,000.00) per year for five years; such program to be financed entirely by the Company. Accordingly, the program was planned and put into effect the early part of 1928, as outlined on the map. (Figure #4)

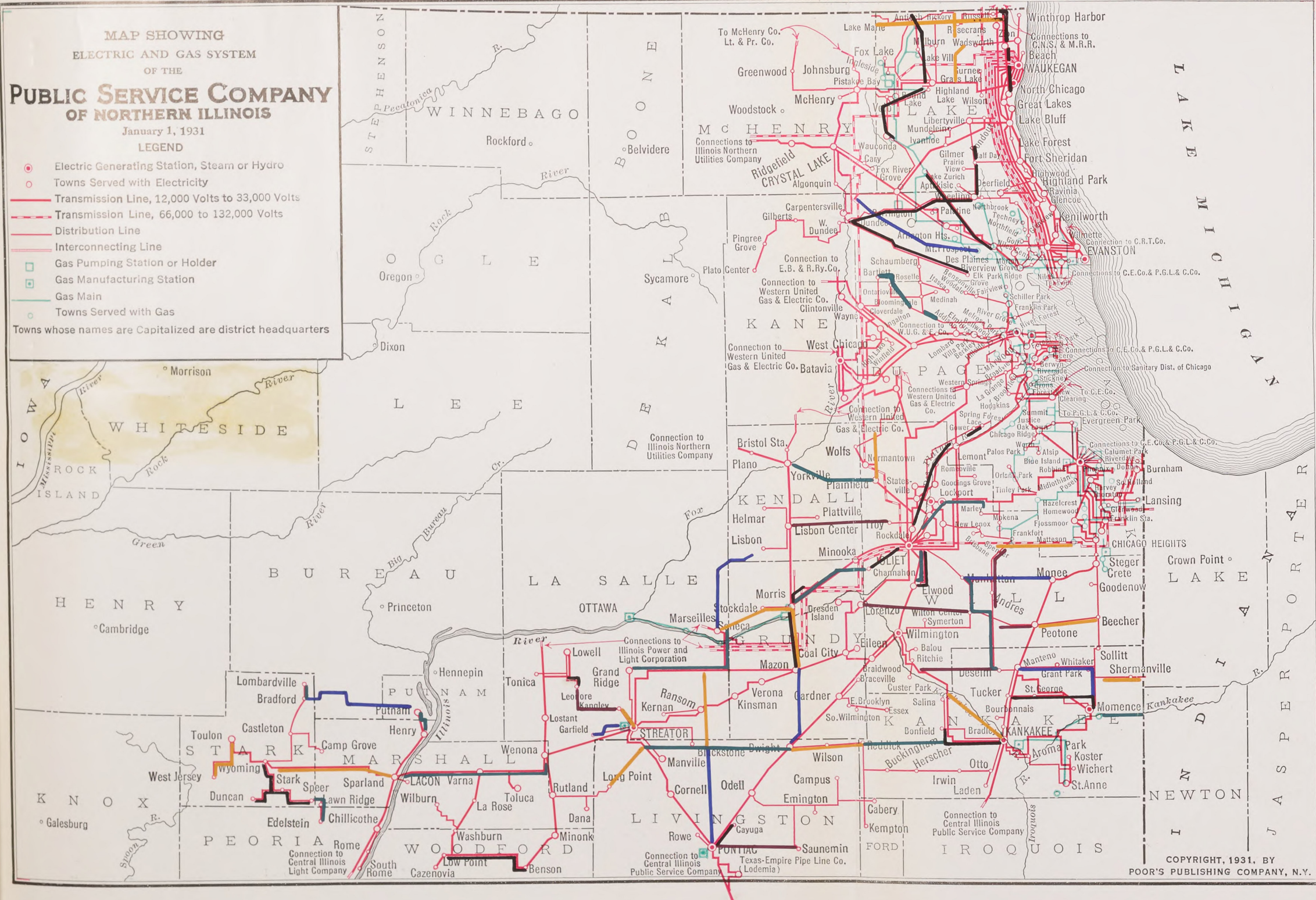
The limited use of electric service made on the farms which had been connected to the Company's lines for some time was most discouraging, and it was realized that the one-million-dollar development plan of making line extensions could not be successful if some supplementary plan of selling farmers on the idea of making a more elaborate use of electrical equipment were not originated at the same time. I had been utilizing some farms that were making substantial use of electric service, as demonstration farms. This method, however, was not entirely satisfactory because the farmers were very poor demonstrators of electrical equipment, although enthusiastic about it.

MAP SHOWING
ELECTRIC AND GAS SYSTEM
OF THE
**PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS**

January 1, 1931

LEGEND

- Electric Generating Station, Steam or Hydro
- Towns Served with Electricity
- Transmission Line, 12,000 Volts to 33,000 Volts
- - - Transmission Line, 66,000 to 132,000 Volts
- Distribution Line
- Interconnecting Line
- Gas Pumping Station or Holder
- Gas Manufacturing Station
- Gas Main
- Towns Served with Gas
- Towns whose names are Capitalized are district headquarters



B. SECOND PERIOD OF DEVELOPMENT

1928 - 1929 INCLUSIVE

The Company had no way of training the farmers for this work, so the officers of the Company approved the buying of a tract of land consisting of 80 acres in the central part of Lake County, Illinois, close to rail and highway transportation--the purpose being to design buildings in which all of the practical uses of gas and electricity could be demonstrated to show to the farmer and his family how the conveniences and necessities of the city could be had on the farm and in his home so as to make home life more attractive and help in saving physical labor.

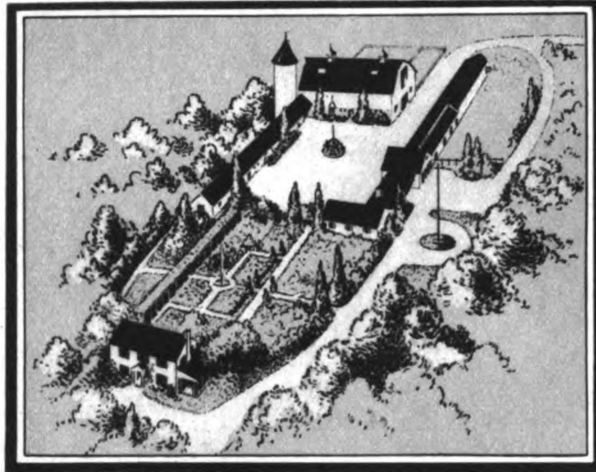
While the architect designed the buildings, I was appointed to work with him on the entire project and make all recommendations with regard to the size of the buildings, recommend the home furnishings, water supply, sewage disposal, equipment, livestock, and crop planning.

I feel that the booklet describing the Public Service Model Farm (Figure #5) gives a complete outline of my work with the exception of the details involved in the design of grain bins, feed grinding arrangements, and the cropping plan. The latter was the most difficult to initiate because the land was practically all in sod and had not produced any crops for several years.

The
MODEL FARM

**PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS**

LAKE COUNTY~*Near Mundelein*~ILLINOIS



Birdseye sketch of the Farm, showing landscaping and general plan of the buildings

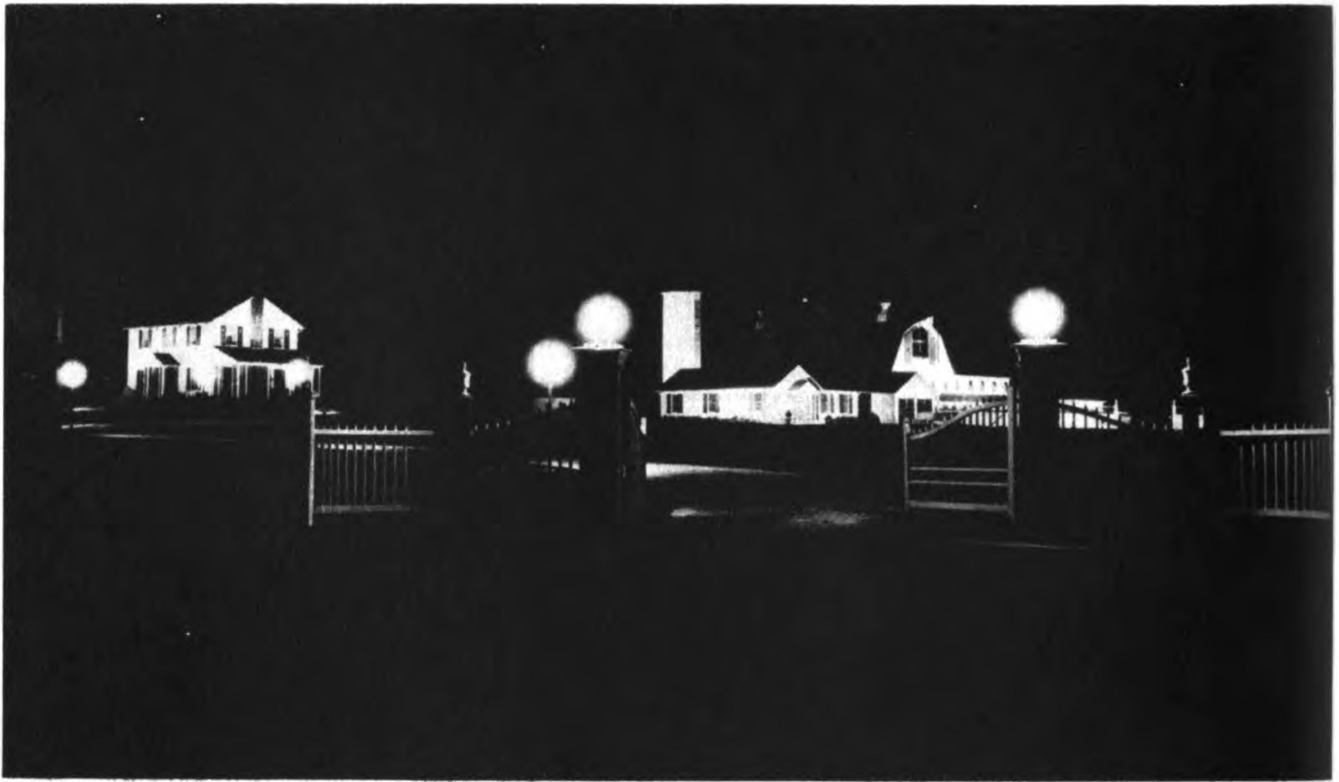
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December, 1928
Third Printing
September, 1929
Fourth Printing
July, 1930

PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS
General Offices
72 West Adams Street
Chicago

SIXTY YEARS ago the open prairies welcomed the arrival of the railroad to make pioneer life less rigorous and large scale cultivation of land more practical. Today wherever electricity and gas are available, intensive cultivation with limited man power is made possible, and living conditions are in keeping with high modern standards. Likewise electricity and gas offer the city dweller, to whom the thought of a country home is appealing, all the pleasures of country life without the burdens it held in years gone by.

This booklet presents the story of our Model Farm, located two miles west of Mundelein, in Lake County, Illinois. This farm is a permanent progressive exhibit of the comfort and convenience which may be brought to country life by adapting electric and gas appliances to rural needs.

**PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS**



The Model Farm of the Public Service Company of Northern Illinois is situated in the highest portion of Lake County. It faces on Diamond Lake Road just northeast of its intersection with Hawley Avenue. The farm is reached from Libertyville and Mundelein via Hawley Avenue.



Above, night view of the Model Farm, through the entrance gate on Diamond Lake Road.

Left, a view of the farmhouse through the gardens.

THE MODEL FARM

ITS PURPOSE AND PLAN

THE purpose of our Model Farm is to demonstrate to farmers, and to city people who would like to have a home in the country, outside of established communities, the use of electric and gas appliances which will minimize labor in the home and on the farm.

The farm consists of 80 acres of fertile land, which are cropped in accordance with the best information available. The buildings are laid out on an interesting landscape plan; they include a very comfortable six room farm home, stock barn, dairy rooms, offices, poultry house, swine barn, and an exhibit hall for the operation and demonstration of electric and gas equipment.

The Model Farm is a demonstration rather than an experimental farm. It does not duplicate the efforts of numerous agencies already established which are successfully carrying on important research and experimental work. The study of new ideas on the application of electricity and gas to rural needs is not entered upon at the Model Farm, but any new inventions using gas or electricity are immediately demonstrated there when they have been worked out and proved suitable for rural use. It is the intention of the Public Service Company to display at the Farm only such equipment as can be recommended to a farmer for immediate use.

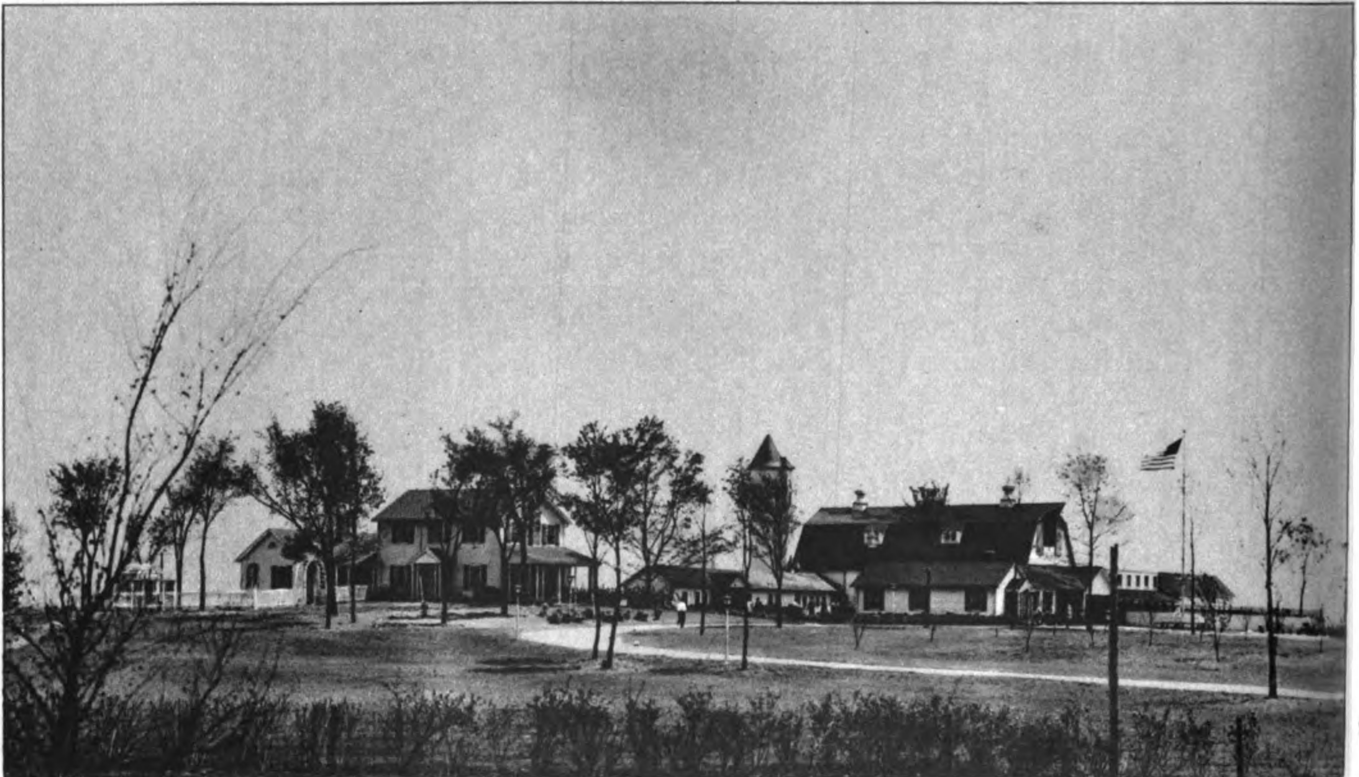
The practical farmer who produces and markets foodstuffs—grains, livestock or garden truck—depends upon electric power to replace expensive labor in many operations. The small or large dairy, selling at wholesale or retail, uses electricity for milking, milk cooling and testing. An abundance of water, gas-heated, assists the sanitary methods of handling so essential to a successful dairy. The poultry fancier, the florist, or any enterprise requiring a country location with fertile land, sunlight, and marketing facilities, finds in modern electric and gas service the means of speeding production, saving labor and improving the quality of what is produced.

In addition to offering farmers an opportunity to see in operation the farm machinery suitable to their needs, the Model Farm also demonstrates that by taking full advantage of electric and gas service, the farm home can be made as attractive and comfortable as the city home.

National associations of the electric and gas industries working with various home planning bureaus have devised standard specifications for supplying homes with gas and electricity. These are known as Blue Star specifications for gas and Red Seal specifications for electricity. The Model Farm plans for electric and gas service have been endorsed with respect both to Red Seal and Blue Star standards.

It is estimated that within three generations there will be 18,000,000 people in and about Chicago. Of these, many will want homes in the country outside of the limits of established communities. Believing that farm and country home life can be freed from drudgery and inconvenience, it is the purpose of the Public Service Company of Northern Illinois to work toward this end in the territory it serves.

General view of the Model Farm, from its entrance on Diamond Lake Road. The farm home at the left, with farm office and dairy barn beyond.



THE FARM HOME

FARM life has always been recognized as one of the nation's chief sources of good citizenship. The tendency, however, of many alert and ambitious young people to leave the farm and seek the seemingly easier modes of living in the cities, has become a serious farm problem. It is one which adequate electric and gas service can go far toward solving. When a young man no longer sees his mother working beyond her strength, when he can offer his bride a home as attractive and convenient as any in the city, when parents can themselves believe that their children will find a life of comfort on the farm, then the exodus to the city will be checked. There is no agency equal to utility service in supplying the country home with comfort.

Beside its attractiveness as a practical residence, the home at the Model Farm serves as a striking example of the beauty and comfort which can be brought into country homes from the viewpoint of the city dweller who would expect his country house to be as much a reflection of his good taste as his city residence.





