U. of M.

The loss from wheat rust in 1916 was over 200,000,000 bushels. It may be greater this year. The common barberry increases wheat rust; the Japanese variety does not. Cut out the common barberry and protect the wheat. Wheat means bread; the common barberry is useless. Which will you protect?
OFFICE OF THE ASSISTANT DEAN

The University of Minnesota
Department of Agriculture
University Farm, St. Paul

May 29, 1918.

Memorandum to Dean Jackson:

I am transmitting herewith thesis entitled "Land Settlement Survey In The Cut-Over Lands of Northern Minnesota" by John C. Gillilan for the degree of Master of Science, together with formal report of Committee of the Graduate School recommending that same be accepted in partial fulfillment of the requirements for the degree of Master of Science.

E. Freeman

Enc. Chairman, Agr. Graduate Group Committee.

THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Thesis

The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by John Columbus Gillilan for the degree of Master of Science. They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science.

E. Dana Durand
Chairman

Andrew Boss

E. A. Cheyney

..........1918

L A N D S E T T L E M E N T S U R V E Y I N T H E C U T-
O V E R L A N D S O F N O R T H E R N M I N N E S O T A.

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science, Department of Agricultural Economics, University of Minnesota.

John C. Gillilan.

May 1, 1918.

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L A N D S E T T L E M E N T S U R V E Y I N T H E C U T-O V E R L A N D S O F N O R T H E R N M I N N E S O T A.

Chapter I - History and General Conditions.

The forests of Minnesota originally covered two-thirds of the state area. The "big woods" of mixed coniferous and deciduous forests extended east of a line directed northwestward from Morrison County in central Minnesota to Roseau County on the Canadian border. The distinctly hardwood belt lay to the south and west of this region, continuing as an unbroken forest to the big bend in the Minnesota River, from which point it extended in more or less broken areas along the lakes and streams to the southern boundary of the state.

Lumbering has formed a most important industry in the history of Minnesota. It began on the St. Croix and Rum Rivers in the early forties, gradually pushing its way up the Mississippi into the heart of the forests. Millions of logs were cut each year and driven down the river to St. Anthony Falls and intermediate points to be sawed into lumber. Virgin pine exists to-day only in comparatively small and scattered tracts while the hardwoods have been exploited less extensively and remain in wider areas and in greater quantities. Second growth hardwoods have supplanted this once vast timber area and together with the stumps and trash left by the lumbermen, form the great cut-over region of the state.

Settlement in the hardwood districts to the south was developing rapidly by 1860; homesteaders received incentive for agricultural development in the markets provided by the lumbering industry which caused immigration to spread rapidly during this period, gradually pushing northwestward into the Red River Valley where grain raising became profitable on a large scale and until about 1880 was

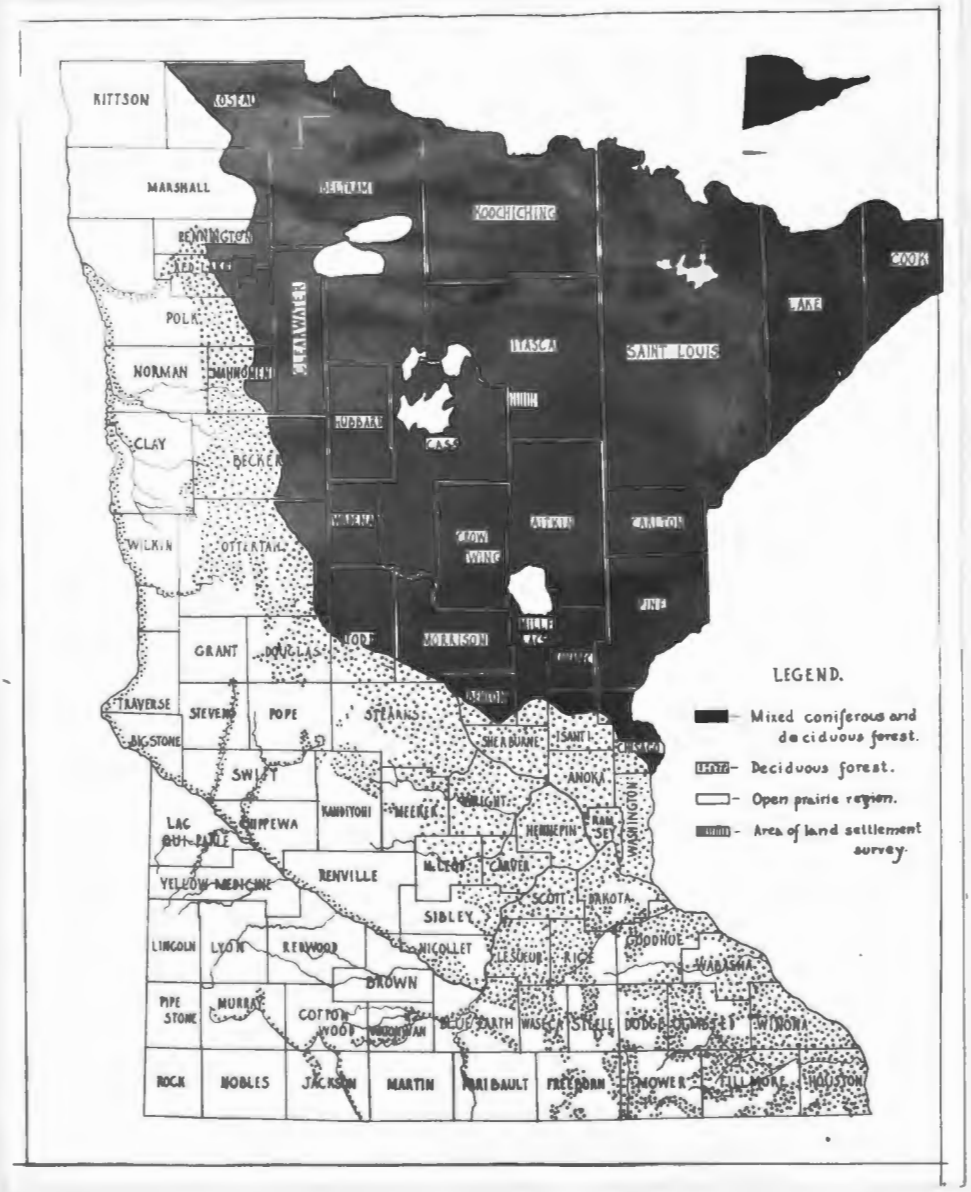


Fig. I Map of Minnesota showing original forest area of state. (After Cox.)

the only type of farming pursued. But the single crop system could not long endure. After a period of decreasing yields and low prices farming became more diversified.

Census figures show that land in farms increased 39.2 per cent from 1880 to 1890, and 28.8 per cent during the next decade. The latter period marks an end of great agricultural extension in Minnesota, since the acreage added to farms

by 1910 had increased only 5.4 per cent over that of 1900. Intensity of cultivation for the state as a whole is shown by the fact that 53.5 per cent of the state area is in farms, 71.0 per cent of which is improved lands, representing 38.0 per cent of the entire state area. A further study of agricultural intensity shows that in 55.0 per cent of the state, 84.0 per cent of the land is in farms, of which 81.0 per cent is improved acreage. The remainder of the state comprising 45.0 per cent of the entire area, and consisting of twenty northern counties*, contains only 15.0 per cent of the land in farms, of which 33.0 per cent, or less than 5.0 per cent of the whole area, is improved lands.

This high degree of intensive cultivation in the well settled portion of the state together with the pressure of increased land values, the high prices of agricultural products in recent years and the possibilities of diversified agriculture in northern Minnesota is extending the boundary of marginal lands in the state into the undeveloped cut-over region. Thousands of people are reclaiming these denuded lands; settlers are scattered over the whole cut-over area, some living in isolated conditions and others living in fairly well developed communities. The density of population increases both from south to north and with the proximity to transportation routes, with the result that the southern line of undeveloped lands is annually crowded further northward.

The transition from lumbering to agriculture is decidedly pronounced. Remnants of the lumbering industry are numerous, since many individuals yet depend upon such occupations as hoop-making, portable saw mills and logging operations for their livelihood. They have not yet realized the value of working on their farms, and they feel at a loss if there is no stumpage available upon which they can speculate during the winter. Agriculture continues to be a matter of experimentation and adaption; what crops to raise, how best to raise them and what

* These counties are those shown entirely in black in Fig. I , together with Roseau, Mahnomen, Becker, Morrison and Mille Lacs counties, which are partially shown in black.

to do with them when they are produced are problems handled in as many ways as there are farmers. Agriculture is not well defined and there are few common practices among the farmers. Certain crops have become established yet there is a tendency to raise those crops produced in the country from whence the settlers came and to employ methods not applicable to these regions. But each year more knowledge and experience is provided for future direction which, with the introduction of new agricultural blood, lends renewed and increased impetus to agricultural development.

Fig. 2 River flowage submerging many acres of hay land annually.

Two distinct problems present themselves in this undeveloped country,--peat lands and cut-over lands. The swampy peat land which forms a large part of Northern Minnesota is quite a different problem from that of the strictly cut-over lands. In much of the country the two problems are found together, in which case reclaimation is easier than where the problem is entirely swamp or entirely cut-over lands. Swamp lands of the deep peat and muskeg type present not only the different difficulties of drainage, but also the uncertainty of

utility when they are drained.

Physical Conditions of Community under study.

The community which has been chosen for this cut-over land settlement study lies in the western part of the southern half of Itasca County, which itself is situated in the center of this great cut-over region, and within whose boundaries probably all conditions typical of both cut-over and swamp problems may be found. This particular community has been selected because of its exclusively cut-over land problems which are found under all gradations of development. It comprises Bass Brook township and an unorganized fractional township immediately to the west. The Village of Cohasset located in the northeastern part on the Mississippi River is the only town within the district. The height of land at this point is 1290 feet above the sea level, which is about the average for the whole community. The topography in the northern half of the country is level to undulating from east to west, gradually becoming rolling in the western part; in the southern half the land is rolling to hilly from west to east for the entire distance to Pokegama Lake. The Mississippi River and its tributaries forms the drainage system of the community and comprises a large percentage of the total area. Pokegma Lake lies in the extreme southeast emptying into Gould Lake thence flowing into the Mississippi River. The extent of the river flowage throughout the whole community is much influenced by the government dam at Pokegama Falls, which serves to control and regulate the waters below by forming a great reservoir in the headwaters above. Besides this chief drainage basin there are many smaller streamlets and lakes which empty into the river and provide adequate facilities for surface drainage where needed.