Furniture and rugs are authentic reproductions of Early American pieces.



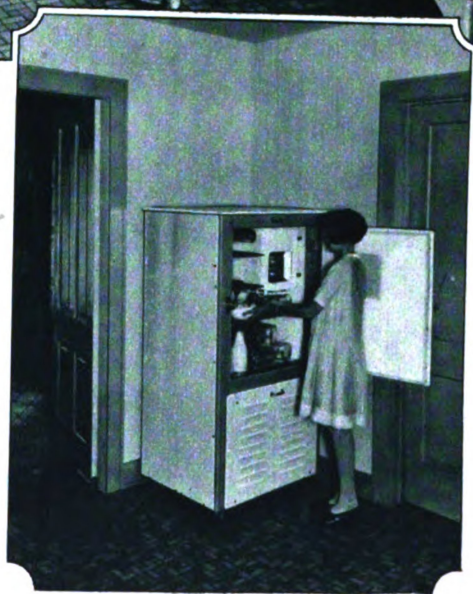
Believing the farm home of modest size may be made as beautiful as the city home, special attention has been given to choice and arrangement of the furniture and furnishings.

The house is Colonial in style. Note also the Early American lighting fixtures.





WITH the new control devices attached to modern gas and electric ranges, whole meals can often be left to cook unwatched for hours. While the farm wife visits the neighbors, attends a meeting which interests her, or makes a trip to town which would otherwise have to be made by a man from the field, she can be entirely unworried by thoughts of neglected work of her own. Convenient refrigeration is one of the delights of an electrified home which becomes all the more important in the country. A refrigerator can be attached to any socket and can be secured in many styles and sizes. Where one refrigerator serves for family use and for storage of dairy products, a larger type may be the better investment. The kitchen sink has a built-in electric dishwasher.





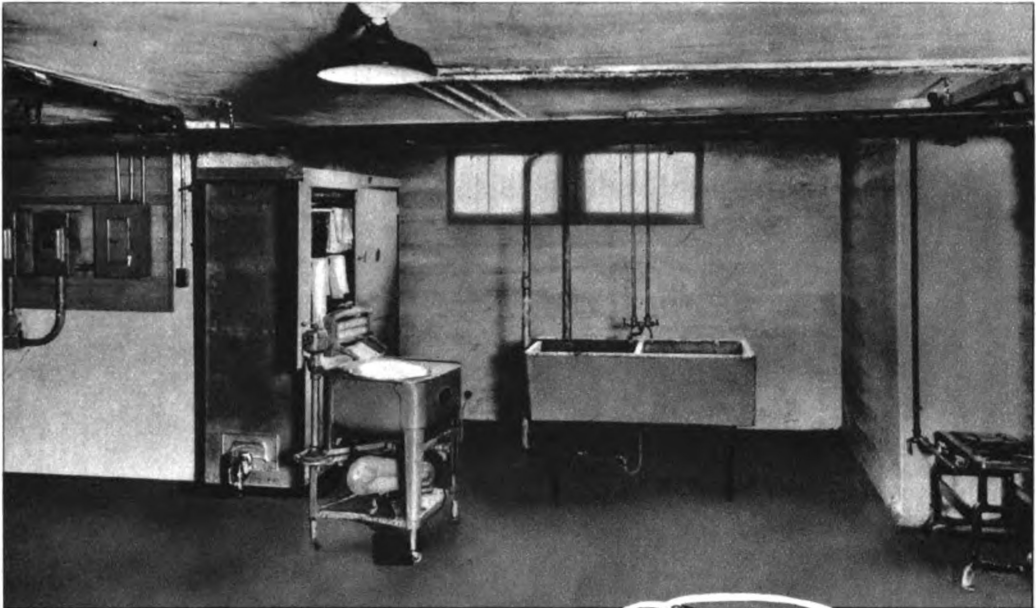
Perhaps it is the faithful adherence to the simplicity of the Early American which lends such an air of comfortable charm to this bedroom.

BEDROOM wiring provides amply for light at dressing table and bedside and for the control of the ceiling lighting by a switch near the entrance. In addition to the ceiling unit in the bathroom, there is a shaded light over the mirror with an outlet for connecting curling iron or portable electric heater. There is an outlet in every room for connecting the vacuum cleaner which saves so much heavy work.

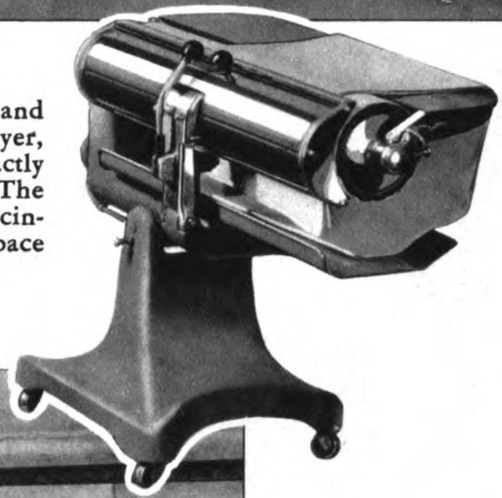
Note simplicity of furniture and the ceiling unit in harmonious good taste.



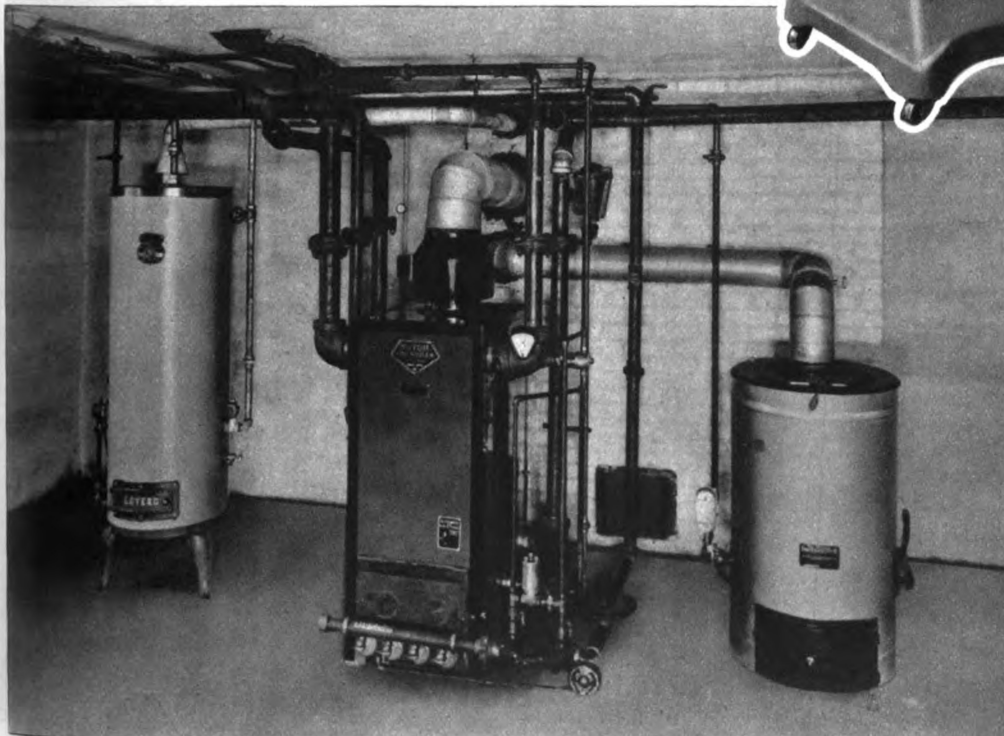
The clothes dryer saves many steps and much wear and tear on clothing. It airs as it dries and it is no longer necessary to hang your wash in the wind and weather.



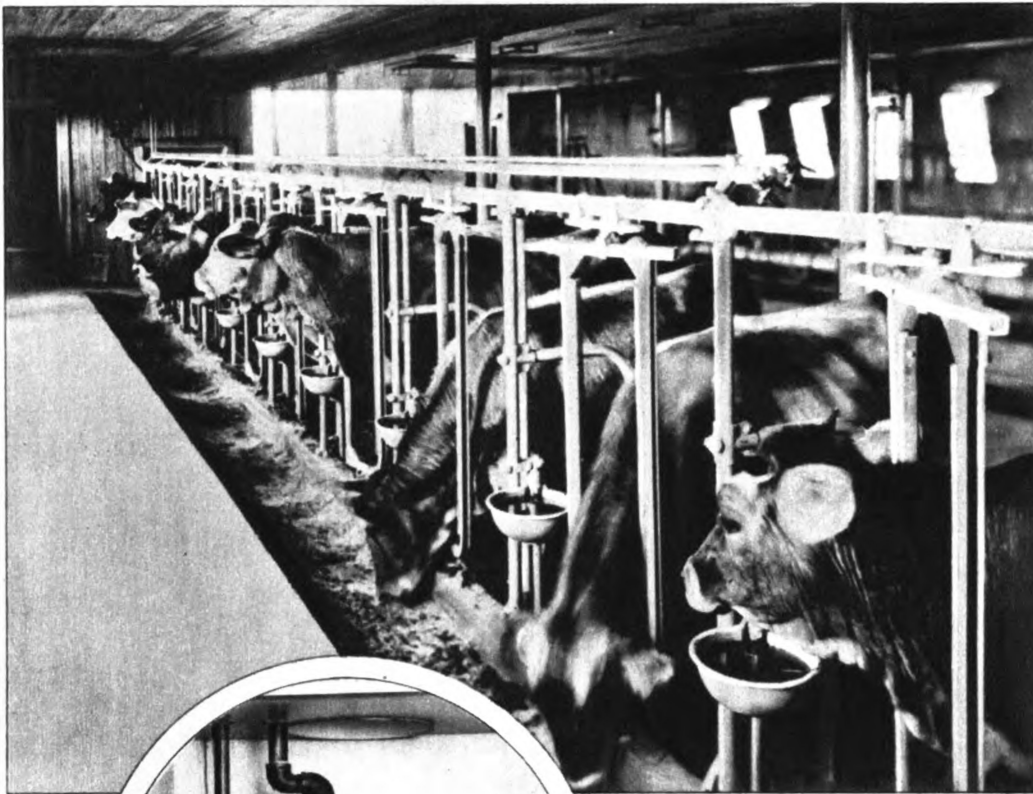
Electric and gas service are largely responsible for the neat and cheerful basement of this modern farm home. The clothes dryer, electric washer and wringer, and power ironer are very compactly and conveniently arranged, under well placed lighting units. The automatic gas-burning water heater, house heating boiler and incinerator occupy only a few feet of space. This leaves plenty of space for vegetable and fruit storage or for many other uses.



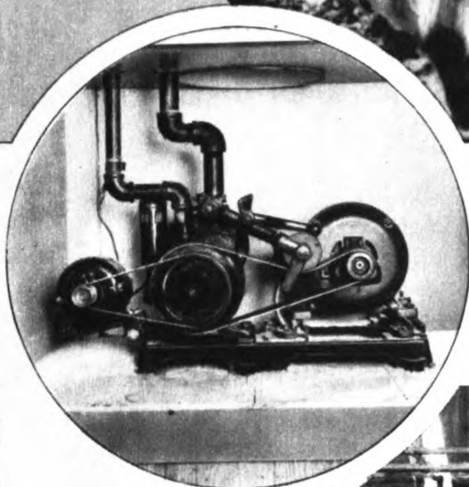
The electric power ironer saves hours of labor every week, and because of its speed, the cost of operating is very small.



There are also practical electric water heaters for use where gas is not available.

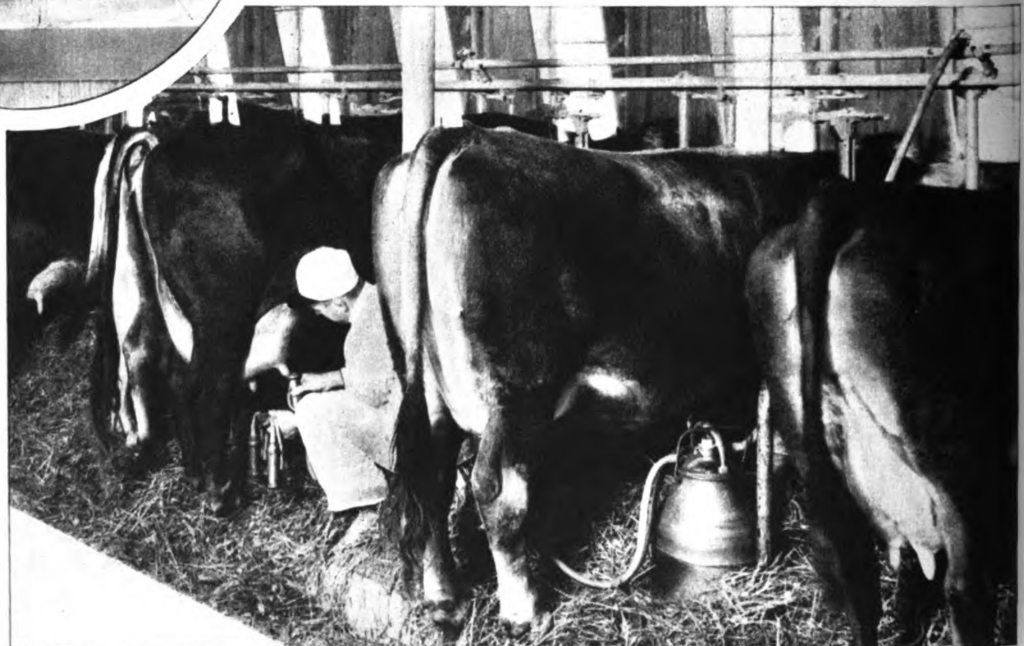


Note the sanitary cemented feed trough which can easily be flooded and cleaned.



Individual drinking cups, made possible by electric water pumping, increase milk production.

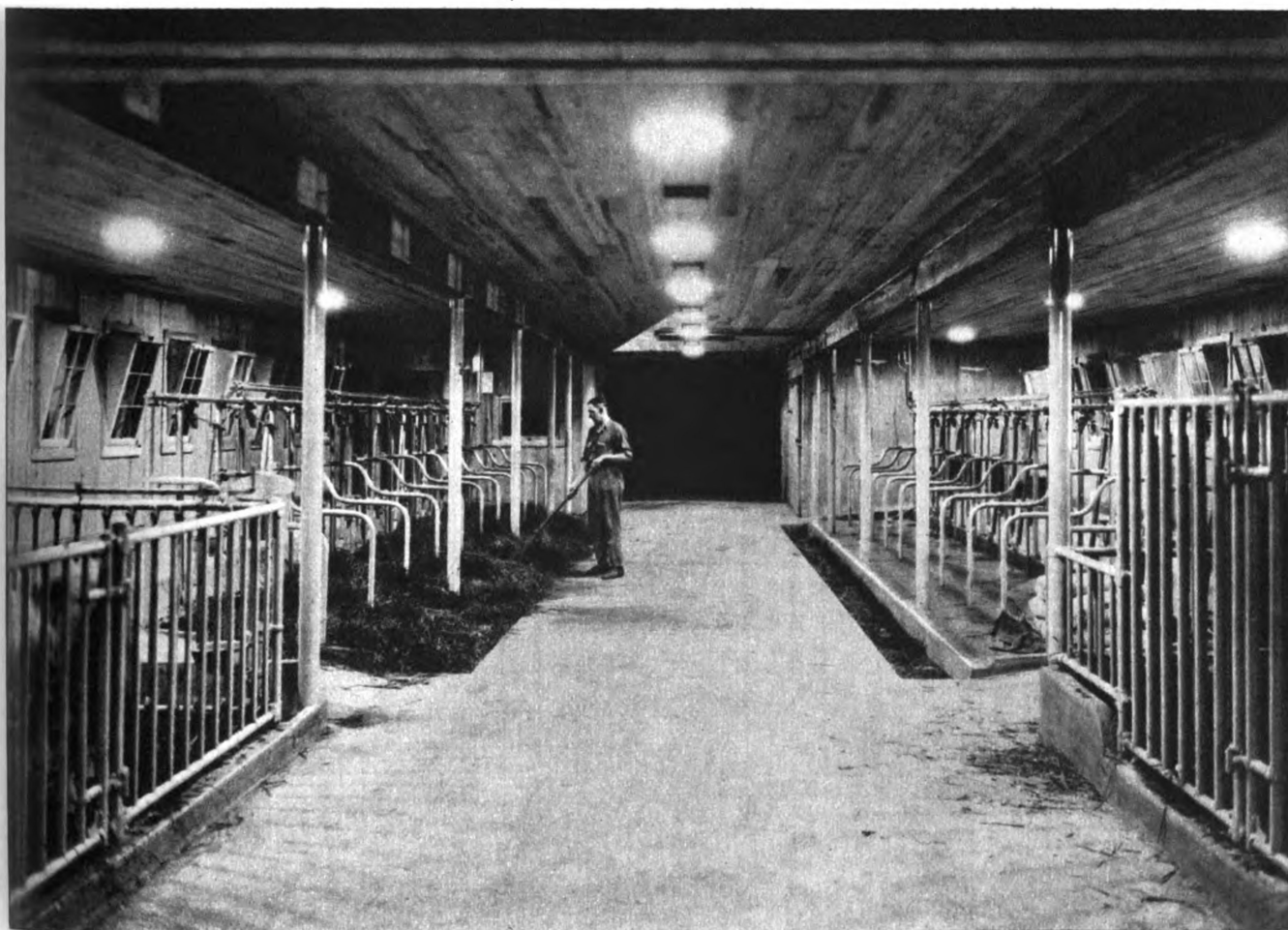
The electric milker enables one man to care for a much larger number of cows, besides improving sanitation in handling the milk. The two horse-power motor (above) which, for easier observation, is mounted behind glass in a partition, operates the milking system which has vacuum and suction outlets in each stall for attaching the electric milkers.

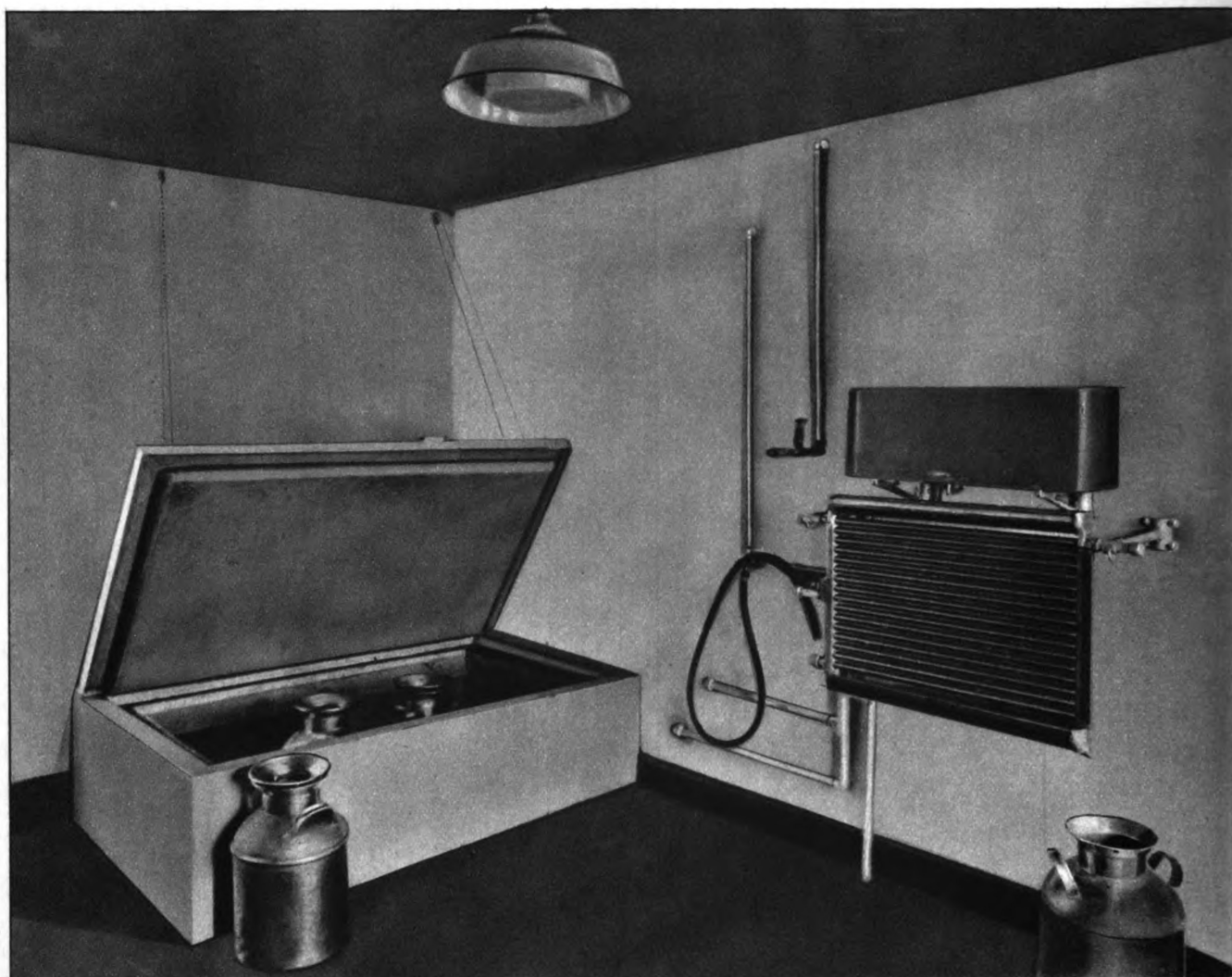


SCIENTIFIC DAIRYING

THE farm is stocked with good grade Brown Swiss cattle, and accommodates a herd of twenty head. Brown Swiss cattle are noted in Switzerland, which is recognized as the leading dairy country in the world, for producing milk rich in butter fat. They are not a widely known breed in America but are commanding the attention of experienced dairymen more and more because of their hardiness and resistance to disease.

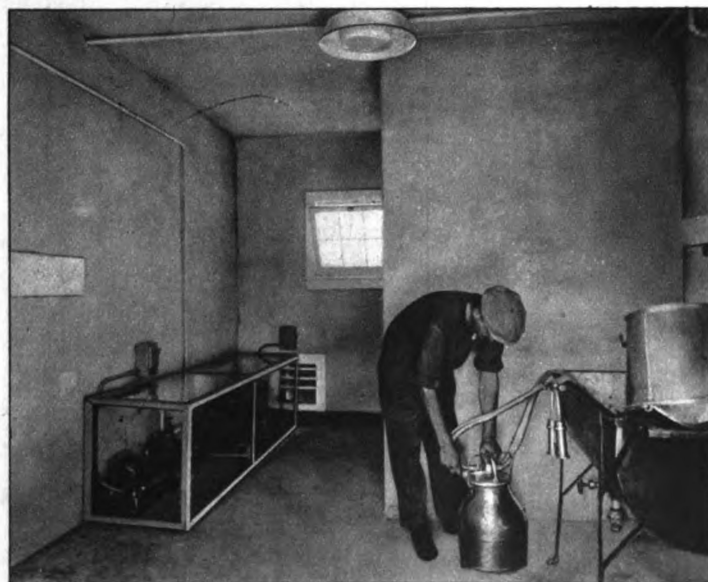
Electricity is used in the Model Farm dairy, for lighting the dairy barn, cow yard, washroom and the milk storage room. It elevates grain to overhead bins, grinds feed, clips and grooms the cows, does the milking, pumps ice water through the milk cooler and refrigerates the storage tank. In a retail dairy, it turns the separator, drives the bottling equipment and operates the bottle washing brushes. Gas supplies an abundance of hot water for washing the dairy equipment.





Refrigerated Milk Storage Tank

Milk Aerator, for prompt cooling



UNDER glass in the washroom (at left) are two motor equipment units. One pumps the cold water through the milk aerator and the other operates the refrigerating unit in the milk room storage tank.

THE warm fresh milk is carried directly to the milk room and poured into the elevated tank of the milk aerator. As it flows down over the horizontal water pipes and drains off into the milk storage can, its temperature is quickly lowered to about 45° F. thereby immediately reducing bacterial growth. The upper pipes circulate water of ordinary well temperature. The lower pipes circulate ice water from the storage tank. The success of the milk cooling system depends upon electric pumping. Electricity also operates the refrigerating unit located in a corner of the storage tank.

It is especially important in connection with the use of the modern machine milkers, to provide for efficient cleaning. A gas fired boiler supplies an abundance of steam and hot water at the washroom sink, so all milking utensils may be easily and quickly sterilized. In a large retail dairy farm from which milk is to be delivered in bottles, the washroom equipment would include steam sterilizer outfits and electrically driven bottle washing brushes. Light in the washroom and milk room comes from ceiling units protected by heavy duty reflectors. Just outside the milk room is a loading platform to which the milk cans from the ice-cold storage tank may be brought quickly and easily for a market trip.

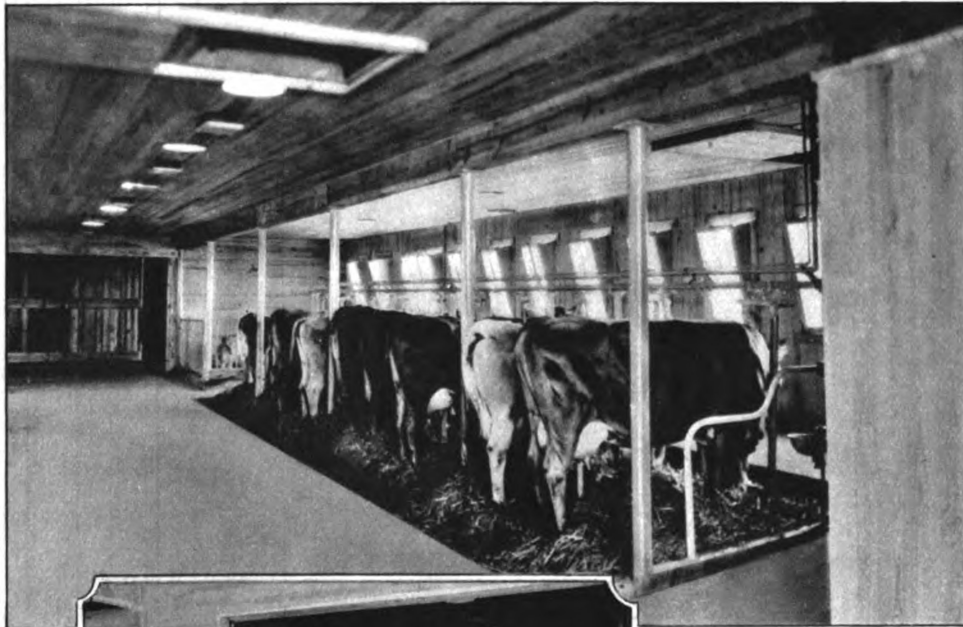


LOCATE IN THE FARMING AREA WITH ITS FINE ROADS AND

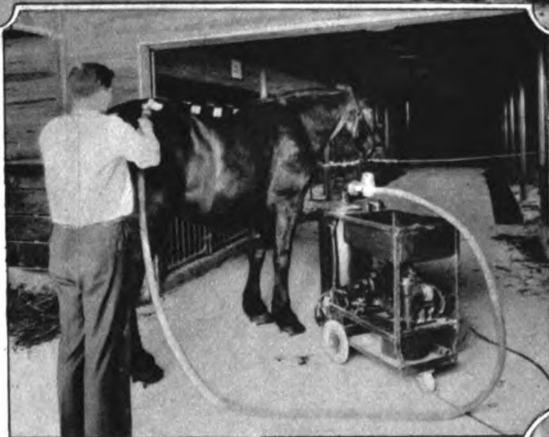


OF NORTHERN ILLINOIS LY REACHED MARKETS



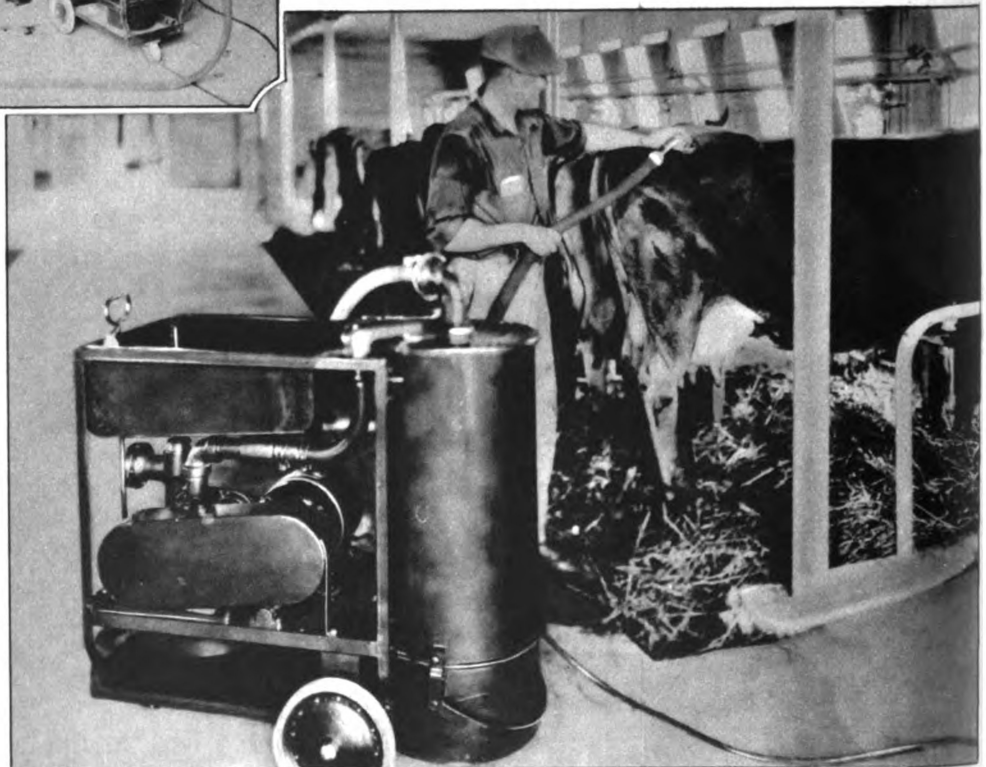


Openings to the barn loft, located over the cemented runways, make feeding easy.



Note that lamps are recessed flush with the barn ceiling. This prevents breakage while hauling in feed. Lamps are set close enough together to furnish the abundance of light which makes it quicker and easier to care for stock and also aids in sanitation.

A portable electric vacuum cleaner is used for grooming farm animals. Convenient electric outlets permit its use at every stall.



CARE OF STOCK

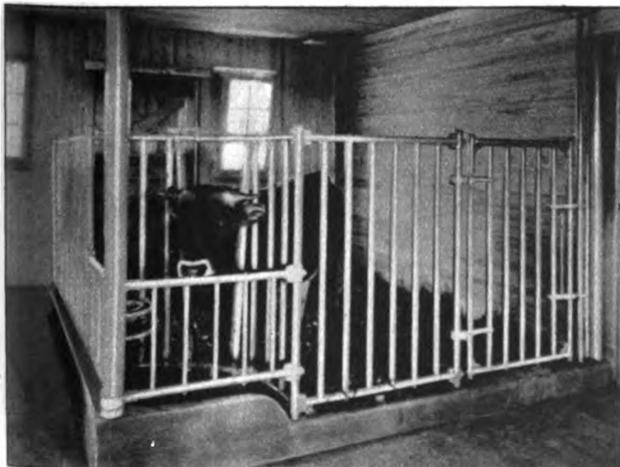
ELECTRIC light, electrically pumped water, and the use of electric motor power eases the monotonous daily tasks of properly caring for barns and farm animals.

The barns of the Model Farm have been carefully designed. The broad center runway expedites the bringing in of supplies. The cows face windows, which open outward at the top. Below the windows, in the sunlight, is the sanitary feed trough. Ventilating shafts, set at frequent intervals, increase the comfort of stock and diarmen.

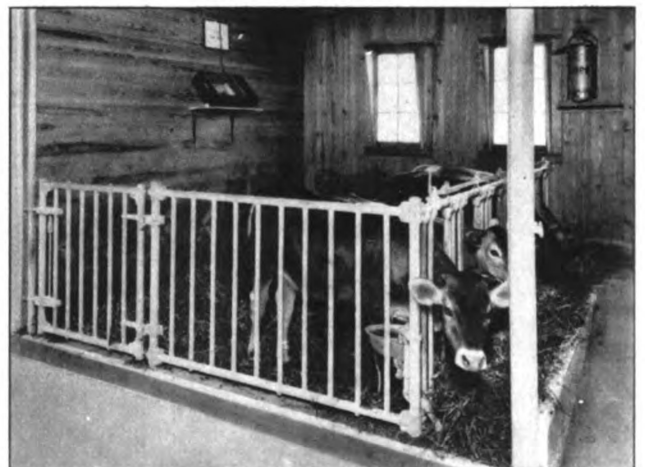
The self-filling drinking cups are made possible by the automatic electric pumping system on the farm. The water is slightly warmed from standing in the individual cups, and this, together with the fact that the water is always ready, has been found to increase the amount of milk produced. Water taps are located at convenient places in the barn and other buildings for attaching a hose and flushing the floors. The use of the electric vacuum cleaner for grooming dairy cows is a great aid to sanitation, removing loose hair from flanks and udder. This grooming machine also has currying and other attachments.

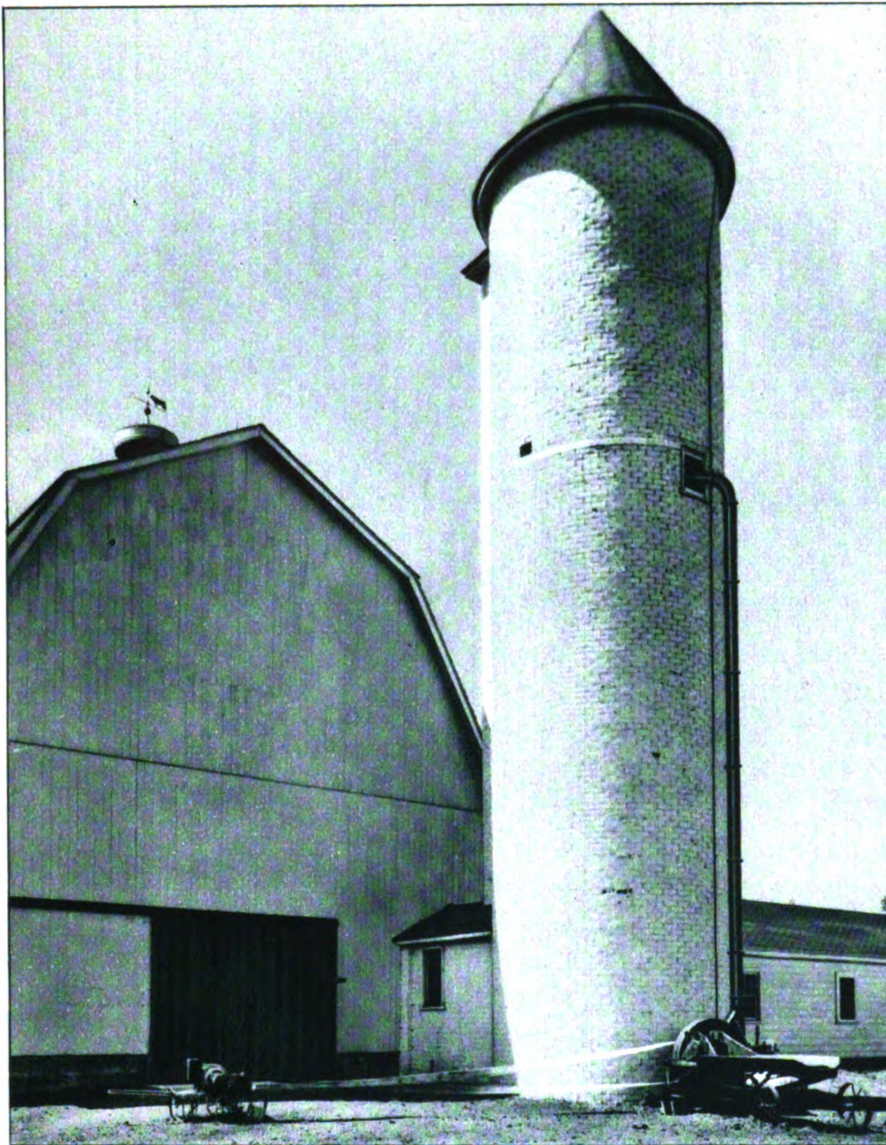
The farmer usually has considerable corn, grain, and feed to handle. An elevator on this work saves much hard labor. Furthermore, it makes possible the use of buildings of greater heights for storage and often a part of the barn directly above the feeding alleys. This, of course, represents a material saving in storage cost and in the labor of feeding. At the Model Farm the grain bins are located in the loft of the dairy barn and an electric elevator is in use.