The soil is a characteristic gray drift, varying as all glaciated soils from a heavy clay to a sandy loam. For some distance north of the river the soil

Table I Showing Mean and Annual Temperature at Niagara Falls 1893-1916.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	Annual Snow fall
1893	-6.0	0.0	16.8	31.1	48.1	67.0	68.6	61.6	52.5	41.4	22.8	1.0	37.7	-
1894	1.8	6.0	25.7	40.9	50.9	68.0	70.2	72.6	55.0	41.6	18.1	17.4	39.0	-
1895	-1.7	6.2	19.5	44.5	51.5	60.8	62.6	61.0	54.7	34.4	29.2	11.4	35.7	-
1896	5.4	8.6	15.2	36.5	56.0	63.8	66.0	61.6	50.2	35.1	11.5	13.6	35.2	-
1897	1.3	9.1	17.8	42.3	50.8	57.3	68.3	60.3	61.6	45.7	19.5	5.5	36.6	-
1898	9.5	8.9	25.4	39.6	50.6	61.7	65.5	61.8	55.8	39.1	23.0	4.4	37.1	40.9
1899	.3	-1.6	18.2	39.2	49.7	60.7	66.0	64.0	51.7	44.2	35.4	12.8	35.9	-
1900	10.9	-2.4	18.0	47.4	55.0	62.2	63.4	70.4	55.7	51.8	22.7	11.5	38.9	47.4
1901	1.0	0.0	18.4	41.2	54.1	60.4	68.8	65.4	55.3	43.6	22.9	7.4	36.4	31.0
1902	9.1	11.0	30.7	40.0	56.0	59.9	69.0	61.4	50.2	40.9	28.2	7.6	38.7	38.3
1903	2.9	4.4	25.0	39.4	53.6	58.8	63.6	58.8	54.3	44.8	20.1	-0.6	35.3	58.4
1904	-4.2	-6.8	18.4	34.2	50.0	58.6	60.7	60.0	50.0	40.5	29.7	5.2	33.0	40.9
1905	-	-	22.6	34.6	49.8	59.5	64.8	63.8	59.2	41.0	28.7	16.8	-	-
1906	14.2	8.8	16.2	45.0	49.5	62.0	66.2	64.8	61.2	44.1	29.2	10.9	39.3	56.4
1907	-1.2	10.4	22.8	30.8	41.8	61.1	65.0	63.5	53.4	42.4	29.0	17.6	39.4	46.8
1908	12.4	15.2	23.0	42.9	50.6	60.6	67.0	61.8	60.8	45.7	31.1	13.4	40.4	57.3
1909	5.8	8.4	21.9	30.9	50.1	63.4	66.4	66.6	55.6	42.0	30.8	8.6	37.5	52.3
1910	9.6	3.5	38.0	46.0	48.6	65.8	66.3	61.1	54.9	47.8	22.4	9.8	39.5	43.4
1911	.6	12.5	28.8	40.8	50.2	65.8	64.8	61.0	53.0	41.2	18.6	17.3	38.1	22.1
1912	-1.8	5.5	16.0	42.3	52.8	58.2	65.9	59.4	55.3	45.0	30.5	16.5	36.3	-
1913	1.6	3.6	14.0	43.2	48.6	64.2	63.3	65.0	54.4	39.5	34.5	24.3	38.0	36.0
1914	12.5	-2.6	21.4	36.4	55.0	59.6	68.8	62.3	56.8	50.2	29.1	7.5	38.1	25.2
1915	4.6	18.5	24.6	49.1	49.0	56.2	61.4	60.6	55.6	45.6	28.2	15.8	39.1	57.9
1916	-1.1	2.0	17.0	36.8	49.1	56.6	72.8	65.2	53.4	40.7	28.0	4.8	35.4	-
Avg.	3.4	5.1	21.4	39.8	51.2	61.3	66.1	63.2	54.9	42.8	21.6	10.9	37.1	45.7

tends to be a sandy loam, but it gradually merges into a clay loam as the northern tier of sections is approached. The heavier clay predominates south of the river except for an over-ridden moraine in the southwest which is characterized by a sandy, gravelly soil with many pot holes scattered throughout. Stone outcroppings appear in several parts of the community, but they are restricted to small areas. Some peat is found in the low places, but it is in negligible quantities as affecting development. The vegetation growing on wild lands indicates in general the soil types; virgin hardwood timber consisting of maple, elm, basswood and birch covers a large portion of the southeastern part as well as many of the other undeveloped lands.

Table II Showing length of growing season 1893-1916

Year	Last killing frost in spring.	First killing frost in fall.	Days growing period.
1893	June 9	Sept. 29	110
1894	June 4	Sept. 11	97
1895	May 21	Aug. 21	90
1896	May 31	Aug. 28	87
1897	June 7	Sept. 17	100
1898	May 17	Sept. 9	112
1899	May 23	Sept. 13	110
1900	June 30	Sept. 17	77
1901	June 8	Sept. 8	90
1902	June 23	Sept. 12	79
1903	May 31	Sept. 17	106
1904	June 15	Aug. 29	74
1905	May 28	Sept. 13	105
1906	May 8	Oct. 31	173
1907	June 14	Aug. 20	66
1908	June 14	Sept. 28	104
1909	May 10	Sept. 1	111
1910	June 5	Sept. 12	127
1911	May 12	Sept. 3	111
1912	June 8	Aug. 2	54
1913	June 8	Sept. 22	104
1914	May 23	Oct. 13	140
1915	June 9	Aug. 26	77
1916	May 17	Sept. 18	111
Average growing season 24 year period			100.6

Birch, poplar and other young hardwoods comprise the second growth of the better soils, while jack and yellow pine, oak and some underbrush are found on the poorer soils. Scattered tracts of wet and swampy land produce a luxuriant growth of cedar, tamarac, willow or elder, most of which is practically worthless.

The United States meteorological station at Pokegama Falls provides definite data for determining climatological conditions in this community*. The records shown in Table I covering a period of 24 years show the annual mean temperature to be 37.1 degrees. The average temperature for July, the warmest month, is 66.1 degrees, and for the months from June to September, inclusive, it is 61.3 degrees. The average temperature for January, the coldest month, is 3.4 degrees; during the five months from November to April the average temperature remains below the freezing point. It is noted in Table II that the growing season extends over the period from May to October and averages 100.6 days between the last killing frost in spring and the first killing frost in the fall. During this 24 year period, the period of growth has six times fallen below 90 days and seven times above 110 days, the shortest growing period being 54 days in 1912, and the longest 173 days in 1906.

Table III shows that throughout this same period the average annual rainfall was 27.05 inches. June has been the month of heaviest precipitation, with an average of 4.41 inches, while the average for the four months from June to September was 3.77 inches per month, thus providing ample rainfall for any crops adapted to this country. Records of snowfall for 15 years show an average of 43.7 inches which corresponds closely to the observations of other sections in the same latitude.

* United States Weather Reports—1888-1916.

Table III Showing the Average monthly rainfall at Pokegama Falls 1888-1916

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1888	1.13	0.45	1.93	2.17	2.75	9.39	3.97	0.76	1.56	1.08	1.16	0.18	27.13
1889	1.34	1.61	1.34	1.82	1.18	2.08	4.32	6.21	2.71	0.31	1.50	1.43	25.65
1890	0.65	0.95	1.21	1.27	1.76	7.42	2.64	3.16	3.91	2.81	0.59	0.26	26.63
1891	0.81	1.63	1.37	2.53	0.59	4.53	5.24	3.14	2.25	1.87	1.00	1.01	26.00
1892	1.00	0.57	1.21	2.69	5.12	1.55	4.00	3.55	1.20	0.28	1.38	0.24	22.59
1893	1.62	1.39	1.35	2.87	2.17	3.22	5.70	4.04	1.23	0.69	0.92	1.04	26.24
1894	1.11	0.21	3.80	4.35	4.21	5.79	0.36	1.89	3.57	4.52	0.92	1.28	32.01
1895	0.61	0.39	0.00	1.54	5.32	6.28	3.65	2.56	3.99	0.18	1.53	0.48	26.53
1896	0.88	0.20	1.40	5.66	7.26	3.13	2.39	2.42	1.72	3.79	2.69	1.04	32.58
1897	1.71	1.73	2.15	1.63	1.50	5.01	7.53	3.37	1.29	1.27	0.35	0.67	28.24
1898	0.27	0.57	1.14	0.62	3.19	5.57	5.40	4.01	2.10	2.58	1.46	0.64	27.55
1899	0.75	0.52	0.58	2.13	7.21	6.81	3.70	6.13	2.83	3.45	0.47	0.65	37.23
1900	0.55	0.31	0.39	0.44	1.10	0.58	3.65	9.85	6.79	4.20	0.78	0.71	29.55
1901	0.26	0.28	4.11	1.94	1.14	9.27	5.09	1.49	1.31	2.67	1.44	0.64	29.64
1902	0.55	0.62	1.20	1.20	5.03	2.44	3.04	3.45	1.76	1.97	2.33	1.32	27.13
1903	0.42	0.98	0.72	2.85	4.43	1.30	2.67	4.53	5.90	3.65	1.10	1.22	29.77
1904	0.13	1.26	1.96	1.03	1.06	2.46	4.76	1.39	4.49	2.75	0.36	1.01	22.66
1905	0.47	0.08	1.78	3.07	4.53	9.16	5.80	3.45	4.00	2.73	2.39	0.30	37.76
1906	1.30	0.15	1.10	1.32	4.63	4.09	0.67	4.53	3.15	2.13	2.73	0.87	26.67
1907	1.00	0.17	1.02	1.53	2.57	2.81	3.17	3.05	3.09	1.34	0.65	0.57	20.97
1908	0.32	1.03	1.48	1.48	6.03	4.66	3.95	0.90	2.19	1.31	1.21	0.38	24.94
1909	1.37	1.07	0.65	1.61	0.88	1.00	3.43	6.33	4.57	1.38	1.20	1.22	24.73
1910	0.32	0.61	0.29	1.49	2.20	1.68	5.76	2.36	3.93	0.51	0.89	1.21	21.25
1911	0.54	1.00	1.24	1.51	3.50	4.49	4.73	4.63	4.72	0.91	0.77	0.51	28.55
1912	0.15	0.04	0.16	1.19	3.60	1.78	2.94	2.50	3.52	0.18	0.33	0.78	16.97
1913	0.24	0.44	1.85	2.17	4.18	3.48	7.95	4.09	3.66	3.43	0.87	0.07	32.43
1914	0.54	0.47	0.95	2.42	1.92	5.13	1.01	3.07	3.92	1.32	0.65	0.12	21.52
1915	0.48	0.58	0.16	0.94	3.75	8.59	3.99	0.91	1.72	3.04	1.60	0.48	26.24
1916	1.94	0.35	1.49	2.99	3.68	4.45	2.37	4.23	2.35	1.10	-	0.40	25.35
Avg.	0.78	0.68	1.31	2.02	3.33	4.41	3.91	3.65	3.08	2.00	1.15	0.72	27.05

Early History of Community.

The region about Pokegama Falls has been of historical significance since the expedition of Pike in 1805-07 in his attempts to find the source of the Mississippi River*. Lieutenant James Allen, a member of Schoolcraft's expedition in 1833 gives the first description of the Mesaba Range as seen from this point. Nicollet in 1841 attracted especial attention to the rocks at Pokegama Falls, but it was not until 1866 that the iron bearing rocks of the Mesaba Range were described.

Until 1890 there were but two ways of getting into this Itasca region; one was by means of the river, which, because of log drives, was impassable most of the year, and the other was by means of a stage route from Aitkin to Grand Rapids which was at that time a lumbering town five miles southeast of Cohasset. In 1890 the Duluth and Winnipeg Railroad**(now the Great Northern Railroad) was completed through Cohasset to Deer River, 9 miles to the northwest and was extended in 1896 to Bemidji. The railroad was originally constructed for moving iron ore from the Mesaba Range to the Duluth ore docks, but soon after the financial depression of 1893-1897, the railroad became the principal factor of development both industrially and agriculturally. Before the advent of the railroad the site at Cohasset served as a trading and distributive point for the lumbering industry in the upper Mississippi region.

Cohasset was the source of navigation above Pokegama Falls from whence supplies were forwarded up stream by boat or hauled direct to lumber camps by teams. In 1895 steamers were plying the waters between Cohasset and Pokegama Lake towing logs and hauling supplies for the lumbermen; other boats handled

* United States Geological Survey. Vol. XLIII--1903. The Mesaba Iron Bearing District of Minnesota. Charles Kenneth Leith.
Files of Grand Rapids, Minnesota weekly papers 1890-1900.