*Registered Brown Swiss Bull
in his pen at Model Farm*



*Brown Swiss Calves
Born on the Model Farm*

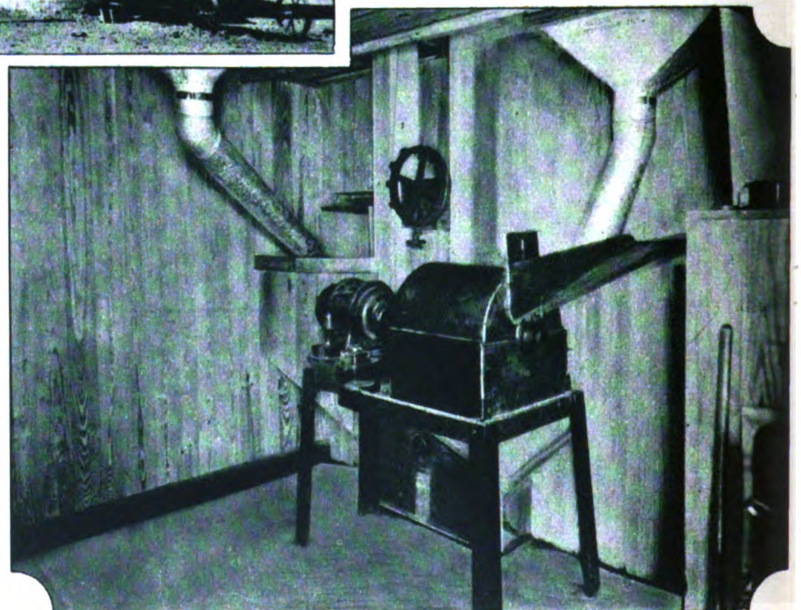


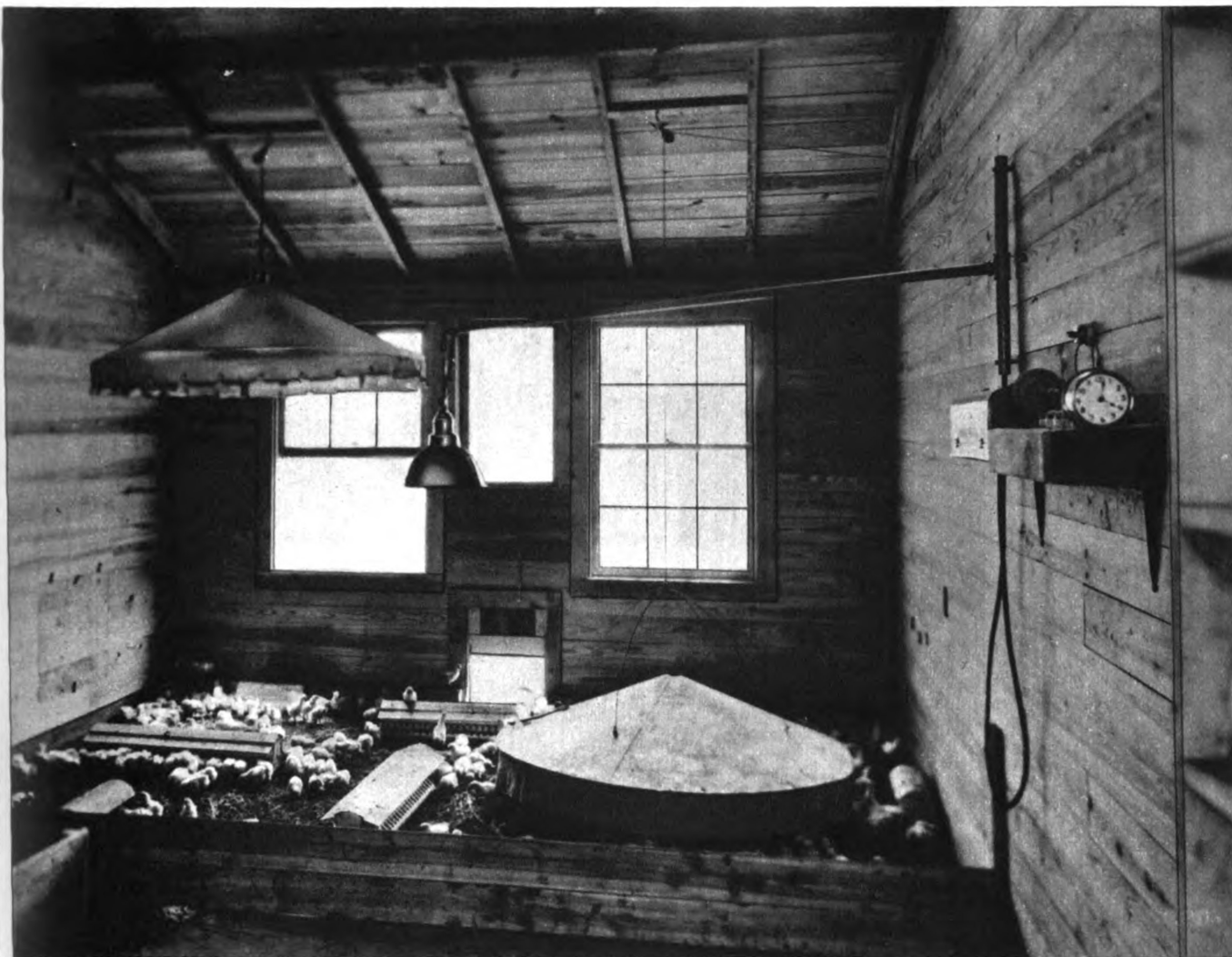


Electric power for cutting ensilage and filling the silo is coming into use. Equally indispensable is the motor-driven hay hoist.

The feed grinder below is driven by electric power. Electricity also elevates the grain to overhead bins in the barn loft.

One of the special features worth noting is the fact that electric outlets are to be found at convenient locations in all farm buildings, for operating such appliances as the electric groomer or portable electric motor





Ultra-Violet Ray Equipment

Electric Chick Brooder in Operation

POULTRY AND HOGS

THE Model Farm has stocked White Wyandotte chickens and Hampshire hogs. The progressive farmer finds electricity an especially profitable investment for poultry raising.

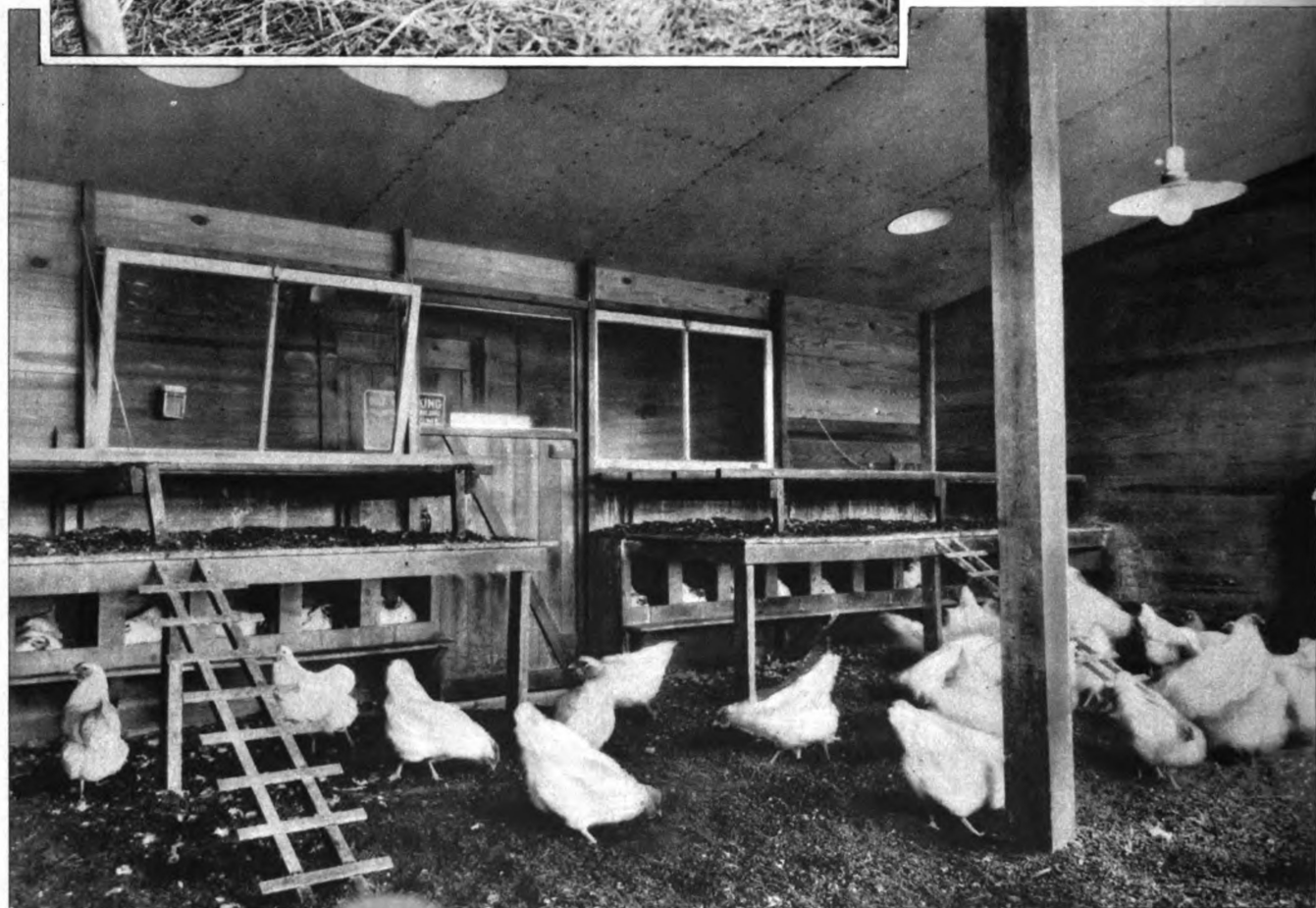
Ultra-violet ray treatment of baby chicks is simple to administer and has been found the means of hastening healthy growth and lowering the death rate. The use of electric light to lengthen the shorter days of the year, results in an increased production of eggs at the time of year when higher market prices prevail. By attaching an alarm clock to the electric switch, light is turned on automatically at the hour desired each morning.

Electric brooders of various types have proved very successful in preventing chilling and overheating. Automatic control devices maintain even temperature and minimize the cost of operating the brooder. In the electrically heated incubator, an even temperature is maintained by thermostatic control. All fuel-tending is thus eliminated at a great saving of time and labor.

Electricity also provides protection against chicken thieves. The cost of leaving the chicken yard lighted all night is insignificant, and an alarm signal can also be contrived inexpensively.



Electrically pumped water piped to convenient locations is important in caring for hogs. The pens at Model Farm are of improved design, are well lighted and easy to clean. Convenience outlets have been installed in the hog house for connecting portable electric heaters used in caring for young pigs during severe weather.



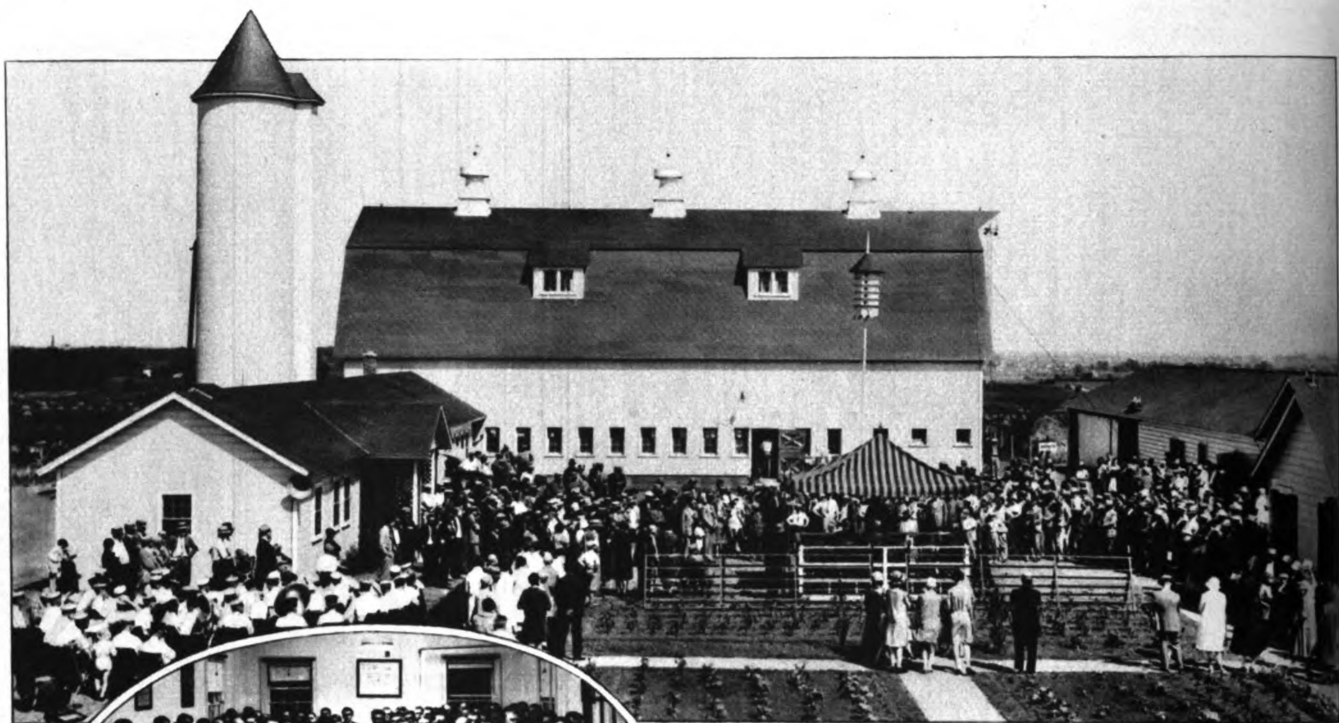


THE EXHIBITION HALL

THE EXHIBITION HALL gives space to a continuous exhibit of all types of electric and gas equipment approved for rural use. No attempt is being made to display every machine, but a wide variety of equipment is shown in operation during the year. Farmers are urged to come here for reliable information concerning the operation of electric and gas equipment.

Among the featured items for the home are an electric range with time and temperature control, an electric washer and an electric ironer. Several types of farm pumping equipment, a vegetable dehydrator, a large electric incubator and a farm chore machine are also on display. Another exhibit of special interest is an electrified work bench fitted with the newest electric repair equipment.

The switchboard which controls all uses of electricity on the Model Farm is located at one end of Exhibition Hall. It is always recommended that electric switches and meters be grouped at one point centrally located on the premises.



Evening lecture meeting at the Farm.

Above: Some of the Model Farm visitors on opening day.

Right: Lake County farmers attending dairy feeding school in Farm office.



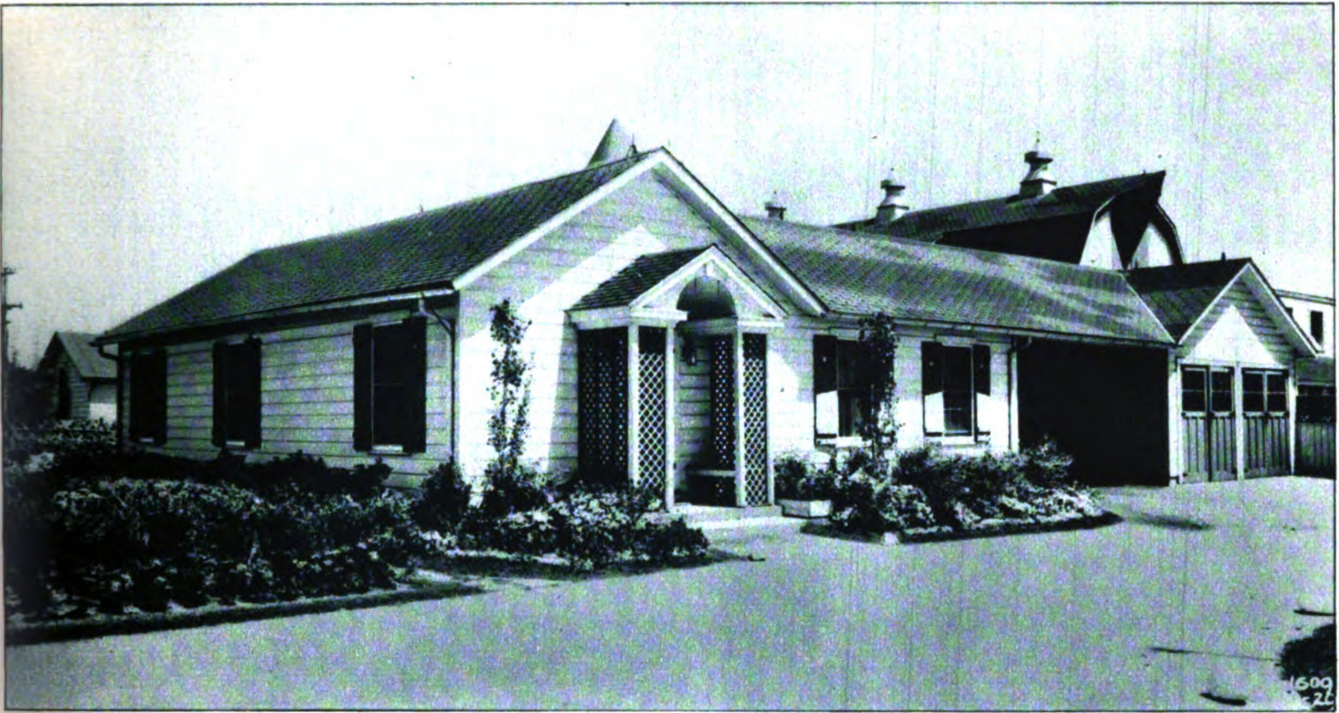
Above: 4-H Club girls at the Farm during Chicago's International Live Stock Show.

Below: Group of 50 prominent Texas farmers and business men at the Model Farm during inspection tour of the Middle West.



Lake County farmers picnicking in grove behind Farm buildings.





At the left of the driveway to the farm courtyard is the farm office building. Here accurate records of farm operations are maintained, and information of interest to farm customers is available.

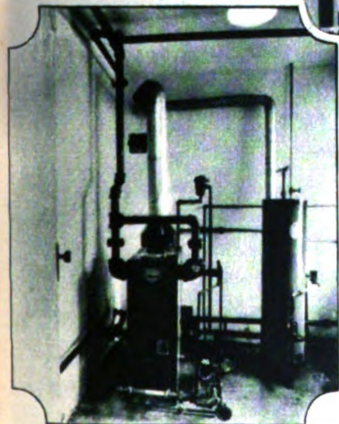
Farm Bureaus, county farm advisors, members of Boys' Clubs and Girls' Clubs are made welcome at all times and every effort is being made to assist them in the study of farm electrification and the important innovations it is bringing to modern farming.

Below: Gas-fired equipment which heats the offices and supplies hot water.



This large assembly room is at the service of the public for farm meetings, and farm clubs are especially invited to arrange inspection trips to the Model Farm.

Wash room and ladies' parlor adjoin the farm office.

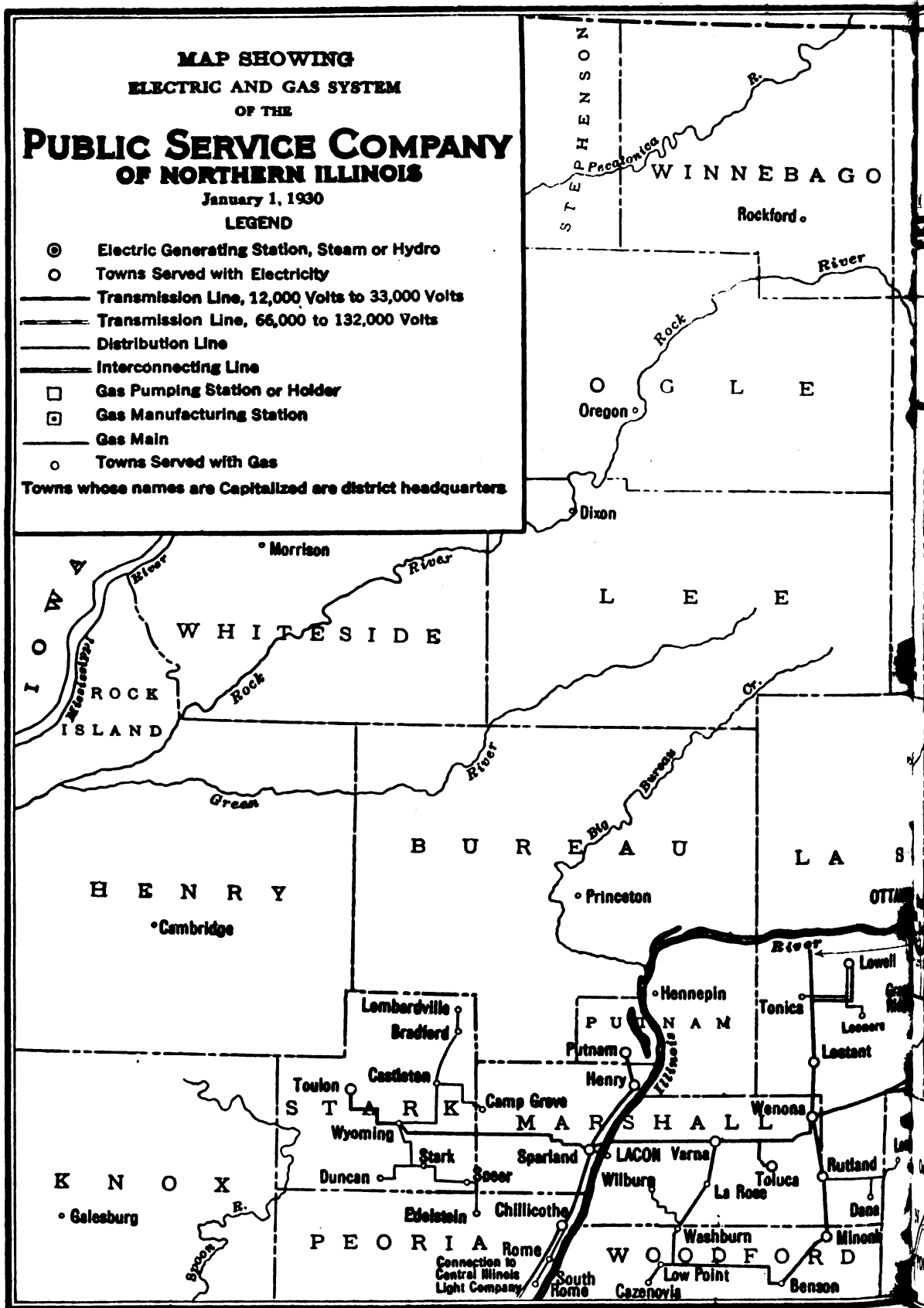


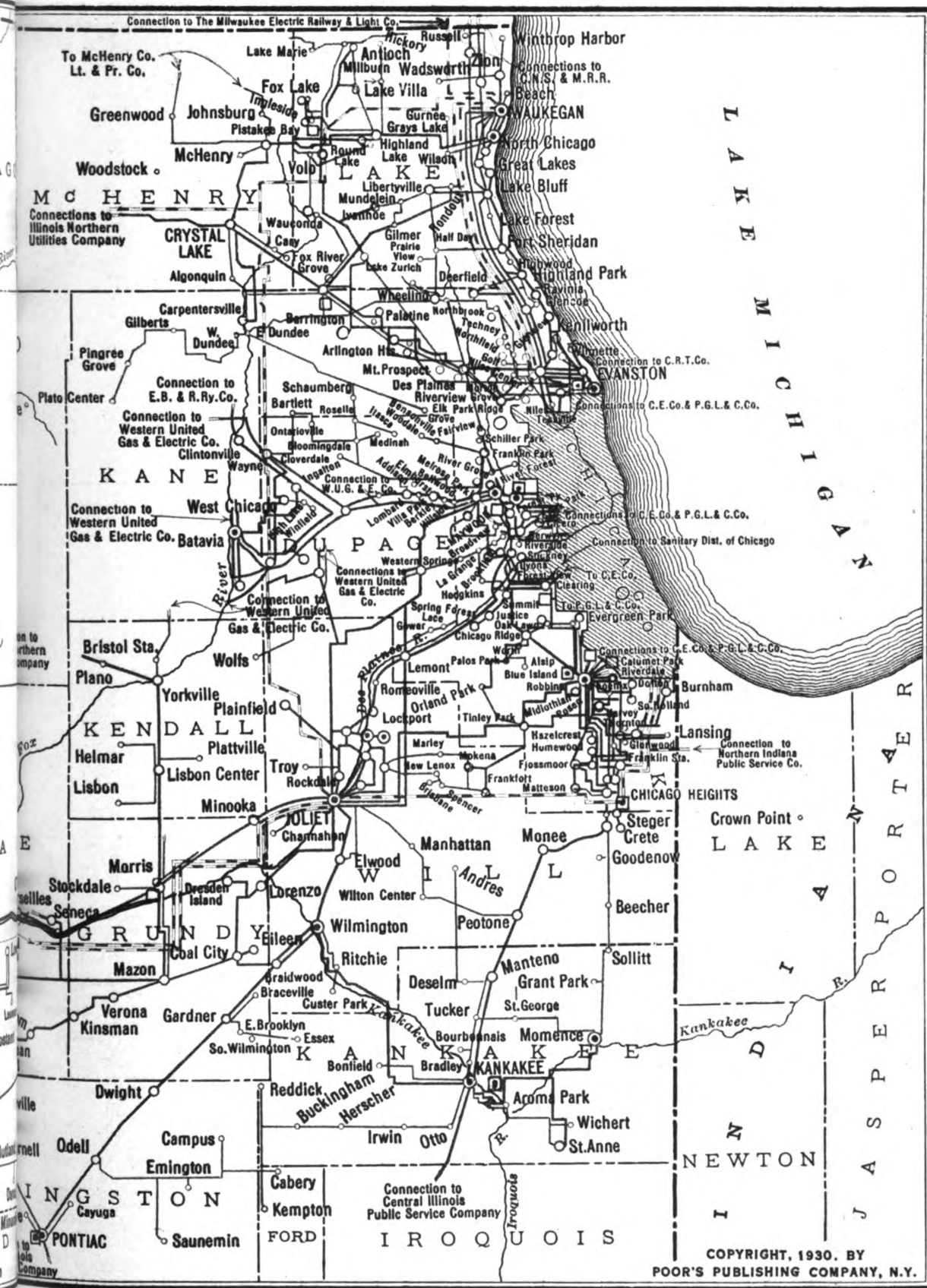
**MAP SHOWING
ELECTRIC AND GAS SYSTEM
OF THE
PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS**

January 1, 1930

LEGEND

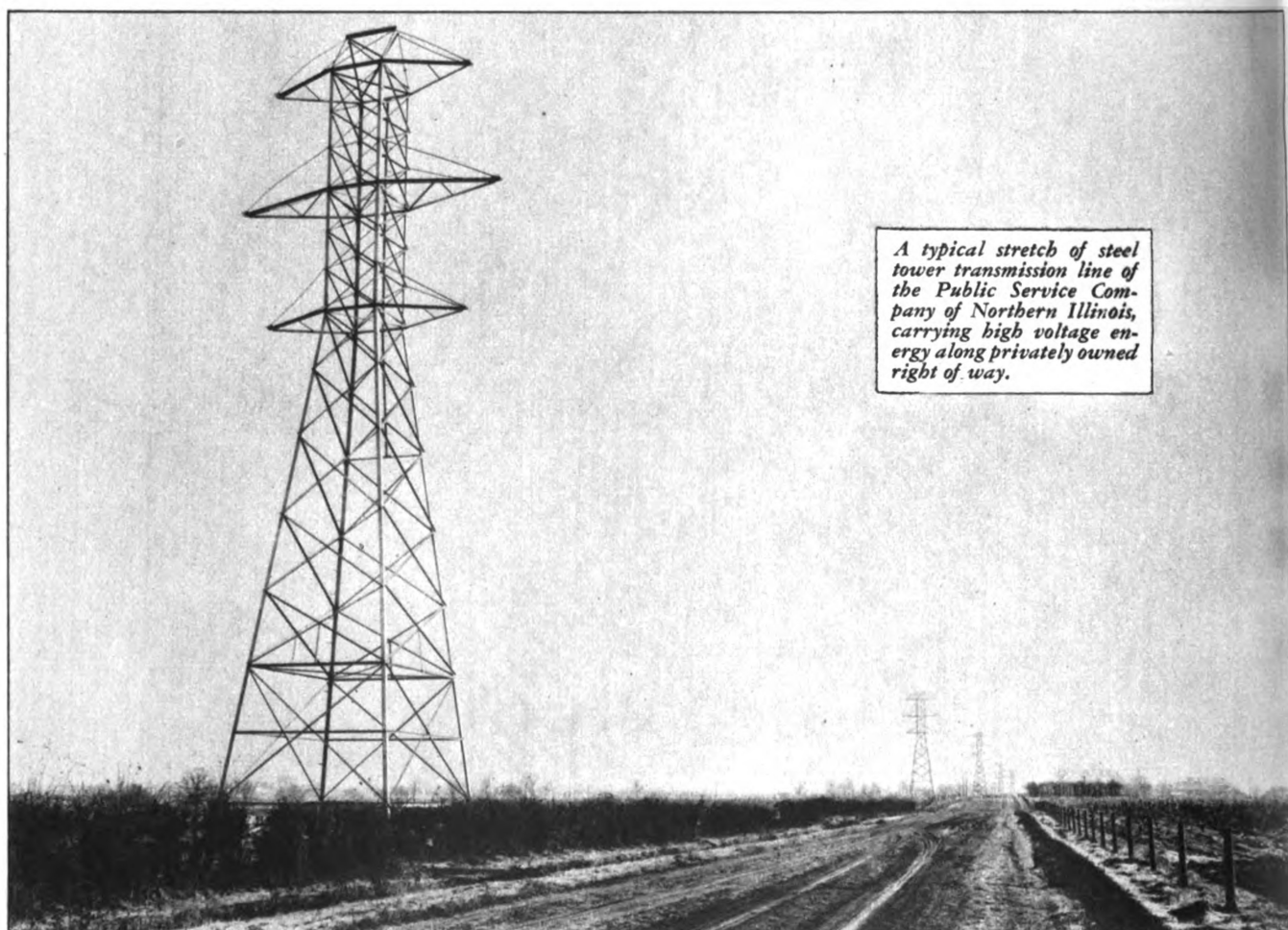
- ⊙ Electric Generating Station, Steam or Hydro
 - Towns Served with Electricity
 - Transmission Line, 12,000 Volts to 33,000 Volts
 - Transmission Line, 66,000 to 132,000 Volts
 - Distribution Line
 - Interconnecting Line
 - Gas Pumping Station or Holder
 - ▣ Gas Manufacturing Station
 - Gas Main
 - Towns Served with Gas
- Towns whose names are Capitalized are district headquarters



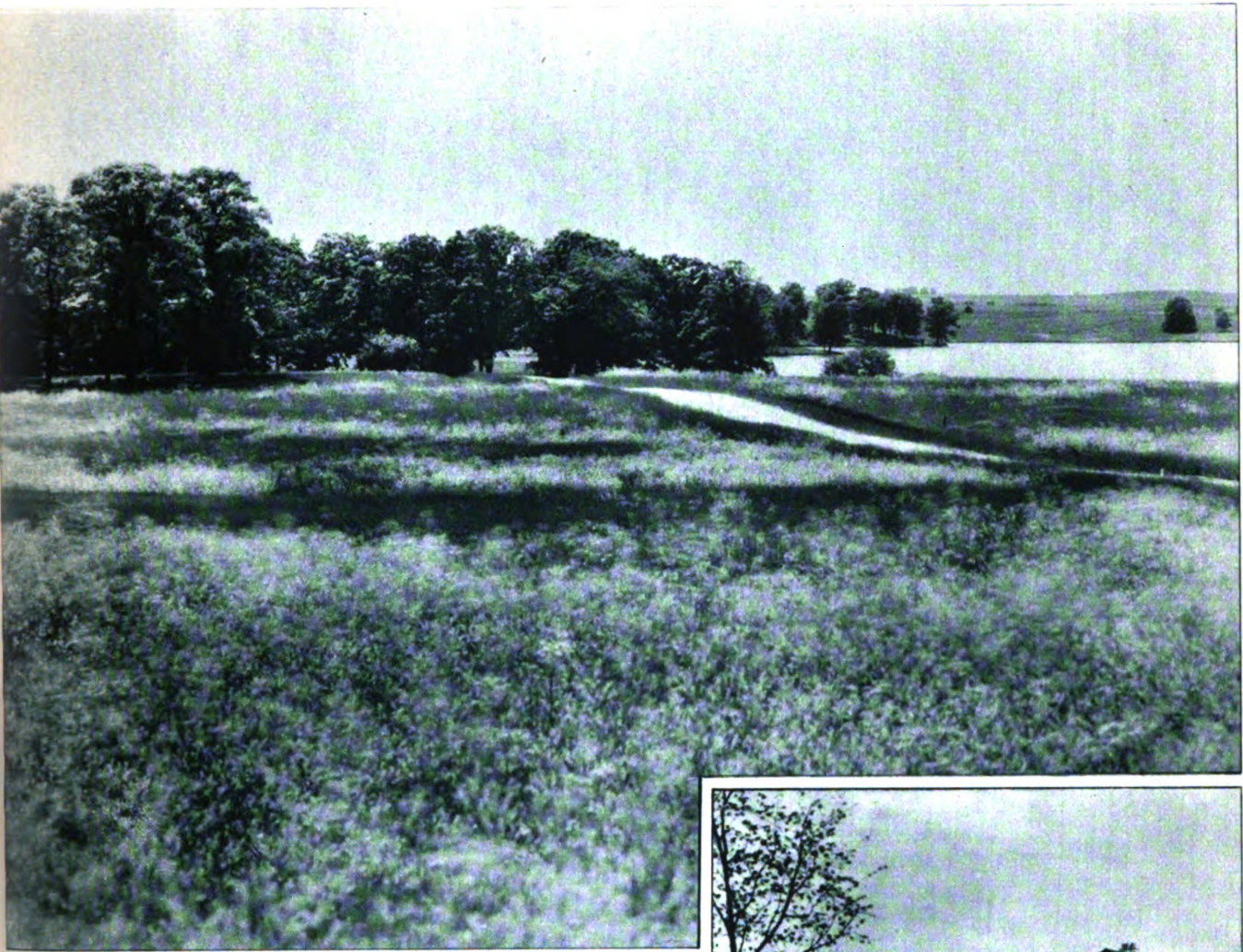


A WISE CHOICE FOR THE LOCATION OF YOUR FARM

A DEPENDABLE source of electricity and gas is the outstanding modern asset of country life of every type. Service is being extended by the Public Service Company of Northern Illinois under a carefully prepared rural development plan, laid out for years in advance. It will develop promptly as needs require, and will, reasonably soon, be available to every farm. In the meantime, large areas are now enjoying the full benefits of modern service. In these areas, located all about Chicago and other Northern Illinois communities, may be found real opportunities for that return to country life which is every man's ideal of home.