** Ibid.

traffic from this point up the river into Ball Club and Winnibigoshish Lakes. Besides the lumbering trade there was considerable bartering and trading with the Indians who brought their furs, wild rice and berries to be exchanged for clothes, shoes and groceries. This country was the original home of the Chippewas, some of whom according to the treaty of 1878 are still living on White Oak Reservation in the northwest corner of the district.

The Village of Cohasset was originally platted in 1893 with an area of 48 acres, but from time to time additional tracts have been added until the town

Fig. 3 Mississippi River at Cohasset. Box factory shown in distance.

site now contains 240 acres. Natural facilities are in abundance for a thriving lumber industry at this point. Water for the transportation of logs is available for many miles above Cohasset on the Mississippi and its lake and stream tributaries, while there is an abundant supply of merchantable hardwood timber growing adjacent to the water's edge and for miles inland. Two saw mills were in operation in 1900, one of which is still operating during parts of the year. In 1907 a pail and box factory was constructed and operated until its failure in

1913; the company reorganized two years later but again failed the following winter. The population of Cohasset has been composed chiefly of people interested in timber and timber products, with the consequence that the population has increased or decreased according to the prosperity of lumbering interests.

The United States Census report for 1900 does not segregate the population of Cohasset from the remainder of the township, but it gives a total population of 241 for Bass Brook township. In 1910 the population of Cohasset was 521, but by 1916 it had decreased to 384. The establishment of the pail and box factory brought great prosperity to Cohasset as more men were needed both for the factory and for the woods. As a result all local business was stimulated, and increased capital flowed into the community. But when the factory closed down in 1915, depression suddenly set in and many laborers were forced to seek work in other towns. The significance of the factory and its effects on the community are indicated by the fact that there were 29 houses vacant within eight months after the factory shut down. The business of the village is largely confined at present to the trade of agricultural and the smaller logging interests of the community, the latter rapidly declining in favor of the agricultural interests.

Land Ownership and Holdings.

Land ownership is almost entirely in the hands of private owners. About 6800 acres were originally ceded to the state under the school and swamp land grants, but most of these lands have been sold; the remainder has been either homesteaded under the Act of 1862 or sold under the amended Timber and Stone Act of 1892. Homestead lands were granted to the settler residing three years on his land and clearing five acres thereof, while under the Timber and Stone Act, lands unsuited to agriculture were sold outright in maximum tracts of 160 acres

to any individual for $2.50 per acre.

Land ownership and development in this community is analogous to the various stages of development which have evolved in the middle western states, except that the last stage has not yet appeared. These various stages are well de-

Fig. 4 Showing abandoned farm ready for second stage of development.

picted in Peck's New Guide to the West, a book published in Boston in 1837.

"Generally, in all the western settlements, three classes, like the waves of the ocean, have rolled one after the other. First comes the pioneer, who depends for the subsistence of his family chiefly upon the natural growth of vegetation, and the proceeds of hunting. His implements of agriculture are rude, chiefly of his own make, and his efforts directed mainly to a crop of corn and a 'truck patch.'... A log cabin, and occasionally a stable and corn-crib, and a field of a dozen acres, the timber girdled or 'deadened,' and fenced, are enough for his occupancy.... The pre-emption law enables him to dispose of his cabin and corn-field to the next class of emigrants; and, to employ his own figures, he...'clears out for the New Purchase'... to work the same process over.

"The next class of emigrants purchase the lands, add field to field, clear out the roads, throw rough bridges over the streams, put up hewn log houses with glass windows and brick or stove chimneys, occasionally plant orchards, build mills, school-houses, court-houses, etc., and exhibit the picture and forms of plain, frugal, civilized life.

"Another wave rolls on. The men of capital and enterprise come. The settler is ready to sell out and take advantage of the rise in property, push further into the interior and become himself a man of capital and enterprise in turn. The small village rises to a spacious town or city; substantial edifices of brick, extensive fields, orchards, gardens, colleges, and churches are seen."

* Bogart: Economic History of United States. Chapter XIV.

The first owners of land in this community were not the pioneers but timber interests who selected and cut down the choicest timber before the pioneer arrived. The first stage of development to correspond with Peck's pioneering stage in the middle west is the logger-farmer who took up his land expecting to sell out and move onward after he had cut down the merchantable timber left by the timber exploiter. This class of settler has largely disappeared and the country has entered into a second stage of development. The settler of genuine agricultural intent has succeeded the logger-farmer; he has taken up these miniature developments where they have existed, investigated his capital and is giving his labor to the making of a new home.

In the following table the figures show that nearly half of the land is owned by the non-resident class of people. This class includes all private land hold-

Table IV Showing Land Holders by Classes and the Size of Holdings.

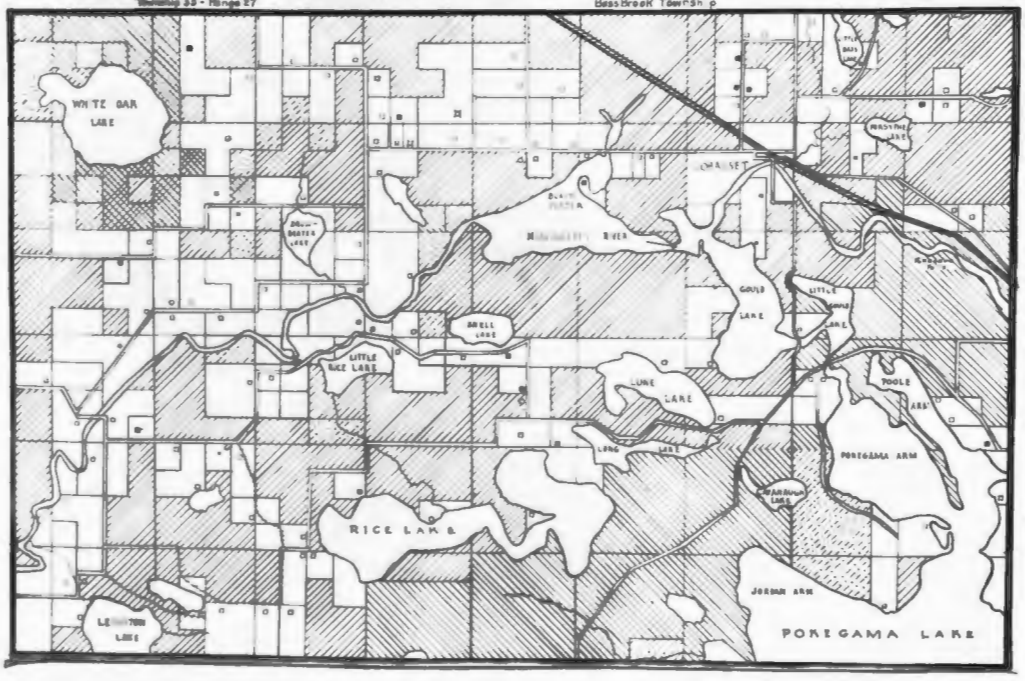
Holding Class	Total Acres Held.	Per cent of total.	Number of Holders.	Average Size of Holdings.
Settlers	9,016	28.9	92	98.0
Non-Resident	15,561	49.9	91	171.0
Mining Interests	4,386	14.1	20	219.3
State Lands	1,395	4.6	-	-
Indian Lands	611	1.9	-	-
Government	193	.6	-	-

ings not held by settlers or mining interests, many of whom are speculators holding the land for the rise in value. The holdings of actual settlers comprise 28.9 per cent of the total area, while mining interests reserve 14.1 per cent from development. The state, government, and Indian holdings form a relatively

small amount. The number of settlers and non-resident holdings in the district are about the same, but it is significant that the latter average 171 acres while the former average only 98 acres. There is one holding of this class in the community which exceeds six hundred acres and several others which consist of less than one hundred acres, but the greatest number of non-resident holdings occurs near the quarter section average. The mining interests which are usually corporate concerns, own the largest tracts in the community, averaging 219.3 acres.

Figure 5.

MAP SHOWING LAND OWNERSHIP IN TOWNSHIP-55-- RANGE-26-27-- ITASCA COUNTY.



The location of the various holdings is shown on the map in Figure 5. Non-resident holdings are somewhat interspersed among the holdings of settlers throughout the community, and except for some merchantable timber south of the river they are held chiefly for their agricultural value. Of the 91 non-resident holders, 64 live outside of Itasca County, indicating the extent of absentee landholders. Settlement is densest in the district west of Cohasset following closely

the course of the river on either side to the western border of the country. This heavier settlement is due not so much to superior agricultural possibilities as to the accessibility of the river which was the chief means of transportation before roads were constructed. Furthermore it is noted on the map that settlement does not venture far from public roads, due to the very great difficulties attendant on poor roads.

The Mesaba Iron Range extends northeast and southwest through Itasca County, the lower end extending through Bass Brook Township including that area described by a diagonal line drawn from Pokegama Falls to the southwest corner of the township. The ore deposits at this end of the range are of low grade and can not be profitably mined under present methods of production. Endeavors have been made to bring some of these mines near Pokegama Lake under operation by the use of hydraulic stripping, but the attempts have not been successful. A large percentage of the state lands in the community also lie in this district, but they are withheld from sale because of their ore content. Other lands being held by the state consist of overflow swamp lands near the river, and a few tracts in the White Oak region of the Northwest. Several Indian allotments and a few tracts yet belonging to the federal government are also found in this region which is known as part of the White Oak Indian Reservation.

Rural Population.

The agricultural population of this community has made rapid strides in late years. The Census report for 1910 gives the total rural population outside of Cohasset as 213; this figure includes all persons living in the rural community in 1910, those actively engaged in farming and those who merely resided in the country but whose occupation was probably some phase of lumbering. In 1916 there were 436 persons, an increase of 105 per cent in 6⅓ years. Of this number as

shown in the table below, 23 have no intentions of farming, but they live as laborers, fishermen or hunters. The first class includes the families whose farms were visited in the survey and which represent either farmers or those making efforts to become such in the near future.

Table V Showing Population in 1916.

	Number of Families	Total Number in Families.
Farmers and settlers	92	413
Laborers	11	23
Total	103	436

The population is one of real heterogeneity. There is no predominating nationality, accounting in part for many existing problems of distribution. Of the 92 families the heads of 42 are of American born parentage; those of German birth or descent follow with 18.0 per cent; of Irish and French Canadian there are each 10.0 per cent, while the remaining 4 families have come from different countries. There are 38 settlers who have migrated from other parts of Minnesota, 20 who have come from Iowa, and the remaining 34 have come from 15 states and 2 foreign countries, 3 coming from Canada and 1 from Bohemia.

Probably the most potent factor affecting development is the type of people that comprises the population, as the formation of the agricultural, educational and social policies of this new country, and its subsequent welfare depends upon the past experiences, practices and accumulated ideas of its people. The nationalities of the settlers are no more heterogenous than have been their occupations prior to settlement. It is also a significant fact that the settlers as a whole are middle aged people, the average age of the 92 heads of families being 46.5 years.

Table VI shows that scarcely more than one-half of the settlers were farmers before settling here; the second class of 14 includes all kinds of labor from factory workers to farm hands, while the remaining classes have come from vocations quite remote from agriculture. Of the 48 migrating farmers, 21 have been owners of land elsewhere and 27 have been renters.

Table VI Showing Occupation of Settlers Prior to Settlement.

Occupation prior to settlement	Number of settlers
Farmer	48
Laborer	14
Tradesman	12
Lumber and Woodsman	9
Real Estate	2
Miner	2
Fisherman	1
Miscellaneous	4
All classes	92

The migration of farmers to this country has been caused in practically every instance by high land values or high rentals in the community from whence they have come. Their desire for land ownership has prompted them to invest where land is cheap, where they can "make something on their investment", and at the same time live free from landlord rule. The other classes either have been desirous of getting back to the land or they have found themselves with no other alternative than agriculture since logging operations have ceased. Thus, the artisan has joined the migrating farmer to form a new population with the result that fusion is slow and difficult.

Chapter II - Farm Development.

It was about 1889 that settlers began taking up land in this community for the purpose of ultimate farming. Most of the lands up to this time had been homesteaded or bought for their timber value and when once depleted, they were allowed to revert to nature. The early settler brought little or no capital with him and consequently depended upon his earnings from the woods for his livelihood. His clearing was done at spare times by the crudest of hand methods, and usually in an incomplete manner; brush, timber and trash were removed, but those stumps which did not seriously interfere with cropping methods were left until time permitted for more intensive clearing. The process was slow and difficult but each addition to the cultivated area made future development more easy and rendered livelihood less dependent upon outside work.

These earlier settlers on the whole were of the nomadic lumbering type, properly called logger-farmers, whose chief desire was to roam about for land that bore timber which might be logged off. They either bought or homesteaded their lands, but they developed them very little, as they were ever waiting their opportunity to sell out; oftentimes they were even a detriment to the real settler who followed, because the land had been stripped of its scattering merchantable timber which might have become an asset to him. On the other hand, the small clearing has often better paved the way for the new settler by providing land or buildings for his immediate use. Not all of these logger-farmers and old homesteaders have moved away; some have remained and become the best farmers, while others have never relinquished their lumbering ideas and are now lamenting the fact that the lumbering days are spent. Their influence is evidenced nowhere quite so much as in the rate of development as contrasted with the more progressive type of farmers now taking up settlement.

The Problem of Development.

The problem of development in the cut-over region is very unlike that of the prairie country, where the virgin soil may be turned over and a crop harvested the first year. Instead, the settler must await the process of clearing, which during the first year is often scarcely more than a garden. The problems facing the settler are many and various, but in general they are similar for each farm, differing chiefly as to degree and intensity. Originally the timber growth

Fig. 6 Home of typical logger-farmer.

was both coniferous and deciduous, but the conifers have been logged off for many years, leaving only the hardwoods. Some of the country is a pure hardwood forest consisting of merchantable basswood, maple, elm, birch and poplar. This is distinctly a lumbering area and is not yet ready for agricultural development. On the other hand, there are many farms bearing considerable timber which present not only the problems of clearing, but also those of marketing timber products.

However, development is concerned largely with brush and second growth timber

on cut-over lands. The density and composition of the growth depend upon several factors, chief of which are soil types, the length of time since logging, and the frequency of fires. Cutting of timber has continued for many years with the consequence that there are all sizes and densities of second growth varying from the light hazel and poplar brush to heavy timber. Poplar and birch are the first varieties to appear after logging; they make a very rapid growth and in a few years together with the smaller underbrush and slower growing hardwoods, form a heavy mass of vegetation. The soil in most parts of the community is of sufficient fertility and moisture retentiveness to support the rankest and densest hardwood growth. Frequently fires pass over the cut-over lands burning off the brush and leaving the land in a denuded condition. It is not long however until trees again appear either as upshoots or as new seedlings.

Fig. 7 Stumping is the most difficult problem of development.

When the timber and brush have been cut and piled the task of disposal still remains. Merchantable timber is sold in the form of logs, bolts or cordwood. The brush is piled and burned with the remaining debris consisting of old logs

and windfalls. The difficulties with old logs depend upon the length of time the timber has been cut and the kind of timber that originally grew on the land. Hardwoods deday much more quickly than the softwoods, and as the hardwoods have predominated in this section, the old logs and windfalls have mostly decayed except in instances of recent cutting. Windfalls are usually numerous among the hardwoods and if clearing takes place in the heavier brush or timber, the problem is one of considerable significance.

Fig. 8 Undeveloped land should be pastured until the stumps have dried out and begun to rot.

The stump problem is perhaps the most difficult of all. Both pine and hardwood stumps confront the settler when the overburden has been removed. The scattering white pine stumps are well preserved after years of exposure, while the condition of hardwood stumps depends upon the length of time they have been cut. Little decay takes place within three years after cutting, but about this time the roots have loosened in the ground and decay starts. The stump is considered green until the sap has left it, and the stump has dried out.

The work of clearing is affected materially by the age of stumps. It is

usually impractical to remove green stumps although this may be done in rare cases. The work and cost is often reduced by two-thirds if the stumps are allowed to remain in the ground for a few years. This, however, is not possible when fields are needed immediately, as is the case when the settler first comes to the farm. The burden of clearing stumps of a given age depends upon the size, number and kind of stumps to be removed. Whatever the methods, increased size requires more work and consequently more time for removal; larger stumps of the same kind decay slower than the smaller sizes, which increases the difficulty

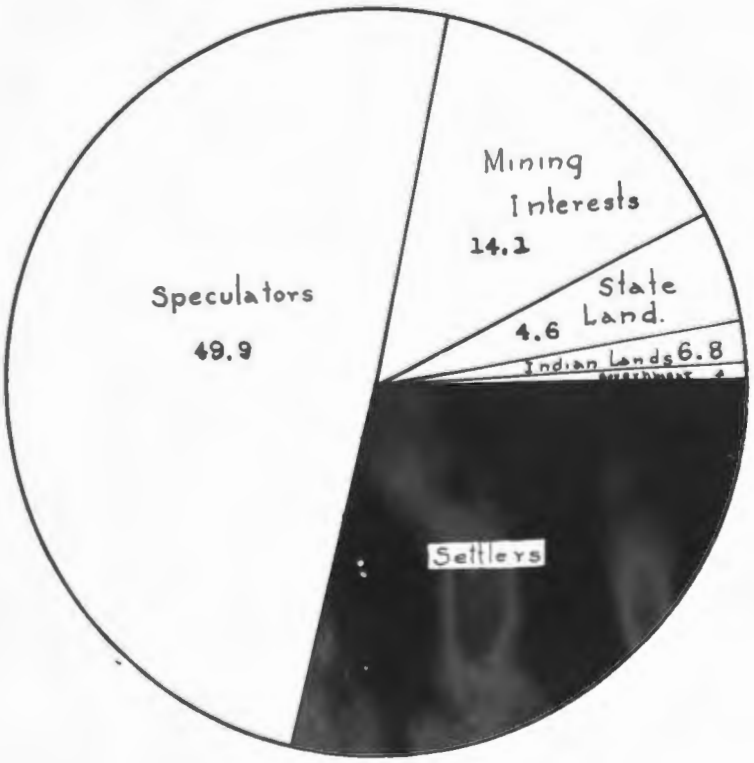


Fig. 9 Showing the relation of land under development to the total land area of the community.

more than proportionately. Age does not affect all stumps alike. Some are more resistant to decay than others and even though they have been exposed for several years and coppice growth has been kept down, they offer stubborn resistance. Basswood and elm are probably the most resistant, while poplar and

birch are the quickest to rot.

The problem of removing stones in many parts of the cut-over country in the state is even greater than that of brushing and stumping, but in this community stony land presents a relatively small problem. However, where stones exist they are found in characteristic patches lying on the surface of the ground and seldom exceeding eighteen inches in diameter. Where they occur in large numbers the cost of clearing is at times more than doubled before they are completely removed. In such cases the land is usually used for pasture or hay rather than for cultivation.

With all surface obstructions removed, there yet remains the task of breaking the land. In most cases this is very difficult, because of the compactness and texture of the virgin soil together with the many root obstructions within the turf itself. Breaking is commonly done too deeply, the object being to turn under as many stubs and as much trash as possible. No thought is given to the fact that the amount of organic matter in a virgin timber soil is small, and if deeply turned under it is unavailable as plant food. A three horse team and a fourteen inch breaking plow is kept busy turning over an acre of the breaking per day. Time requirement varies with the soil, and the degree of prevalence and the character of obstructions.

Status of Development in Community.

As a result of the several steps in the process of clearing, and the many ways of handling them, development is found in all its various stages, not only throughout the whole community, but on practically every farm. Some farmers have opened up large tracts and have them under cultivation, others who may have been on their farms equally long or longer, have developed less, while the new settler may have only begun his development. No farm in the community is

entirely developed. On practically every farm a part is wholly cleared, another is partially cleared, while another part is wholly undeveloped. Fields are first opened where clearing is least difficult, and because of this fact clearings are often irregular in shape and perhaps hidden in the back part of the farm.

Figure 9 shows graphically the relation of the farming area to the total land area. Of the total acreage 28.9 per cent is under the ownership of settlers who are bringing it under cultivation. This represents 92 holdings out of which 82

Table VII Showing status of development on farms in the community.

Number of Group	Acres under cultivation	Number of farms in group	Average total acreage	Average acres under cultivation	Per cent of farm cultivated
1	Less than 1	4	32.5	-1.0	-
2	1 - 4.9	7	51.7	2.0	3.8
3	5 - 9.9	11	79.5	7.7	9.7
4	10 - 14.9	10	65.4	11.4	17.3
5	15 - 19.9	13	76.2	15.7	24.0
6	20 - 24.9	15	120.7	22.2	18.3
7	25 - 34.9	6	107.1	29.1	27.1
8	35 - 49.9	9	205.2	40.4	19.6
9	50 and over	7	241.0	83.3	34.5
All classes		82	103.5	23.0	22.2

have been chosen for further study. Table VII shows their state of development on the basis of acreage under cultivation, (irrespective of the time element.) The classification includes all lands cleared and under cultivation whether in hay or in other crops.

The first two groups of farms largely represent classes of moneyless would-be farmers who have lived on their farms from one to several years. A study of their condition and circumstances is most apropos in view of the fact that many of the more prosperous farmers of the community have evolved from this class. The greatest concentration of farms is in Group 6, with 20 to 25 acres under cultivation. Although Group 7 is based on an interval of 10 acres instead of 5, the number of farms is only 6. Groups 8 and 9 are examples of real thrift. Most of the farmers in these groups have had considerable capital to begin with in the

Fig. 10 Clearing stumps by hand methods.

form of either money, labor, or equipment, and all but 3 of them have developed their farms from wholly wild lands.

The average total acreage per farm for all groups is 103.5 acres, ranging from 32.5 acres in the case of the group with less than one acre under cultivation, to 241 acres in the group with 50 or more acres under cultivation. There is a general increase in the size of farms from the first group to the last, although groups 4 and 7 are exceptions, due to the small holdings of certain old settlers in these groups. The large increase of acreage in groups 8 and 9 over

Table VIII Showing Condition of Development for the Community.

Number of Group	Acres under cultivation	Total farm acreage in group	Acres totally cleared and in crops	Total acres under cultivation	Acres approximately cleared		Acres logged and brushed but not stumped		Acres brush land pastured	Acres in timber	Acres in brush land not pastured	Acres in swamp or flowage land
					Acres cultivated	Acres not cultivated	Acres cultivated	Acres not cultivated				
1	Less than 5	492	14.5	15.5	-	10.0	1.0	66.5	28	89.5	267	15
2	5 - 14.9	1608	171.0	197.0	19.5	25.0	6.5	94.5	331	296.0	580	85
3	15 - 24.9	2901	462.0	552.5	63.5	146.5	27.5	183.0	1091	260.0	523	145
4	25 - 34.9	643	132.0	169.0	37.0	17.0	-	82.0	184	34.0	40	121
5	35 - 49.9	1153	304.5	367.0	61.0	28.5	1.0	446.0	476	40.0	146	50
6	50 and over	1691	583.0	583.0	-	52.0	-	115.0	498	20.0	403	20
Grand total		8488	1667.0	1884.0	181.0	279.0	36.0	587.0	2608	735.0	1959	436
Per cent of total area		100.0	19.6	22.2	2.2	3.3	.4	6.9	30.7	8.7	23.1	5.1

the preceding groups is due to the greater capital of the owners. The average acreage under cultivation for all groups is 23 acres per farm although only 27 of the 82 farms have in excess of this amount. The last group is very significant both relatively and absolutely. It shows more than twice as much land per farm under cultivation as any other group, and moreover, presents in itself a very satisfactory sized cleared farm.