A typical stretch of steel tower transmission line of the Public Service Company of Northern Illinois, carrying high voltage energy along privately owned right of way.



THERE'S A HOME IN THE COUNTRY FOR YOU ♪ ♪



SITUATED in the heart of the beautiful Lake County Countryside in a setting of gently rolling fields and wooded hills are the Countryside home sites. Here in these rural surroundings, yet only a little more than an hour away from Chicago's Loop, are to be found all the modern comforts and conveniences usually associated only with city life

and largely made possible by reliable gas and electric service.

For the man or woman active in business who desires a comfortable home with new and delightful activities—for the parents who believe in wholesome outdoor life for growing children—the Countryside home sites represent the ideal combination of rural advantages and urban comforts.

HOW TO GET TO THE MODEL FARM

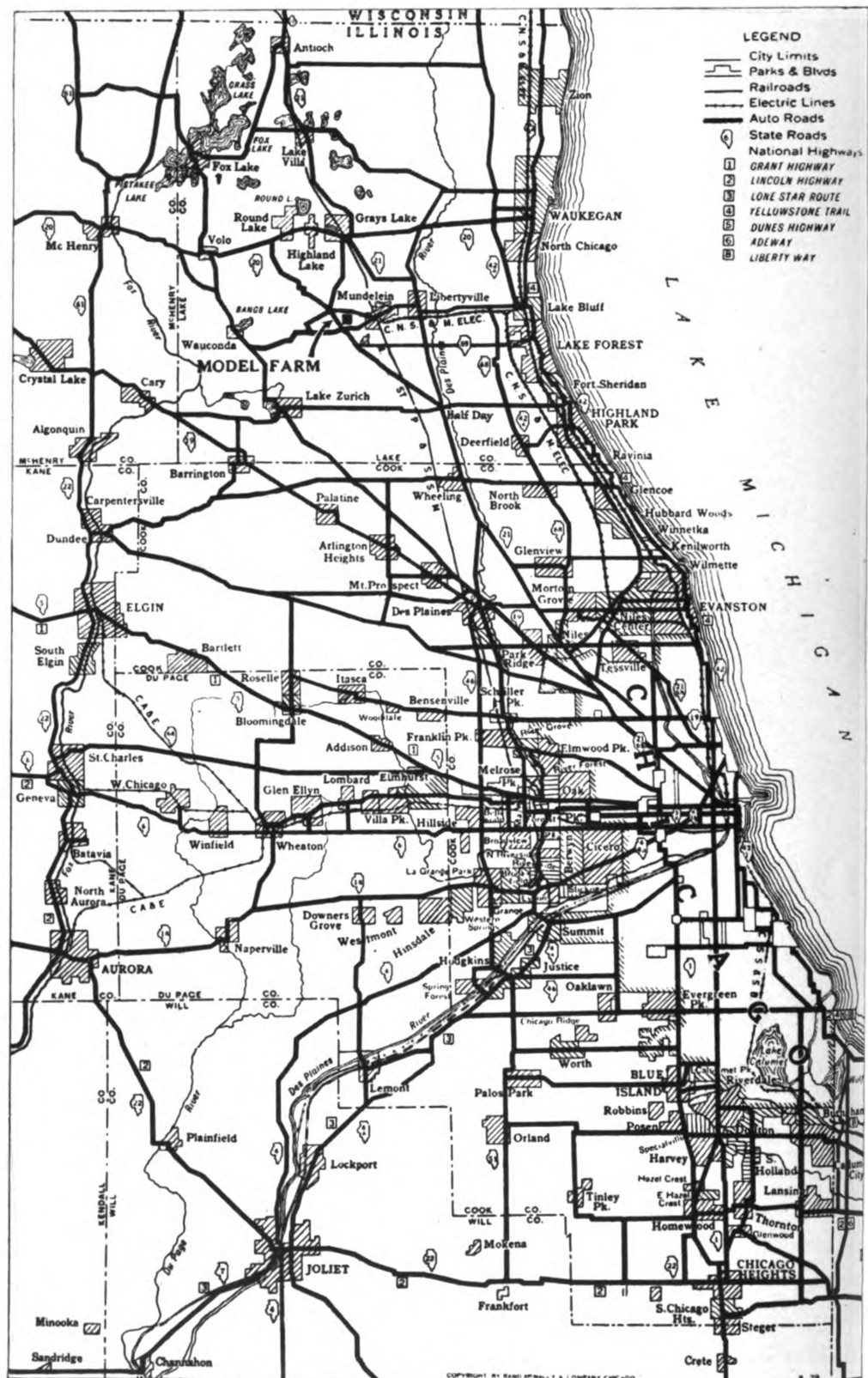
BY TRAIN

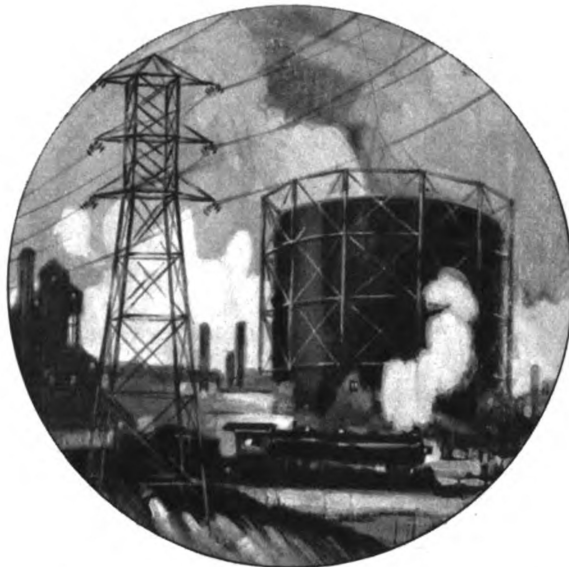
The Model Farm may be reached conveniently by the electric trains of the North Shore Line. Frequent trains run from the Chicago Loop to Mundelein as well as from Waukegan and points north via Lake Bluff, and buses can be arranged for to make the short trip from the station to the Farm. Special trains may also be chartered to run from any point on the Rapid Transit system direct to Mundelein.

BY AUTO

The Farm is a pleasant drive from any place in the Chicago Metropolitan Area. From the city you can travel northward along Milwaukee Avenue (State Highway 21) to Libertyville and then west through Mundelein to the Farm, or you can take State Highway 59 (between Half Day and Libertyville) to Diamond Lake Road, which runs by the Farm. Another route is north along Sheridan Road (State Highway 42) crossing over to Milwaukee Avenue on Dundee Road out of Glencoe or on State Highway 59 out of Lake Forest.

Motorists from the south and west can avoid Chicago by taking the River Road to Milwaukee Avenue, or State Highway 22 along the beautiful Fox River.





PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS

Consequently, a program of crop production was planned which would gradually build up the soil and increase the yield per acre at a nominal cost. The results over a period of three years are shown in Figure #6.

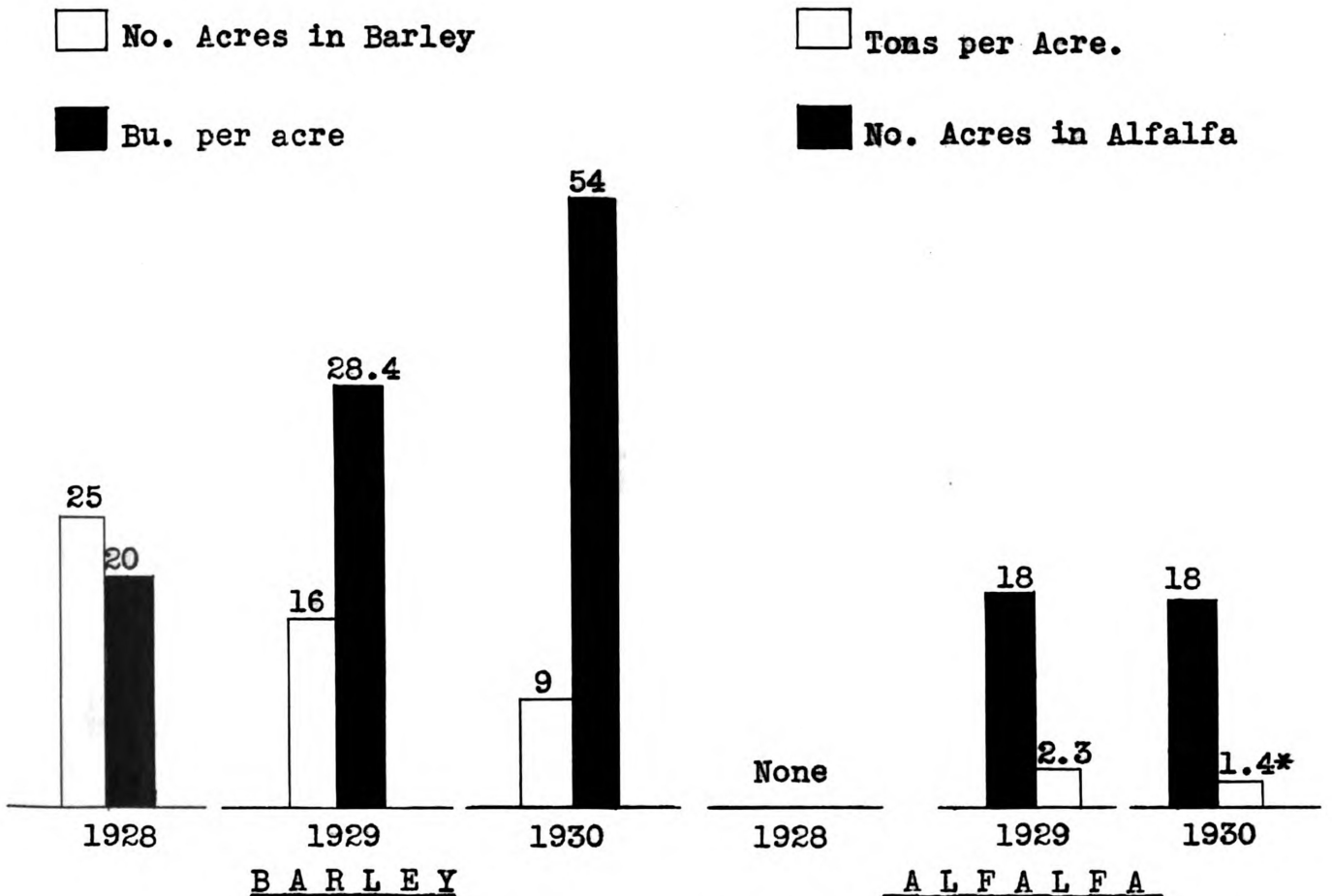
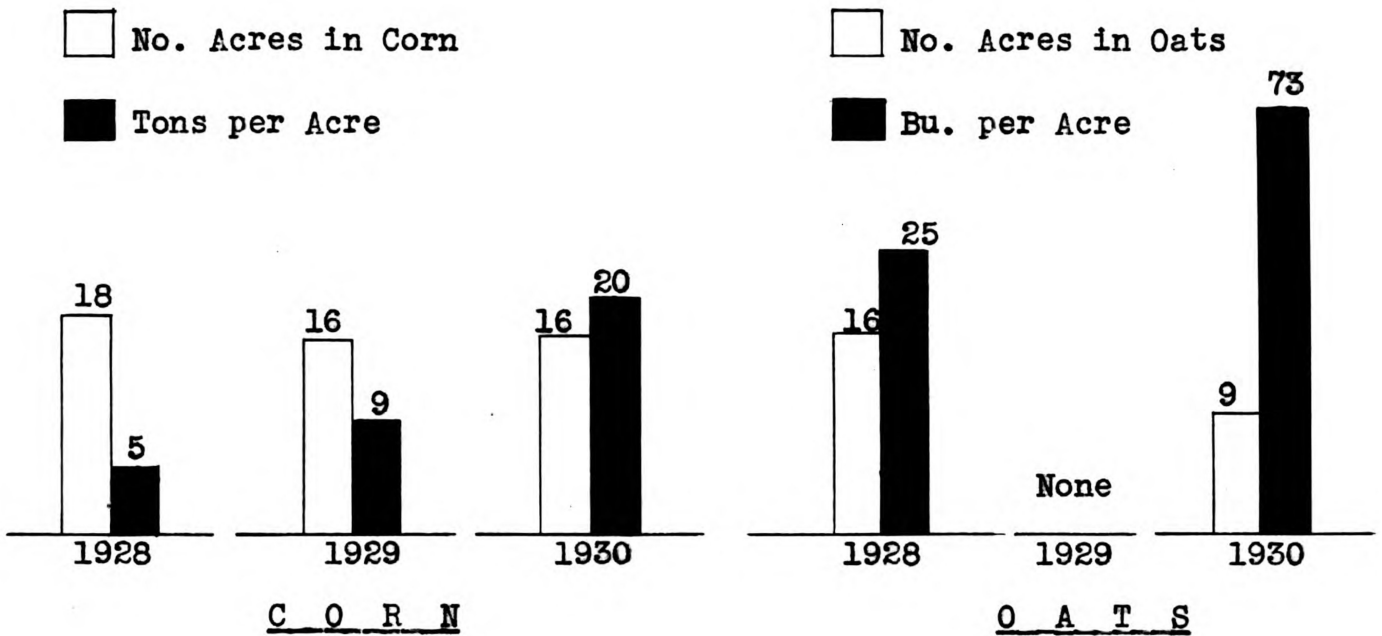
Since the farm buildings would not be ready for occupancy until about August 1, 1928, cattle and swine were not purchased until that date with the cropping plan in operation. We purchased Grade Brown Swiss cows, some young stock, totaling 15 head, and a registered Brown Swiss Bull. The reason for not purchasing registered cows was because we wanted to build up a herd in the same manner as it is done on ordinary farms. The results are shown in Figure #7.

The biggest problem in connection with operating such a project is to consistently increase the attendance of visitors. This was done by continually keeping the place attractive, and through advertising on a generous scale. The attendance chart is shown in Figure #8.

The Model Farm was opened to the public on August 22, 1928--which together with the Five-Year Rural Construction Program should do much to make the electrification of rural areas a success. We were, however, not succeeding in the building of lateral extensions under

MODEL FARM ACTIVITIES

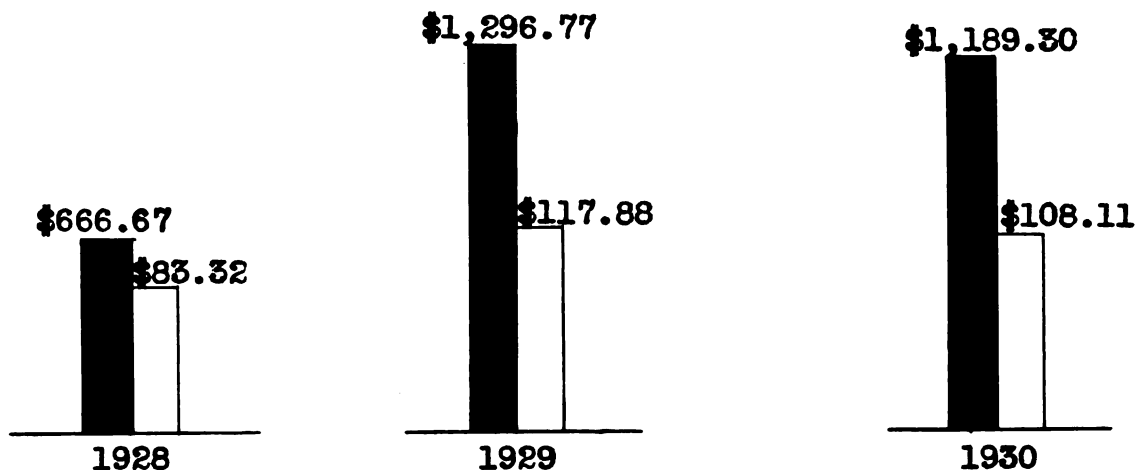
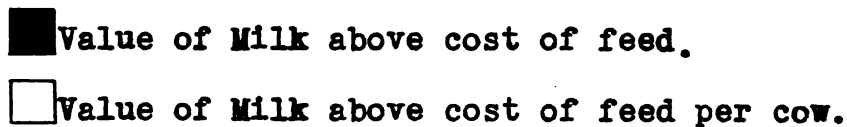
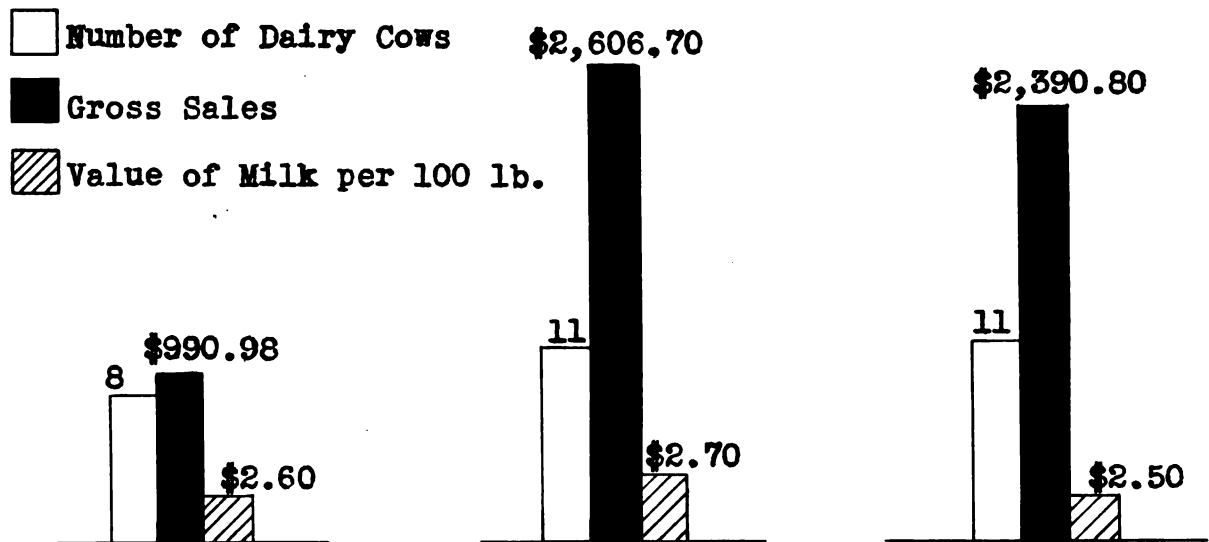
Crop Production Yields



Increased Yields Have Been Due to Careful Management and Application of Fertilizers.