It is noteworthy that, roughly speaking, the larger the farm the greater the proportion of it cleared. This increase in per cent of acres cultivated to total

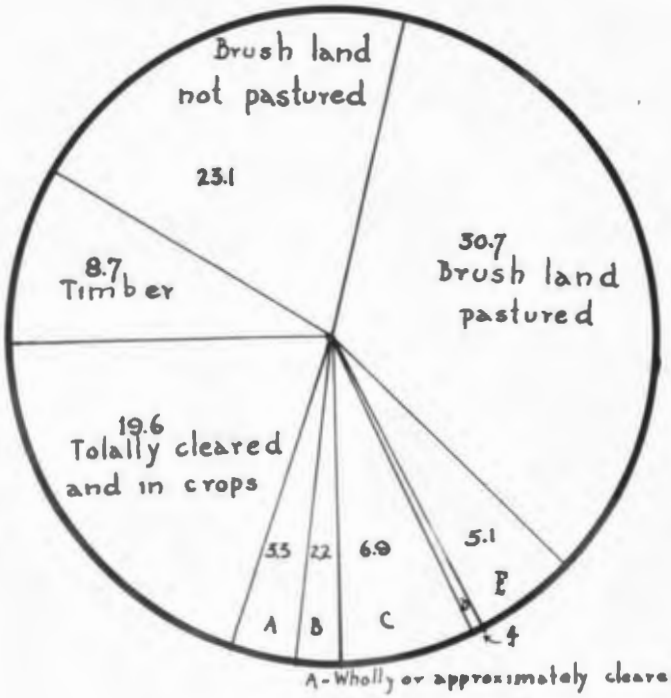


Fig. 11 Showing the condition of development for all farms in the community.

acres owned is found except in groups 6 and 8, which have relatively larger average acreages than the immediately preceding groups. The average per cent of land under cultivation for all farms is 22.2 per cent.

Having determined the general state of farms in the community, a further analysis of their degree of development is in order. These conditions are shown in Table VIII. The same basis of classification is used as before, but the groups are reduced to six in number. Division of lands is made into nine classes. Some groups have little or no acreage under certain classes, but these finer classifications show precisely to what degree certain stages of development have been reached. The column showing the acreage totally cleared indicates better than any one other the progress of development, yet all must be considered if the situation is to be fully understood.

Table IX Showing Classification of Productive and Non-Productive Lands

Productive lands	Acres	Per cent of total	Non-Productive lands	Acres	Per cent of total
Totally cleared	1,667	19.6	Timber land	735	8.7
Approximately cleared	462	5.5	Brush land not pastured	1,959	23.1
Logged and brushed but not stumped	623	7.3	Swamp or flowage land	436	5.1
Brush land pastured	2,608	30.7			
Total	5,358	63.1	Total	3,130	36.9

The total acreage in farms may be divided into two great classes, productive and non-productive lands. Productive lands are those under cultivation, whether totally cleared or not, together with those lands used for pasture, while the non-productive lands include all lands not in use or under exploitation. Such a classification is shown in Table IX.

The total acreage of productive lands is 63.1 per cent of the total farm lands. Of this area 19.6 per cent is wholly cleared and in crops. Thus, of the 23 acres under cultivation on each farm 20.3 acres are totally cleared, while 2.7 acres

are only partially cleared. The difference between land classed as approximately cleared and that classed as logged and brushed but not stumped, lies in the number of stumps on the lands; the latter is land from which none of the stumps have been removed, while the former has had a part of them taken out. Land approximately cleared comprises 5.5 per cent and that logged and brushed but not stumped 7.3 per cent of the total area. Both these classes are used both for actual cultivation and for pasturage. Table VIII shows that the land approximately cleared and in crops is 2.2 per cent of the total farm acreage, that which is

Fig. 12 Pulling stumps by stump puller method.

logged and brushed but not stumped and which is cultivated is very small in quantity, the remainder of these classes being used for pasture. More than 30.0 per cent of the total farm area or nearly one-half of the productive farm area is brush land pastured.

The non-productive lands comprise 36.9 per cent of the whole farm area. Timber lands might be considered productive in that they bear a potential crop, but since the timber products sold at present are so few, it may be considered as a

non-productive area. The timber acreage is relatively small, comprising 8.7 per cent of the total farm area. Great difficulty was experienced in distinguishing between virgin timber and second growth since so much of the latter contains trees of the merchantable type. However, timberland was defined as land bearing a heavy stand and scaling six inches or over at the tops. No attempt was made to classify the timber according to varieties as it is composed entirely of mixed hardwoods. The majority of these lands, as noted in Table VIII, are found on the farms with few acres under cultivation, and they should prove a valuable asset if a market for timber products can be procured.

Table X Showing land under process of clearing.

Grouped according to acres under cultivation	Number of farms	Total farm acreage	Total acres under development	Averages per farm		
				Total acreage under development.	Acres approximately cleared	Acres logged and brushed but stumped
Less than 5	11	492	77.5	7.0	.9	6.1
5 - 14.9	21	1,608	145.5	11.0	2.2	8.8
15 - 24.9	28	2,901	420.5	15.0	7.4	7.6
25 - 34.9	6	643	136.0	22.3	9.0	13.3
35 - 49.9	9	1,153	137.0	15.2	9.9	5.3
50 and over	7	1,691	167.0	24.0	7.4	16.6
All farms	82	8,488	1083.5	13.2	5.6	7.6

The largest amount of non-productive land is the brush land not pastured. This land is in a wholly wild state, bringing in no revenue whatever. The overflow lands, included in the swamp or flowage land class, exist as a result of raising the dam at Pokegama Falls. Many of these lands are constantly covered

with water, while others are overflowed seasonally, rendering the land worthless. They comprise, together with the few swamp lands of the community, 5.1 per cent of the farm area.

Table X shows in detail the land under process of development. The average total acreage under development increases somewhat irregularly with the increase of acreage under cultivation; the irregularity is due to the fact that these lands are continually falling into the class of cleared lands. The group of farms of over 50 acres under cultivation shows the greatest amount of land per farm under development. The average acreage under development for the first group is 7 acres, while for the farms having over 50 acres under cultivation, it is 24 acres. The clearing of brush and logs proceeds more rapidly than the clearing of stumps, except in the fifth group, which indicates that the economy method, or the employing of the natural elements in clearing land is used most extensively.

Methods of Development.

The method pursued in clearing depends largely upon the kind of vegetation and the type of soil. Early clearing was done entirely by hand, but hand methods have been largely supplanted by easier and quicker methods. The problem of clearing may be divided into two parts; (1) the clearing of over-burden and (2) the removal of stumps. The over-burden consists of all brush, second growth and debris lying on the ground, leaving the stumps exposed upon its removal. The valuable timber is sorted out from the worthless cuttings and sold when markets are available, while the rest is cut, piled and burned. This phase of the work is usually done with an axe, brush hook and scythe, although the larger second growth is sometimes grubbed out by hand or pulled with a stump puller. Stumping seldom immediately follows the clearing of brush and timber, but it is deferred from three to six years until the stumps have begun to decay and the roots have

loosened in the ground. Brushing is done chiefly during the spring and fall months when the settler has the most time for such work. Summer cutting is advisable whenever possible, since the brush is killed entirely at this time and the added work of keeping down coppice growth is eliminated. This problem is very well met, however, by seeding and subsequent pasturage, which not only hastens the rotting of the stumps, but leaves the land much more fertile and in better condition to grow crops.

There are three general methods in practice of removing stumps, although they

Fig. 13 Land being rid of trees by stump puller.

are often modified in various ways to suit conditions. These methods are (1) by means of explosives entirely, (2) by explosives, team, block and line, and (3) by stump-pullers. Each method has superior advantages for different conditions and each method finds practical usage in this community in normal times. The use of explosives alone is best adapted to heavy clay soils; the stumps are blown out free from dirt and the job is done quickly, but a great disadvantage is found in piling and burning the larger stumps. The second method is practiced probably to as great an extent as the first and has some superior advantages, but it usually

requires more time. The practice of first breaking the stumps by dynamite and then pulling them by chain or hook and line lessens the difficulties found in moving and burning besides reducing the actual cash output, but it takes more time.

The stump puller method is not extensively used yet it finds favor in certain parts of the community; it is best adapted to lighter soils and particularly to decayed stumps on heavier ground. The time required is somewhat greater than with the explosive method and the same difficulty is presented in moving and burning the stumps. When used on stumps in lighter soil, dirt does not adhere to them, thus escaping the disadvantage met in using the stump puller on clay soils. Both hand and horse power pullers are in use; the hand method is slow and is used only by farmers of limited capital.

The rate of removal and the cost for the various methods is difficult to determine as no records have been accurately kept. Estimates obtained from a detailed review of settler's clearings indicate the total cost of clearing to vary from ten to eighty five dollars per acre. The costs are reduced by one-half to two-thirds when the overburden has been removed from three to six years before the stumping is done. The average cost of developing all land cleared in the community is about thirty-nine dollars per acre*. This cost is the average of the easy as well as the more difficult clearings and includes the clearings which have been made of both green and decayed stumps. These estimates of the farmers in the community are substantiated by similar studies made by the Federal Department of Agriculture in Minnesota, Wisconsin and Michigan**. Costs of clearing as determined by the Northeast Experiment Station*** are also shown to be high; although conditions at Duluth are somewhat different than those found in this community, it is not believed that they are sufficiently dissimilar to cause much variation in the total costs.

* This figure includes the capitalized value of labor rather than actual cash paid out by the settler.

** United States Department of Agriculture Bulletin No. 425.

*** Minnesota Bulletin No. 163

Rate of Development.

The rate of clearing for the community as a whole has been slow. Table XI shows the rate of clearing for all farms during the period of development to have been 2.1 acres per farm. This figure is based on land totally cleared and does not include that still in process of clearing. The first column in the table shows that the amount of land cleared varies from 1.2 acres for the farms with less than 5 acres under cultivation to 61.1 acres for the farms with over 50 acres under cultivation. Not only does group 6 contain more than twice as

Table XI Showing amount and rate of development

Number of group	Acres under cultivation	Average acreage totally cleared while on farm	Years of development	Rate of development	Average acres in process of development less acres under development when coming to farm
1	Less than 5	1.2	6.0	.2	7.0
2	5 - 14.9	7.9	7.8	1.0	6.6
3	15 - 24.9	13.9	7.6	1.8	13.3
4	25 - 34.9	21.6	11.1	1.9	20.8
5	35 - 49.9	27.6	9.6	2.9	5.8
6	50 and over.	61.1	8.7	7.0	22.9
All classes		16.8	8.0	2.1	13.2

many acres per farm entirely cleared as any other, but it exceeds all other groups in acreage under development. For all farms the average acreage totally cleared while the settler has been on the farm is 16.8 acres, and the average acreage under development less what was under development when the settlers came to the

farm is 13.2 acres. There is no correlation between the acreage cleared and the period of development which indicates that there are other and more potent factors than the time element affecting development. The average time of development for the community is eight years, varying from six years for the farms of less than 5 acres under cultivation to 11.1 years for the farms from 25 to 35 acres under cultivation.