*Approximately one-half of the acreage used for pasture and parking.
(Figure #6)

MODEL FARM DAIRY RECORDS



The Model Farm herd stands very high in comparative production yields on the records of the Lake County Pure Milk Association as to pounds of milk and butter fat.

NOTE: The reduction in value of milk above cost of feed per cow has been entirely due to the fact that the price per one hundred pounds of milk has lowered more in proportion than the cost of feed during the greater part of 1930.

NUMBER OF VISITORS AT THE MODEL FARM OF THE
PUBLIC SERVICE COMPANY OF NORTHERN ILLINOIS

66,214



19,231



August 11, 1928
to
December 31, 1928

34,534



January 1, 1929
to
December 31, 1929

January 1, 1930
to
January 1, 1931

TOTAL ATTENDANCE - - - 119,979

Representing 48 States of the United States, District of Columbia,
Alaska, Phillipine Islands, and 18 Foreign Countries

(Figure #8)

the advance deposit agreement. Farmers and others outside of municipalities apparently were not in position to advance the cost, and about this time various utility companies had developed policies under which the farmer paid a service charge but was not required to advance the cost of the extension.

With those prevailing conditions, a new policy for extending electric service, called the Farm Line Extension - Electric Service Agreement, was evolved and approved by the Illinois Commerce Commission, to become effective April 1, 1929. This policy was only adopted after making a study of some fifty-five policies that were in effect over the entire state. Farmers only pay a minimum electric light and power bill in proportion to the length of line extension and transformer capacity required to serve them. (Figure #9)

Coincident with the development of a new policy, we began to select men from the graduating classes of the various colleges and universities located in several states. Their duties, after a period of training, were devoted entirely to helping the farmers with their gas and electric problems, and to sell them equipment which will be suitable for their use.

FARM LINE EXTENSION — ELECTRIC SERVICE AGREEMENT

(Alternating Current—60 Cycles—115/230 Volts)

MEMORANDUM OF AGREEMENT, made by and between PUBLIC SERVICE COMPANY of Northern Illinois, its successors and assigns, hereinafter called the "Company", and....., Owner of the farm premises, or other customer located adjacent to an existing "Farm Line Extension", hereinafter described, hereinafter called the "Customer".

Witnesseth: That for and in consideration of the mutual covenants and agreements hereinafter contained, the parties hereto agree with each other as follows:

Customer Requests Service.

1. The Customer requests the Company to furnish, in accordance with the terms hereof, electric service (alternating current, transformed to approximatelyvolts,-phase, 60 cycles) for power, electric lighting, cooking and other purposes on and about the premises owned by the Customer located....., in Section.....Township, Range.....,Principal Meridian, near.....County, Illinois.

Term. Contracts for Service and Minimum Bills Thereunder.

2. The Customer agrees to accept and use, for a term of not less than fifty (50) months, electric service under the Company's standard Rates and Terms and Conditions of service as filed with the Illinois Commerce Commission, and agrees to sign the Company's standard form of contract for each class of service taken and to pay all bills as they accrue for service under such contracts, and further agrees that the minimum bills to be paid under such contracts for any month shall total not less than the monthly minimum amount hereinafter stated.

Rural Highway Electric Line Extension.

3. In consideration of the agreements on the Customer's part as noted above and of his signing said contract or contracts for electric service, the Company agrees
 - (1) to furnish and install at its expense such rural highway electric line extension as shall be necessary to serve the Customer, providing such extension, or the Customer's proportionate part thereof, if more than one Customer is served from such extension, including such transformer as is necessary to serve the Customer, shall not cost in excess of fifty (50) times the minimum monthly amount which the Customer agrees to pay the Company under the terms hereof, and
 - (2) in the event that such extension be installed, to furnish to the Customer electric service in accordance with the terms of such contracts and of this agreement.

Several Customers. Proportionate Minimum Bills.

4. In the event the extension under this agreement is made to serve several Customers, and each of such Customers shall have signed an agreement similar to this agreement, the total monthly minimum bills of said various Customers shall be an amount equal to one-fiftieth (1/50) of the cost of the highway extension and transformers necessary to serve all of said Customers, and such total shall be apportioned among the various Customers in the respective ratios which the sizes, in kilowatts, of the transformers required to serve them, respectively, bear to the total required transformer capacity, in kilowatts. The size of transformer required to serve each individual Customer shall be determined by the Company.

Increased Utilization by Customer.

5. In the event that within fifty (50) months after said highway extension is made hereunder any Customer served from said extension increases his utilization of electricity in such an amount as to require the Company to replace the transformer serving said Customer with a transformer of larger size, such Customer's monthly minimum bill then in effect shall, for the remaining portion of the fifty (50) months' term hereof, be increased by one-fiftieth (1/50) of the cost of the new transformer in excess of the cost of the transformer replaced, and the Customer hereby guarantees and agrees to pay such increased minimum bill for each month of the remaining portion of the term of this agreement.

Additional Customers.

6. In the event that within fifty (50) months after said highway extension is made hereunder an additional Customer, or Customers, shall be served directly from said extension, that is from a point within the extremities of the extension made hereunder without further highway extension, either at distribution or secondary voltage, the Company shall investigate the service conditions of the total number of Customers then served from said extension and shall re-apportion the monthly minimum bills, under this and other similar agreements relating to said extension, among the various Customers then served therefrom in accordance with the new service conditions; thereby reducing the monthly minimum bills of Customers previously served from said extension.
7. If it shall be necessary for the Company to install additional line extension, either along the same highway on which the original extension was made hereunder or laterally thereto, in order to serve an additional Customer, or Customers, such additional Customer, or Customers, shall not be considered as being served over the extension constructed hereunder and no re-apportionment of monthly minimum bills hereunder shall be made.

Sketch and Cost of Highway Extension. Minimum Bills Hereunder.

8. The highway extension made hereunder is shown on the sketch attached hereto and made part hereof.
9. Said sketch shows size of transformer installed, or to be installed, for each Customer, and also shows the total cost of the extension including transformers and the apportionment of monthly minimum bills among the various Customers served from said extension.
10. Said sketch shows said extension to cost.....
(\$.....), including any refund it may be necessary to make under any agreement held by an existing Customer, and the undersigned Customer's monthly minimum bill to be, upon commencement of service hereunder,
(\$.....); such monthly minimum bill to remain fixed for said period of fifty (50) months, subject, however, to adjustment from time to time during said fifty (50) month period in accordance with the terms hereof.

Change of Tenant. Minimum Bills.

11. The Company agrees to waive the above mentioned monthly minimum bill for a period of not to exceed three (3) months in any calendar year, during any period when any of said farm premises shall be vacant on account of change of ownership or tenancy, provided the Customer shall give at least thirty (30) days' previous written notice of such vacancy and shall make satisfactory proof thereof.

Public Buildings. Churches. Schools.

12. It is mutually agreed that public buildings, such as town halls, rural churches and rural schools, may be served by the Company from said highway extension, but shall not be considered in the apportionment of monthly minimum bills among the various Customers served from said extension, and that the owners of such public buildings shall not be required to guarantee or pay minimum bills in excess of minimum bills required of urban Customers owning similar buildings.

Terms and Conditions of Service.

13. The Company's standard Terms and Conditions of service, as filed with the Illinois Commerce Commission, relative to class of service, voltages, types of motors and other equipment required by the Company to be installed by the Customer, as set forth in said contracts for electric service, are hereby made a part hereof.

14. In case a community transformer be used to serve several Customers the Company shall determine the proportionate share of such transformer necessary to serve the undersigned Customer, and such Customer agrees not to make any additions to his connected load without giving the Company ample notice thereof in advance and time to install such larger transformer, if any, as shall be necessary.
15. The Customer agrees to permit the Company to erect, where necessary, said electric line extension on the highway adjacent to or through the premises described herein, to do the necessary trimming of trees, to set anchors where necessary, and to do other things essential to or convenient for the efficient and safe operation of the said electric line extension and to the rendering of service to the Customer, and further agrees to grant such permission to the Company, under its standard forms of permits.
16. The prompt completion of the electric line extension hereunder is contingent upon strikes, fires, accidents, delays of carriers, or other delays unavoidable or beyond the Company's control.
17. The Customer may terminate this agreement at any time if he be not in arrears hereunder and if he shall pay to the Company an amount equal to the sum of the monthly minimum bills that would accrue hereunder for the remaining months of the term hereof.
18. This agreement shall be binding on the parties hereto, their heirs, executors, administrators, successors and assigns, provided, however, that no assignment hereof shall be made by the Customer without first obtaining the Company's written consent.
19. This agreement is submitted to the Customer by the Company on....., 19....., and is void unless accepted by the Customer within thirty (30) days from said date; provided, however, that if said extension is to serve several Customers, as aforesaid, this agreement shall not be binding upon the Company until similar agreements have been executed by all prospective Customers shown on the sketch mentioned above and attached hereto, and provided, further, that it shall be subject to the approval of an Officer of the Company and shall not be binding upon the Company until endorsed with his approval.

Dated.....19.....
Customer

Approved.....19..... By.....

Public Service Company of Northern Illinois

.....
Official Capacity

By.....

Customer's Mailing Address

.....
Print Name

.....
Street

.....
Town

Pl. No.....

**FARM LINE EXTENSION
ELECTRIC SERVICE AGREEMENT**

BETWEEN

Public Service Company of Northern Illinois

AND

Premises _____

Dated _____ 19____

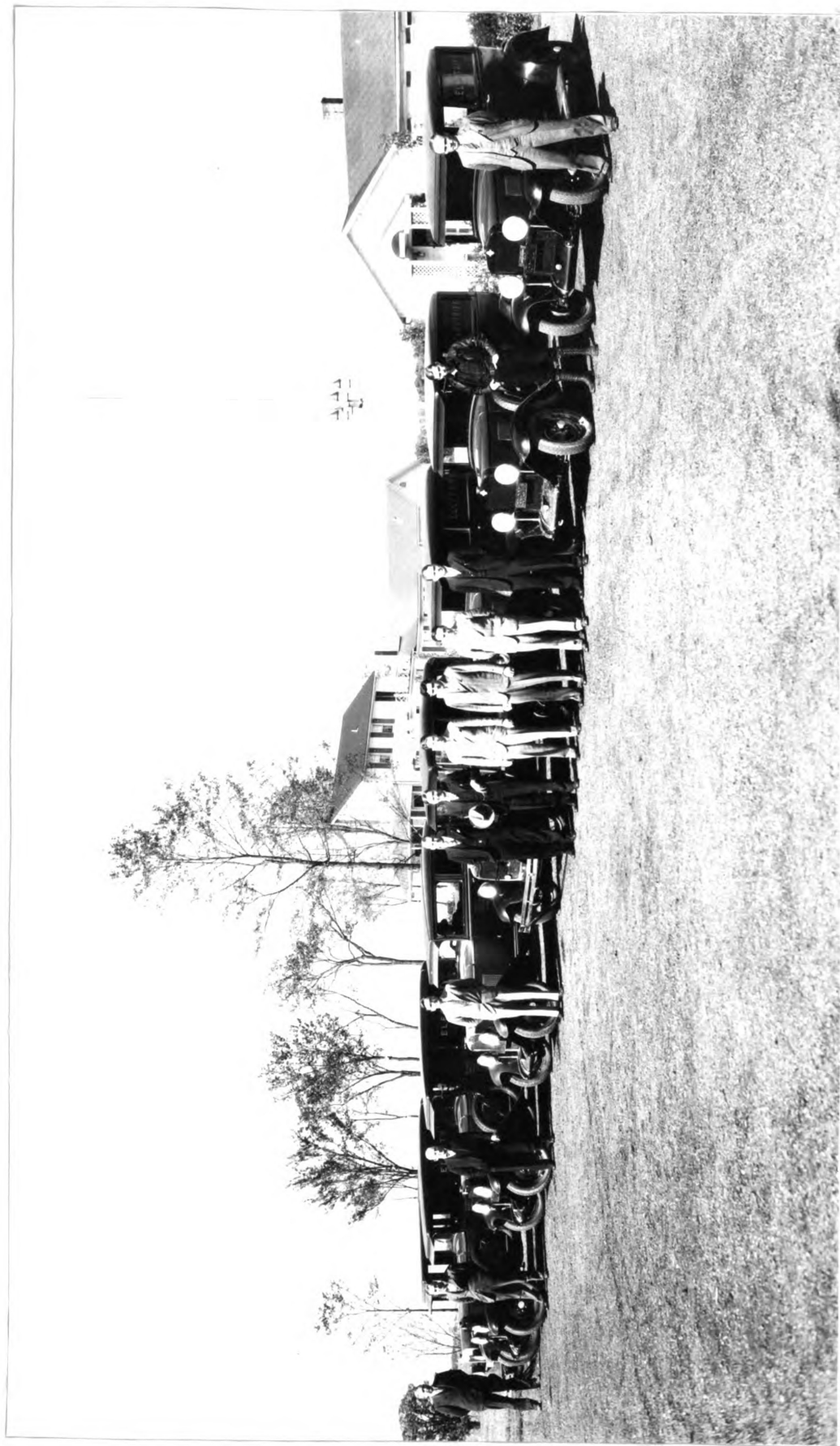
Salesman _____

District _____

We also supplied each man with suitable transportation with the Public Service Company name on the car. (Figure #10) The Company's territory is divided into eleven districts, which required eleven rural representatives. This gave each salesman approximately 2,000 farms to take care of. These men are as follows:

<u>Name</u>	<u>Graduated in:</u>	<u>Year Graduated</u>
A. W. Abbott	Agriculture	1912
R. H. Bloedel	Elec. Engineering	1928
*R. R. Caldwell	Agri. Engineering	1929
*W. Hickman	Elec. Engineering	1926
F. M. Jones	Elec. Engineering	1928
C. V. Kallal	Agriculture	1928
J. M. Luther	Agriculture	1929
R. J. Patton	Commerce	1928
H. C. Rutt	Agriculture	1928
E. B. Scott	Agriculture	1930
R. R. Smith	Elec. Engineering	1928
*T. A. Swigert	Elec. Engineering	1930
G. E. Troxel	Special Training in Wiring	
D. G. Womeldorff	Agri. Engineering	1930
E. L. Wood	Commerce	1922
C. R. Zink	Agri. Engineering	1929

*Working in General Office.



Men Engaged in Farm Electrification Work
Public Service Company of Northern Illinois
October 4, 1929.

(Figure #10)

C. PRESENT STAGE OF DEVELOPMENT

1930 - 1931

9	3
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[illegible]

SILO FILLING DEMONSTRATIONS



Filling Wilbur Swayer Silo

<u>Dist- rict.</u>	<u>Name of Farmer</u>	<u>Nearest Town</u>	<u>Date</u>	<u>Number of Visitors</u>
A	Wilbur Swayer	Gurnee	Sept. 9	30
A	A. H. Pierstorff	Loon Lake	" 10-11	20
A	Charles Sheldon	Grays Lake	" 12	50
A	Earl Henry	Rosecrans	" 15-16	100
E	Fred Converse	Grays Lake	" 9	35
E	William Tobin	Gilberts	" 19	20
E	Otto Metzler	Barrington	" 22	35
J	Irvin Marti	Mokena	" 15	20
J	T. Craughwell	Joliet	" 18-19	25
O	S. R. Wheeler	Plainfield	" 15	10
O	W. F. Tillotson	Yorkville	" 16	10
R.	H. Brinkman	Pontiac	" 9-10	55

Eight 5 h.p. motors and one ensilage cutter were sold as the result of demonstrations, and the rural salesmen reported 22 good prospects for 5 h.p. motors.

FAIRS AND EXHIBITIONS PARTICIPATED IN DURING 1930



Feed Grinder, Silo Filler, Portable Motors,
Water System, and Pump Jack at Antioch Fair

Exhibits of Farm Equipment:

Interstate Fair - Kankakee, Illinois.

State Rural Electrification Conference -
Springfield, Illinois.

Chicago Lighting Institute - Chicago, Illinois.

Antioch Community Fair - Antioch, Illinois.

Farm Bureau Picnic - Pontiac, Illinois.