The rate of development per year shows a definite increase as the size of the farm, measured by acreage under cultivation, increases. The rate of clearing varies from .2 acres per year in the first group to 7 acres in the last. The slowness of the first group is due both to the fact that a few individuals are

Fig. 14 A prosperous farm made out of a veritable forest.

reluctant to take up clearing with the determination of making a farm, and to the conditions of a few which have not permitted their clearing land to any extent. Although group 4 has been under development for the longest period, the rate of clearing has been but one-tenth acre faster than the preceding group. The next group with from 35 to 50 acres under cultivation has cleared at the rate of 2.9 acres per year, while phenominal development has taken place in the last group

at an annual rate of 7 acres per year.

Factors affecting Development.

The factors contributing to and causing this gradual increase in the rate of development with size of farm are many and varied. Some of them are tangible and capable of statistical verification, while others are of equal importance but immeasurable. Thrift, for instance, is absolutely fundamental, for however favorable other conditions may be, success depends upon the degree of industry, initiative and economy practiced by the individual. General intelligence, broad mindedness and capacity for co-operation, all of which are also immeasurable, are other

Table XII Showing rate of development on farms classified according to years under development.

Number of group	Years of development	Number of farms	Average acres under cultivation	Average acres totally cleared while on farm	Average acres under development while on farm	Average time of development	Average rate of complete development
1	2 years and under	4	-	1.1	1.2	2.0	.5
2	3 years	11	27.0	9.8	12.0	3.0	3.3
3	4 years	7	25.3	17.1	10.2	4.0	4.3
4	5 years	21	21.2	19.9	13.0	5.0	4.0
5	6-10 "	17	21.3	17.5	14.6	7.4	2.4
6	11-15 "	10	16.9	12.4	9.6	12.9	.96
7	16-20 "	7	33.1	27.5	19.9	17.0	1.6
8	Over 20 "	5	28.8	22.0	7.2	25.0	.88
All classes		82	23.0	16.8	13.2	8.0	2.09

factors affecting development in proportion to the degree they are possessed by the settlers, other things being equal.

Time as an element.

Among the more tangible factors, the time element is often considered the most important. Table XI has shown the farms of group 4 with the longest period of development to have had a much slower rate of development than others of a shorter period of development, thus proving that there are other more significant factors. But before going further, the importance of time on the rate of development should be examined more fully. In Table XII the farms have been arranged according to the years of development and the average rate has been determined for each period. It is noted that the greatest acreage under cultivation is found in group 7 with an average of 17 years of development. However, this is only 6.1 acres more than for group 2, which has been under development only three years. Again group 6 which has been under development for an average of 12.9 years has only 16.9 acres under cultivation, which is less than that for group 2 with only three years of development. Acres under cultivation do not constitute an adequate criterion of progress both because much land is cultivated before it is entirely cleared and because it does not in all cases represent land actually cleared by present settlers. The next column shows absolute data of what has been done by the present settlers in clearing.

Group 7 leads with 27.5 acres totally cleared while the settler has been on the farm, which is 5.5 acres more than the amount cleared by the next group with an average of 8 years more development; this group also exceeds all others in the amount of land under development.

The average acreage totally cleared per year does not increase directly with time, as shown in the last column. Rather, the rate is inversely as the years of

of development. The period of fastest development seems to be during the fourth and fifth years on the farm, although this is partially due to the difference in the type of settlers falling in that group compared with those of earlier development when homesteading was the chief means of acquiring land. Besides this, Table VII indicated that the rate of development declines after a certain status of development has been reached, which accounts in part for a slower rate for older settlers. The maximum rate of clearing is 4.3 acres per year for settlers who have been on the farms 4 years, although the 4 acres cleared per year by the

Fig. 15 Field cleared by stump puller method.

next group is more significant when the difference in the number of farms is taken into consideration. The rate falls off rapidly beginning with Group 5, which averages 7.4 years of development. Group 7 with the greatest number of acres cleared has developed at the rate of 1.6 acres per year, while the last group with an average period of 25 years has cleared only .88 acres per year.

Available Capital.

It is evident then from Tables XI and XII that the time element is only one factor affecting development. A second and more important factor is capital, and the manner in which it affects development is shown in Table XIII. Capital is the base upon which all development proceeds, and if its supply is limited, the rate of clearing must necessarily be slackened. The extent to which capital affects development is evident in the column showing the average total capital the settler possessed before making the first payment. The average for the group with

Table XIII Showing the amount and affects of capital on Development.

Number of Group	Acres under cultivation	Number of Farms	Average total capital before first payment	Average capital before the first payment in the form of			Average total capital after first payment.	Average amount of money after first payment.
				Money	Live Stock	Machinery		
1	Less than 5	11	$1,022	$ 922	$100	$ —	$ 537	$ 437
2	5 - 14.9	21	1,075	905	140	29	698	529
3	15 - 24.9	28	1,126	748	338	39	772	395
4*	25 - 34.9	6	1,609	1180	335	93	1263	825
5	35 - 49.9	99	1,990	1369	506	115	979	359
6	50 and over	7	6,322	5960	320	61	1951	1570
All classes		82	$1,647	$1336	$265	$ 46	$ 769	$ 567

less than five acres under cultivation is $1,022, while each succeeding group with additional acres under cultivation shows an increase. The increase is slight

* This group is somewhat misleading. The large average is due to the extraordinary amount of capital brought by one settler. For the remaining settlers in the group the average capital owned before first payment amounted to $891. $737 of this was in money, $242 was in live stock and $52 was in machinery.

for the second and third groups, but it is greater for the remainder. Group 6 shows an average capital of $6,332 which is three times greater than that of any other division.

Figures for capital include all money, live stock and machinery owned at the time of coming to the farm. The greatest amount of capital consists of money, the average amount on hand being $1,336, while the average value of live stock and machinery brought to the farm was $265 and $16 respectively. Less than one-half of the settlers in the first two groups and many in the remaining groups brought little or no live stock and machinery with them, but generally those settlers making the greatest progress are those who have brought live stock with them. The amount of money decreases in the second and third groups, but again increases in the fourth and remaining groups. Capital in the form of live stock and machinery is not large on the average when the settler comes to the farm, but as conditions permit, the investment is increased.

The amount of capital the settler had available after the first payment includes the remaining money and the value of both live stock and machinery. This sum increases directly with the acreage now under cultivation except with those farms between 35 and 50 acres under cultivation, where the increase of available capital before the first payment was not commensurate with the increased acreage of farms. The last group shows the largest amount of capital remaining after the first payment was made, even though the size of farms has increased and the initial payment was greater. Thus the figures show a definite correlation between the present acreage under cultivation and the amount of capital available after the first payment.

The average aggregate capital on hand after the first payment amounted to $769, of which $567 was money on hand. Out of this sum and from what was earned thereafter by the settler or added from other sources, development has proceeded and sustenance has been maintained. There is less close relation between the acreage

now under cultivation and the amount of money after the first payment than between it and the total capital available after that payment. This depends somewhat on the terms of sale which are shown for the community in Table XIV. The largest number of sales have been for cash, but 19 farms were homesteaded which involved only a small initial capital outlay. There are 13 farms bought either directly or indirectly from the State under contracts which gave the payee a long period of payment. Sixteen farms were bought on contract from private parties, the terms calling for complete payment in five years' time. It is obvious then

Table XIV Showing terms of sale for farms in Community.

Acres under cultivation	Number of farms in group	Number of farms			Number of farms bought which required	
		Bought for cash	Homesteaded	Bought from State	Payment 5 years or less	Payment after 5 years
Less than 5	11	5	1	2	1	2
5 - 14.9	21	6	7	5	3	-
15 - 24.9	28	6	7	4	7	4
25 - 34.9	6	1	2	1	1	1
35 - 49.9	9	2	2	-	3	2
50 and over	7	3	-	1	1	2
All classes	82	23	19	13	16	11

that a large per cent of the money brought by settlers has been consumed in the initial payments on land.

The money available after the first payment however increases directly with the acreage under cultivation except in Groups 3 and 5. The last group shows the largest amount of money remaining after the first payment, even though the inital

payment was relatively greater. Thus a very definite correlation is noted not only between the available capital and the acres under cultivation but also between the amount of capital applied and the rate of development, which warrants the conclusion that development progresses in proportion to the available capital, other things being equal.

Outside Work.

Work done off the farm is a factor supplementary to available capital, for were capital available, outside work would be unnecessary. For those farmers

Fig. 16 A well broken tract of cleared land.

with less than 5 acres under cultivation 78% of their total income is derived from sources other than the farm. This percentage decreases with increased acreage under cultivation until those farmers with over 50 acres under cultivation receive but 4.2 per cent of their income from outside work. In one sense, to the extent that working off the farm is necessary during the spring, summer and fall months, development is hindered, but were it not for such work the condition of

development for the community would be much lower.

Sales of Timber Products.

Another factor of considerable importance in hastening development is the possibility of selling timber products taken from the farm in the process of development. Marketing is the greatest problem connected with this phase of development. Prior to 1916 the community was provided with a hardwood market which bought many million feet of timber and second growth from the settlers. This source of revenue becomes a very great asset to the settler of limited means.

Table XV A comparison of development on farms selling timber with those selling no timber.

Acres under cultivation	Farms with timber sales					Farms with no timber sales			
	Number of farms	Average net value of timber sold	Average years of development	Average acres wholly developed	Average acres under development	Number of farms	Average years of development	Average acres wholly developed	Average acres under development
Less than 5	4	$122	3.5	1.6	6.2	7	7.4	1.0	7.4
5-14.9	12	475	8.9	9.0	4.0	9	6.4	7.5	9.7
15-24.9	15	444	9.2	13.4	12.8	13	5.7	13.7	13.0
25-34.9	6	548	11.1	22.5	24.3	-	-	-	-
35-49.9	7	477	11.7	37.4	7.4	2	2.5	9.0	3.5
50 and over	2	607	3.5	44.0	40.0	5	11.2	76.6	12.0
All classes	46	$450	9.0	16.8	11.6	36	6.8	18.3	10.6

Although the price received for the products is often not in excess of its cost on the basis of a going wage, it aids in providing his living and at the same time increases the extent of his clearing.

Table XV shows a comparison of development on the farms selling timber with that on farms not selling timber. Out of the 82 farms, 46 have had timber sales averaging $450. For those farms selling timber the average time of development has been 9 years, while those farms having no timber for sale have been under development 6.8 years. The table shows 16.2 acres cleared for the class with timber sales and 18.3 acres for those farms with no timber sales, - a rate of development of 1.8 acres and 2.7 acres per year respectively. Hence those farms with no timber sales have developed somewhat more rapidly than the farms selling timber products, but they have been doing so at a financial disadvantage of $450 for the difference of 2.1 acres in the amount of clearing, minus the benefits from the use of the land for a period of 2.2 years. The excess of available capital in the beginning assumes no appreciable significance as the difference between the two classes is only $77.

Settlers are evidently at a decided advantage in taking up lands upon which clearings have been made. The farms are so few however in any one group where this condition has existed that any benefit accruing in development is impossible of statistical measurement. However, in the group with 15 to 25 acres under cultivation there are 6 farms which had an average of 11.5 acres cleared before the present owner undertook development. In addition to this, the average capital available for these 6 farms was $550 above the average for the whole group. With these advantages in a period of 4.1 years of residence as compared with 8.6 years for the whole group there has been an increased development of 6.3 acres in favor of the farms with land cleared in advance of settlement. A part of this increase is due to the increased capital, but a share of it must at least be attributed to the acreage cleared before development began.

Previous Occupation.

Another factor of very great significance is the percentage of settlers who were actual farmers prior to settlement. This proportion varies from 27.2 per cent in the group with 5 acres under cultivation to 71.4 per cent in the group with over 50 acres under cultivation. No further statistical results can be obtained concerning the effect of this factor, but certainly the positive correlation existing between the acres under cultivation and the previous occupation shows that the factor bears considerable weight.

Outside Influences.

Besides these factors which affect the administration of development by the settler there have been many outside retarding influences. Nothing perhaps has been so harmful both to the settler and to the general status of development as the misleading and fallacious advertising so often disseminated by private and state agencies in the past. Independence was the catchword. Wonderful opportunities were presented to the man with little capital. Clearing was said to be easy and inexpensive. But little was mentioned of the difficulties encountered and the precautions to be taken in the operation of development. Those were left for the discovery of the settler. In too many cases they have been realized too late not only serving as a cause to slacken development but in many cases to drive settlers away, thus leading to unwarranted reflection upon the communities. But the fact is being appreciated more and more by dealers and others interested in land that satisfied settlers make better advertising than exaggerated claims, with the consequence that settlement propaganda is tending to follow less fallacious and exaggerated lines.

Inflated prices and impossible terms of payment have been practices altogether too prevalent among real estate men. Prospective buyers coming from high priced lands were shown undeveloped tracts at apparently low prices, but in reality prices entirely out of reason. Here again the actual facts were withheld and the buyer having no means of knowing the truth, bought the land. It has been the policy of most agents to get as large an initial payment as possible and as short terms as possible for the remainder, irrespective of the settlers' ability to pay. As a result many contracts have reverted, the settlers have left their farms together with what improvements they may have made, and the country itself has been made to suffer because the land dealer has taken undue advantage of the settler for his own private interests.

The well-known fact of unearned increment in land value is highly significant to development. Many instances are at hand where the price of wholly undeveloped land has been raised by the improvements of adjoining property. This is an inevitable consequence yet one often assuming unwarranted proportions. Land values are based on present returns plus expected future increments. Otherwise wild lands yielding no return would not be owned; in like manner land under cultivation is higher than that not cultivated or developed because it yields a present return in addition to discounted future increments.

It is not the fact that wild lands have a potential value and consequently a present worth equal to their discounted future increments, that retards development, but the fact that they are too often in the hands of speculators who magnify their present value and withhold them from settlement because they are able to do so, refusing to sell except for excessive prices. It has been seen that one-half of the land in the community is owned by a non-resident class, many of whom are speculators and the writer believes that because of the high prices asked in many cases development is seriously retarded.

Chapter III - Farming Operations and Incomes.

Farm management problems in northern Minnesota are very different from those found in other parts of the State. With the country still in the development stage, agriculture is in an unsettled condition, although the trend is toward a definite type. This tendency is directed chiefly by climatic conditions which determine largely what crops are grown; quick maturing crops are essential, although in time, by breeding and selection, new varieties may be adapted to conditions. Economies of crop production must always be practiced. Cash crops are essential to the farm income, but because of the small acreages under cultivation, the proportion of cash crops to live stock requirements becomes a real problem. Again, the problems of marketing are significant limiting factors in the crops raised since the amount raised per farm is very small and the status of co-operation is low.

Farm Valuation.

It is impossible to compare farms of 23 acres under cultivation with those farms of large scale production in other parts of the state. A perspective of agricultural conditions is obtained from Table XVI. The average capitalization for all farms is $4957, ranging from $929 on the farms with less than one acre under cultivation to $15,888 in the group with over 50 acres under cultivation. Land comprises 63.8 per cent, buildings 18.6 per cent, live stock 13.4 per cent, and machinery 4.2 per cent, of the total investment. Land valuation is based upon the selling price of recent known sales in the community. In no case has the cost of development been made the basis of valuation, as this would inevitably exceed the present worth. The value of buildings is based in most cases

on their original cost with a reasonable depreciation. Original cost in actual money spent was often very small, as a large part of the lumber used in building came fromtthe farm. Many buildings are of the log type and hence are relap tively inexpensive, but because of their utility they are given a value in excess of their material worth.

It is noted that the total investment per farm of the various groups increases directly with the acreage under cultivation. The same is true for the valuation of land, except in Group 7, which is due to the fact that the total

Table XVI Percentage Distribution of Farm Capital

Number of Group	Acres under cultivation	Average acres per farm	Total Investment in Land		Buildings		Live Stock*		Machinery		Average total investment
			Average value	Percent of total	Average value	Per cent of total	Average value	Per cent of total	Average value	Per cent of total	
1	Less than 1 acre	32	$ 575	61.8	$ 221	23.8	$ 112	12.0	$ 21	2.2	$ 929
2	1- 4.9	51	849	37.2	833	36.5	500	21.9	101	4.4	2283
3	5- 9.9	79	1638	66.3	492	19.9	289	11.7	51	2.0	2470
4	10-14.9	65	1885	57.0	767	23.2	451	13.6	203	6.1	3305
5	15-19.9	76	2314	57.5	760	18.9	658	16.4	290	7.2	4023
6	20-24.9	120	3588	72.0	642	13.2	595	11.7	155	3.1	4900
7	25-34.9	107	3480	61.3	962	16.9	977	17.2	255	4.5	5674
8	35-49.9	205	4266	67.3	1011	15.9	799	12.6	266	4.2	6342
9	50 and over	241	10490	66.0	3064	19.2	1775	11.2	558	3.5	15888
All classes		103	$3163	63.8	$921	18.6	$564	13.4	$209	4.2	$4957

* Exclusive of poultry.

acreage of farms in this group is smaller than for the farms in Group 6. The portion of capital invested in land increases irregularly from 61.8 per cent in the first group to 66.0 per cent in the last group. Buildings, on the other hand, decrease relatively from 23.8 per cent in the first group to 19.2 per cent in the last; live stock remains about the same as in the first group, decreasing .8 per cent, while machinery increases from 2.2 per cent in the first to 3.5 per cent in the last group. In general all the groups present a very similar distribution of capital. Group 2, however, is an exception, due to the abnormal relations of building and land valuations.

Fig. 17 One of the best developed farms.

This distribution of capital is somewhat different from that for the farms in the more developed parts of the state. Table XVII shows the distribution of capital as taken by the census in 1909 for Minnesota as a whole, for six counties in the southern part of the state and for Itasca County. For the state and the six counties, the total average land and live stock valuation is more than twice as large as that for the community under study, while the excess in the value of buildings and machinery is not as great. These figures are not strictly com-

parable, however, since the interval between the dates of the census figures and those taken for this community is seven years.

It is to be expected that the percentage of capital represented in land should be relatively less in the community studied than for the state as a whole, since land values are much lower here. On the other hand it is to be expected that the relative value of buildings should be greater than for the state because certain improvements are essential for any farming enterprise, and after that point is reached they do not increase proportionately with other factors.

Table XVII Showing a Comparative Distribution of Farm Capital

Comparison of farm capital in	Land		Buildings		Live Stock		Machinery	
	Average value	Per cent of total capital	Average value	Per cent of total capital	Average value	Per cent of total capital	Average value	Per cent of total capital
Minnesota (1909)	$6517	69.0	$1568	16.5	$1371	10.9	$334	3.5
6 southern Minnesota counties* (1909)	8219	68.6	2052	16.8	1372	11.3	337	3.3
Itasca County (1909)	1692	63.8	555	20.9	286	11.2	106	4.0
Community Studied (1916)	3163	63.8	921	18.6	664	13.4	209	4.2

* Faribault, Freeborn, Fillmore, Goodhue, Jackson and Olmstead Counties.

The table shows that 16.5 per cent of the total farm valuation in the state is in buildings while for this community it is 18.6 per cent. Live Stock and machinery percentages are also greater than those for the state although the absolute figures are very much less.

As compared with Itasca County, of which this community is a part, land forms the same percentage of the total investment, although the average value per farm is much greater for the community than for the county. Again these values are scarcely comparable because of the general rise of prices since the census

figures were taken in 1909. The percentages however, are not altered; a higher percentage is shown for buildings in Itasca County than in this community because of the lower land valuation, but this increase is offset by the increased live stock valuation. In 1909 there was but $286 worth of stock on each farm for the county, while in 1916 there was $664 worth of stock per farm in this community.

Farm capital is of two kinds, fixed and operating. Fixed capital roughly consists of the land and buildings, while the operating capital is that investment in live stock and machinery with which the farm is run. The average per cent of capital invested in land and buildings for the state in 1909 was 85.5 per cent, while it was 85.4 per cent for the six southern counties selected above. Itasca County in the same year reported a somewhat lower proportion of fixed capital. In 1916 fixed capital was 82.4 per cent for the community under study, thus showing a larger per cent of operating capital on farms under development than on farms in southern Minnesota. Of the 17.6 per cent operating capital, 12.4 per cent represents live stock, and 4.2 per cent machinery, both of which are higher percentages than in the other areas compared.

Farm Crops.

The chief crops raised are hay, grain and potatoes. Table XVIII shows the total crop acreage, both rented and owned in 1916, for all farms in the community, giving the acreage for all crops and the yields of hay and potatoes. The greatest acreage is given over to oats, which, together with hay and potatoes, are best adapted to the country. Hay and grains are largely consumed on the farm while potatoes constitute the leading cash crop. All crops are planted to a certain extent on new ground, but hay is usually successful on such ground, as cultivation for a time after clearing is rather difficult. Humus is also

Table XVIII Statement of Crops Raised in 1916.

Number of Group	Acres under cultivation	Total acres in crops	Potatoes		Hay		Truck		Oats	Barley	Corn	Roots	Other Crops
			Acres	Total Yield	Acres	Total Yield	Acres	Total Value	Acres	Acres	Acres	Acres	Acres
1	Less than 1	.5	-	-	-	-	.5	$ 5.	-	-	-	-	-
2	1- 4.9	15.0	2.7	328	2.0	1.5	2.5	25	3.	-	1.8	1.0	2.0
3	5- 9.9	83.0	5.5	863	52.0	88.0	1.5	25	19.5	3.0	1.2	.5	-
4	10-14.9	114.0	8.0	1150	53.3	107.8	3.0	211	35.7	2.5	8.0	2.0	1.5
5	15-19.9	221.5	14.7	1335	128.0	194.5	3.0	180	50.5	2.0	19.0	3.5	-
6	20-24.9	330.5	27.2	4081	149.7	199.5	2.5	245	101.5	19.5	13.5	5.2	12.0
7	25-34.9	169.0	13.0	2070	80.2	189.0	1.7	240	54.0	11.5	6.0	3.0	-
8	35-49.9	366.5	16.5	2925	220.0	275.0	2.0	-	76.0	27.5	5.0	2.0	17.5
9	50 and over	582.5	36.0	6405	329.0	532.0	8.0	395	133.0	33.0	25.5	2.5	15.5
Rented Land		167.0	6.0	691	72.0	87.0	1.0	177	47.0	26.0	15.0	-	-
New Settlers		50.7	2.5	410	31.0	29.0	-	-	12.0	1.0	-	.2	-
Total All Classes		2103.0	131.5	20860	1117.2	1503.3	25.5	$1503	532.8	125.8	94.8	19.7	48.3

lacking in timber soils. Upon growing clover for two or three years nitrogen and humus are added, making the soil highly productive. Hay land comprises over half of the cultivated area, consisting chiefly of clover with some wild and timothy hay. Wild hay forms a very small percentage, however, since the low non-timbered lands are relatively few. This has been a decided disadvantage, for, unlike conditions in many cut-over lands elsewhere, the new settler in this community has been required to clear land both for his grain and hay crops.