Will County Pure Milk Association Picnic -
Frankfort, Illinois.

Marshall-Putnam Fair - Henry, Illinois.

International Livestock Exposition - Chicago

Lake County Pure Milk Association and Farm
Bureau Picnic - Model Farm, Mundelein.

Lake County Farmers' Institute - Model Farm.

**Progress Made in Making Personal Contacts
with Key Men and Organizations in Our
Agricultural Territory**

American Farm Bureau Federation.

Illinois Agricultural Association.

Illinois Farmers' Institute.

University of Illinois -

College of Agriculture.

Experiment Station.

**County Farm Advisers, Highway Com-
missioners, and Township
Supervisors in our Terri-
tory.**

Agricultural Research Problems

Experiments to determine the effects of electric light upon flowers and plants were begun in the early part of 1927. This work had such encouraging results that it attracted the attention of professors in horticulture at Purdue University.

In 1929 the results were presented, together with prospective available business for extended use of electricity in greenhouses, to the Utilities Research Commission with the idea of having Purdue University carry on this research work. The Committee acted favorably on the project, and arrangements were made to begin the work in 1930.

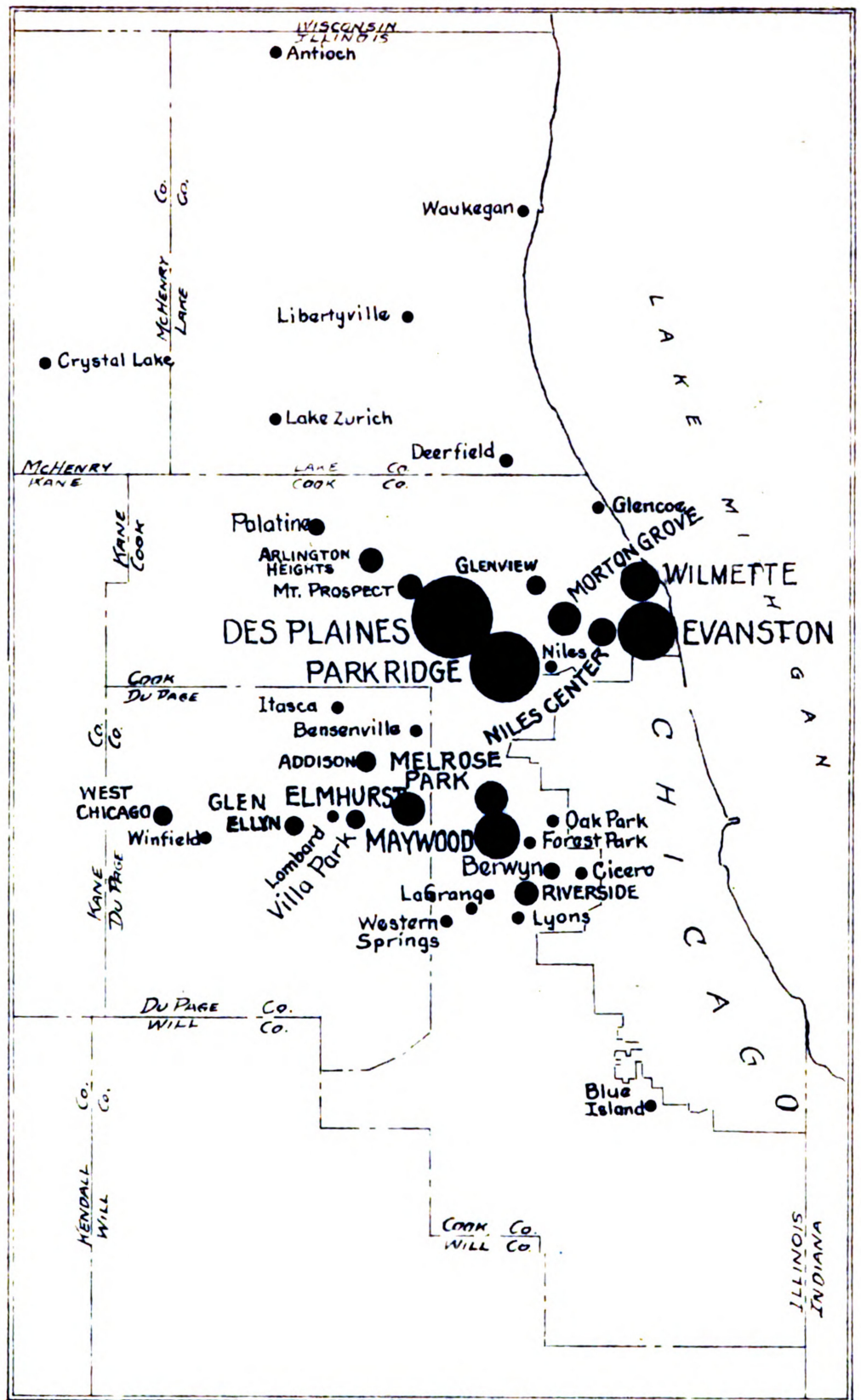
Forty-eight kilowatts of lighting are now installed in the horticultural greenhouses at Purdue University. The current was turned on December 1st, and the research work is well under way. This project is known as "Utilities Research Commission Case No. 36; Acceleration of Plant Growth".

A brief statement of the possibilities is presented on the next page.

Possibilities for Use of Electricity for Lighting
in Greenhouses in Public Service Company
Territory near Chicago

Number of commercial growers - - - - -	159
Average area under glass per greenhouse based upon 1920 Census Report (sq.ft.) - - - - -	17,780
Estimated total area under glass (sq.ft.) - - - - -	2,827,000
Possible area to be lighted - 20% (sq.ft.) - - - - -	564,000
Wattage per sq.ft. - - - - -	50
Total kilowatts required - - - - -	28,200
Hours' use per year - 5 hr.per night for 100 nights -	500
Total kilowatt hours per year - - - - -	14,100,000

The above figures are not intended to be a close estimate, but do show the possibilities in the event that wide use is made of greenhouse lighting.



LOCATION OF LARGE COMMERCIAL FLOWER GROWERS

IN TERRITORY SERVED BY

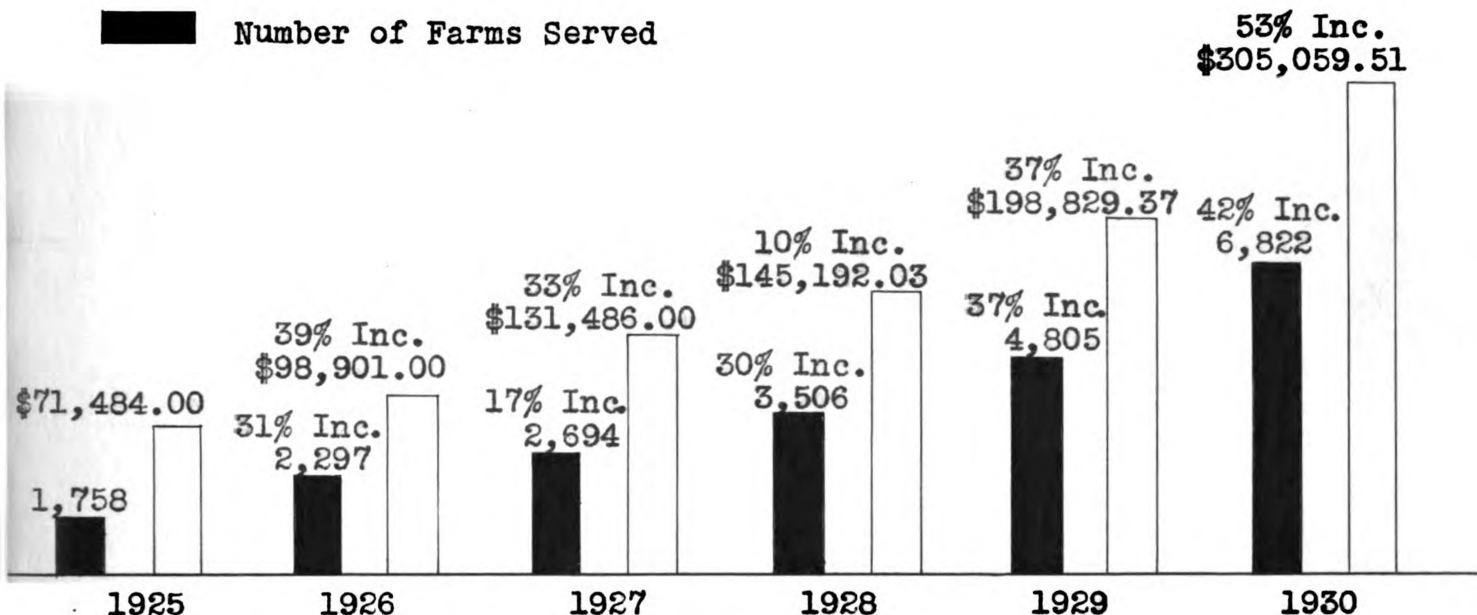
PUBLIC SERVICE COMPANY
OF NORTHERN ILLINOIS

EACH DOT REPRESENTS ONE OR MORE GREENHOUSE
ESTABLISHMENTS. SMALLEST = 1; LARGEST = 26

TOTAL NUMBER - 159

F A R M E L E C T R I F I C A T I O N P R O G R E S S

Gross Revenue
 Number of Farms Served



Miles of farm line built during 1930 - - - - - 466.44
 Total miles in operation (Reported by Districts) - - - - - 2,226.52

Farmers signed on Farm Line Extension - Electric Service
 Agreement - - 1,276; Number connected - - - - - 1,206
 Yearly Gross income from minimum bills signed for - - - - \$98,234.40

Number signed on Rural Electric Line Extension - Advance
 Deposit Agreement - - 160; Number connected - - - - - 143
 Number connected on Five-Year Rural Extension Program - - - - - 688

Total number connected in 1930 - - - - - , - 2,017

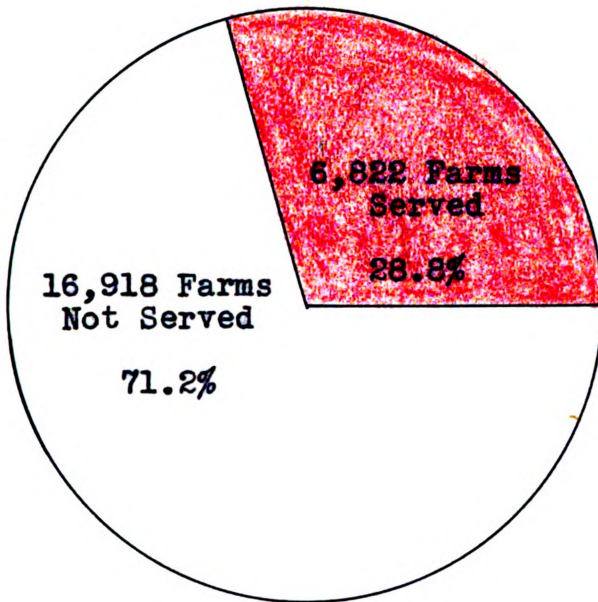
Total yearly gross revenue estimated from all agreements - \$137,910.00

M E R C H A N D I S E S A L E S T O F A R M E R S By Public Service Company.

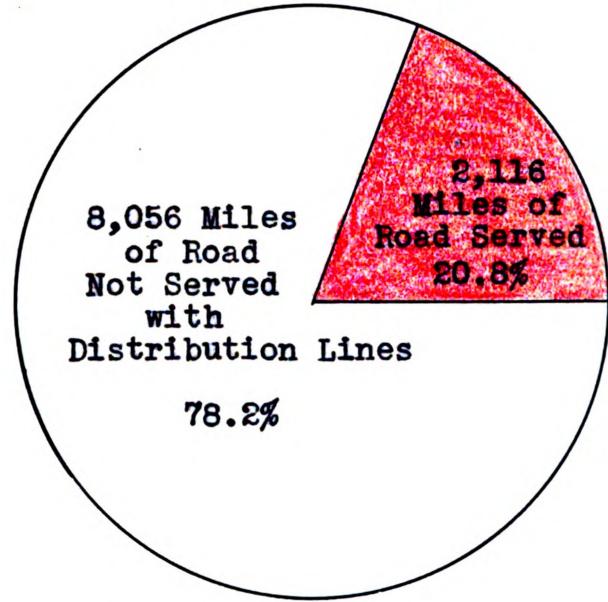


FARM ELECTRIFICATION SURVEY

* 23,740 Farms in the Territory



10,172 Miles of Road in the Territory outside of Incorporated Towns



Do you know that the Public Service Company of Northern Illinois now serves more farms than the total number of farms in the States of Rhode Island and Nevada?

Do you know that of the total number of farms receiving Central Station Service in the State of Illinois, the Public Service Company of Northern Illinois serves over 35 per cent?

Unusual opportunities await the designing engineers and the construction engineers who have the vision and stamina to build rural lines of good quality for \$600.00 per mile.

Sales cannot be expected to increase with stationary and rising costs of construction. At \$600.00 per mile, a great many families could be provided with work, and a large number of farm customers could be obtained.

Our present costs are too high.

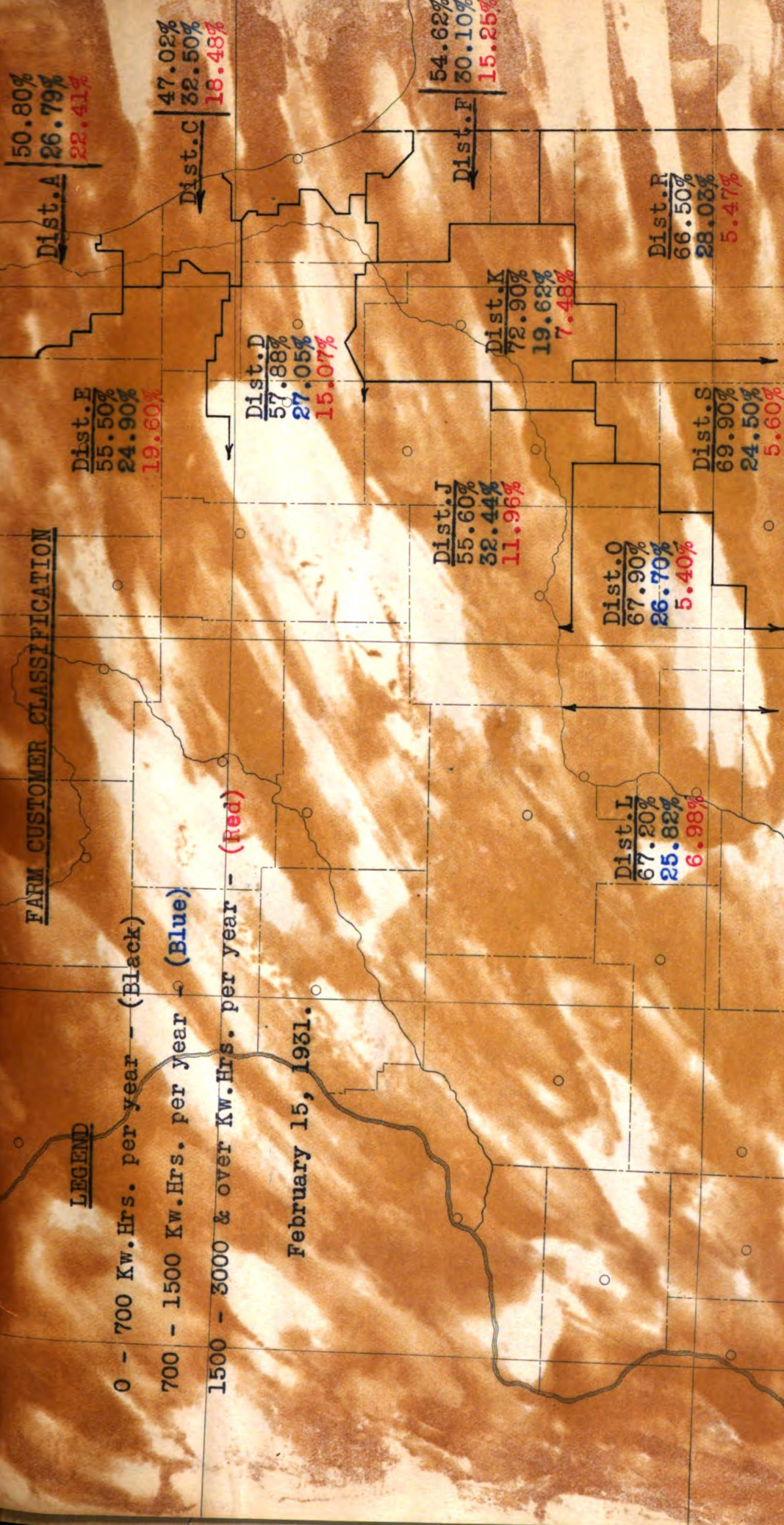
(*The difference between 1925 figures and 1930 figures is accounted for in farms being divided into subdivisions, golf courses, etc.)

FARM CUSTOMER CLASSIFICATION

LEGEND

- 0 - 700 Kw.Hrs. per year - (Black)
- 700 - 1500 Kw.Hrs. per year - (Blue)
- 1500 - 3000 & over Kw.Hrs. per year - (Red)

February 15, 1931.



AGRICULTURAL SALES DEPARTMENT ORGANIZATION CHART

Reports

Monthly Report
Ext. Electric

Farm One Sale
and
Farm Sales Class
(Statistical)

Monthly Summary
Farm Line Extension
Electric Service
Agreement and
Electric Line Extension-Advance De
Agreement for
Dr. Leonard's

Five-Year Extension Program
(Yearly Report)

Combined Farm Extension
Program

Yearly Report of
Electric Extension
Model Farm Activities

District Yearly
on Farm
Electricity

Periodical No. of
Model Farm Activities

Periodical and
Reports

Farm Electrification
Report to State
Electric Association

Progress Report

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Aug 20 '64 ROOM USE ONLY

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