Grain crops are not usually grown the first year after breaking the land, al-

Fig. 18 One of the few natural grass meadows in the community.

though barley is reported in many instances to have done well. The grains grown in order of their importance are oats, barley and corn; a few acres of spelts, wheat and rye were also raised. In the entire community only 460 bushels of grain were sold off the farms. Yields are good where the ground has been well tilled and cared for, but until there is enough land cleared to supply hay and other cash crops the growing of grains will be deferred, because, of the feeds required, grain can be bought most easily.

The total acreage of corn for the farms studied was only 79 acres. Corn is not a popular crop due to the failures of the past as a result of planting southern, late maturing varieties. Certain varieties such as Northwestern Dent, Minnesota 23 and the flint corns have been successfully grown. The crop is cut and fed as fodder, except upon the five farms having silos.

Roots are grown to a limited extent. About 20 acres were raised in 1916 and fed to cattle and hogs. Root cellars found on most farms afford excellent facilities for storage, and since the cost of the silo makes it usually prohibitive, roots are more and more coming into favor as a succulent winter feed.

Table XIX Farm Crops Raised in 1915.

Number of group	Acres under cultivation	Total acres in crops	Crops Raised: Potatoes Acres	Potatoes Bushels Raised	Hay Acres	Hay Tons Raised	Truck Acres	Truck Value	Oats Acres	Barley Acres	Other crops Acres
1	Less than 5	.5	-	-	-	-	.5	$ 5.0	-	-	-
2	1-4.9	7.3	3.5	315	3.0	3.0	.5	27.0	-	-	.3
3	5-9.9	56.1	7.8	1037	36.0	44.5	1.0	25.0	2.0	4.5	4.8
4	10-14.9	102.1	11.3	1670	42.0	67.0	1.0	85.0	9.0	19.3	19.5
5	15-19.9	206.5	22.0	2114	116.5	138.0	3.0	220.0	18.5	30.0	16.5
6	20-24.9	274.0	25.3	3240	156.0	211.0	2.0	70.0	19.5	47.5	23.7
7	25-34.9	159.4	11.3	2213	74.0	125.0	1.8	200.0	22.5	31.5	18.3
8	35-49.9	217.3	12.5	1890	117.0	284.0	-	-	24.0	45.3	18.5
9	50 and over	438.0	43.0	5650	261.0	376.0	10.0	300.0	84.0	70.0	30.0
All classes		1521.2	136.8	18129	805.5	1248.	19.8	932.0	179.5	247.1	131.6

Potatoes are the natural cash crop of the country. There is adequate moisture

for their growth every year, and when planted within reasonable time they are not affected by frosts. While the crop is intensive and involves considerable labor, it yields a commensurate return. The total potato acreage for the community was 131 acres. Truck is raised to a limited extent, comprising nearly 25 acres. Truck crops yield well and when grown in sufficient quantities to be conveniently marketed they are highly remunerative.

Table XIX shows the total acreage under cultivation for the 82 farms in 1915 to be 1521 acres, which is 363 acres less than that of 1916. This acreage includes all land in crops, whatever the status of development. Besides the new

Fig. 19 Small fields of corn are raised.

land brought under cultivation in 1916 there were 46 acres of tillable pasture land broken up and put into crops. Potato acreage decreased somewhat in 1916, but hay increased 312 acres, which includes much hay grown on partially cleared land. Oats acreage increased 294 acres, while barley decreased 122 acres, showing a decided preference for oats. The acreage of corn remained about the same. Root crops increased from 5.3 acres to 19.7 acres; truck crops from 19.8 acres to 25.5 acres. Other crops such as spelts, wheat and flax, which are largely

experimental, increased from 7.5 to 48.3 acres.

A considerable amount of cleared land lying adjacent to or near these farms is leased each year. In 1916 a total of 167 acres were rented on which there were grown 72 acres of hay, 88 acres of grain, 6 acres of potatoes and 1 acre of truck crops. Also, in the spring of 1916, new settlers increased the cultivated acreage to the extent of 47.7 acres, which made a total of 2103 acres under cultivation for the whole community in 1916.

Table XX Showing cultivated area devoted to each crop.

Crop	Average acres per farm	Average per cent per farm
Hay	12.3	53.8
Oats	5.8	25.1
Potatoes	1.5	6.7
Barley	1.2	5.2
Corn	1.0	4.2
Truck	.3	1.3
Roots	.2	1.0
Other Crops	.6	2.6
Total	23.0	99.9

Table XX shows the average acreage of each crop per farm and the percentage which each crop bears to the cultivated acreage. Hay leads with 12.3 acres per farm, which is 53.0 per cent of the whole cultivated area. Oats rank second in importance, and comprise over 25.0 per cent of the cultivated area. Neither potatoes, barley, nor corn exceed 1.5 acres per farm, while truck, roots, and all other crops are each less than one acre. No one farmer grows all these crops, but the table shows the extent to which they are grown in the community.

Table XXI Showing Crop Sales.

Acres under cultivation	Potatoes				Hay				Truck		Other		Total sales	Total sales
	1916		1915		1916		1915		1916	1915	1916	1915	1916	1915
	Bushels sold	Value	Bushels sold	Value	Tons sold	Value	Tons sold	Value	Value	Value	Value	Value	Value	Value
Less than 1	20	$ 85	-	$ 25	-	-	-	-	5	-	-	-	$ 30	$ 25
1 - 4.9	10	10	90	72	-	-	-	-	188	-	-	-	198	72
5-- 9.9	572	572	575	374	40	448	17	170	29	25	-	-	1049	569
10 - 14.9	648	757	1265	696	39	422	19	190	318	85	-	-	1497	971
15 - 19.9	1000	978	1493	941	44	506	8	96	180	220	150	115	1814	1272
20 - 24.9	2788	3297	1960	1425	70	686	49	495	275	70	66	93	4324	2083.
25 - 34.9	1950	1773.	1340	737	20	240	33	325	273	20	50	110	2336	1372
35 - 49.9	2115	2279	1325	610	82	879	36	360	15	-	65	-	3238	970
50 and over	4880	5330	4550	1638	120	1330	126	1255	580	-	-	650	7240	3543.
Total	13583.	$15021	12618	$6518	415	$4511	295	$2691	$1843.	$600	$331	$968	$21726	$10977

In 1916 the total crop yield of potatoes in the community was 20,260 bushels, making an average of 154 bushels per acre. In 1915 the total yield was 18,129 bushels from 136 acres, or an average yield of 133 bushels per acre. Although the year 1916 was unfavorable for potatoes in most parts of the state, this community had a larger yield per acre than in the preceding year. The hay crop for 1916 did not average as high as that of 1915, the yields being 1.4 tons and 1.6 tons per acre respectively. Because the hay crop consists partly of wild and timothy hay, the average yield is considerably reduced. Truck crops com-

Fig. 20 Second-growth clover field.

prising cabbage, roots, beans and onions sold in 1916 at an average of $54 per acre, while in 1915 they brought $49. Grain crops yield well if properly planted, although the results are often discouraging when new ground is improperly broken, tilled or planted. Corn yields well for silage and fodder, often making 15 tons of silage per acre. Mangels and rutabagas yield from 10 to 20 tons per acre. Wheat, spelts and rye also yield well, but the country has not yet developed sufficiently to permit of their extensive production.

It is noted that the crops grown are numerous and varied, that few have be-

come standardized, and that many even are being grown experimentally. Hay and potatoes are the staple crops while some of the others are grown to a greater or less degree on every farm, and will become standard crops with time and subsequent development. Corn can not assume the role of a primary crop, but it may be profitably raised for silage and fodder. Barley is a substitute carbohydrate feed, and with further agricultural development and sufficient realization of its value, barley should become a leading crop. In fact all grain crops are well adapted to this country and will probably succeed potatoes as a

Table XXII Sales of Farm Crops

Number of Group	Acres under cultivation	Average sales of farm crops	Per cent of farm crop sales from:			
			Hay	Potatoes	Truck and vegetables	Others
1	Less than 1	$ 8	-	83.3	15.7	-
2	1 - 4.9	25	-	.5	99.5	-
3	5 - 9.9	95	42.7	54.5	2.8	-
4	10 - 14.9	150	28.2	50.6	21.2	-
5	15 - 19.9	140	27.9	53.9	9.8	8.2
6	20 - 24.9	288	15.9	76.2	6.4	1.5
7	25 - 34.9	309	10.3	75.9	11.7	2.1
8	35 - 49.9	360	27.1	70.4	.4	2.0
9	50 and over	1034	18.4	73.6	8.0	-
All classes		$ 262	20.8	69.1	8.5	1.5

cash crop in the future. Leguminous crops other than clover have only been introduced, but experiments elsewhere under similar conditions bid fair for their success here. A few plots of alfalfa have been grown. Canadian field peas are highly recommended by the North Central Experimental Station at Grand Rapids,

but no such fields were found in the community.

Rotation of crops is not generally practiced because the farms are too small, yet a few of the larger farms are tending toward certain rotations. A three year rotation is well adapted to conditions in this country. This rotation should consist of grain, clover, and a cultivated crop such as corn, roots and potatoes. Such a rotation requires more land under cultivation than the average farm provides. Rotation in the early stages of farming is not so essential as proper tillage methods, but as development proceeds and agriculture becomes more permanently established, a definite rotation is essential for the maintenance of fertility.

The value and amount of all crops sold from the farm in 1915 is shown in Table XXI. Of the potatoes raised 81.3 per cent were sold as compared with 70.0 per cent the year before; prices were high and every bushel not needed for home consumption or for planting the following year was sold. The average price received for potatoes was $1.10 per bushel as compared with 50 cents for the previous year. Hay was sold to the extent of 40.0 per cent of the total crop yield which was 16.6 per cent more than the previous year. The prices received were $8 to $10 for wild hay and $12 for clover hay. As noted before, the acreage of truck crops was greater in 1916 than in 1915, but this table shows their value to be more than three times as great. All "other crops" sold amounted to $331, which is only one-third of the value of the "other crops" sold in 1915. "Other crops" consist chiefly of grain crops, which in 1915 yielded well, and in 1916 yielded only fair for the community. The total amount of crops sold amounted to $21,726, which was nearly 100.0 per cent more than for the previous year.

The relation of the several crops sold to the total sales is shown in Table XXII. The average sales of farm crops per farm amount to $262. Of this amount potatoes constitute 69.1 per cent, hay 20.8 per cent, truck 8.5 per cent and "other crops" 1.5 per cent. The average amount sold per farm naturally in-

creases with increased acreage under cultivation. The average amount sold from the farms having the most land under cultivation was $1034 per farm, or more than 2½ times as much as from those of any other class; this might be expected since the average acreage under cultivation is more than twice as great as that for any other group.

Table XXIII Showing number and value of stock owned in 1915 and 1916.

Class	Number		Value
	1916	1915	1916
Horses	169	138	$24,625
Colts	34	26	2,995
Cows	227	193	14,275
Heifers	119	70	4,080
Steers and bulls	69	42	2,370
Calves	154	143	2,209
Hogs	227	326	2,753
Sheep	165	91	1,242
Poultry	3774	3506	1,963
Bees	-	-	800
Total			$57,312

Live Stock in the Community.

Crops grown, climatic conditions and marketing facilities all indicate that this country is destined to become a live stock country. Live stock is scantily owned at present, but it increases in proportion to the acreage under develop-

ment. Capital is also a limiting factor and pasture and other feeds must be available before profitable production can take place. Much wild land is used for pasturage but it bears little edible and nutritious grass except where open areas occur. From 3 to 10 acres are required to keep an animal, depending upon the density of the brush; on much of this land an animal would actually starve if it were not for the tame grasses oftentimes growing through the brush. This grass contains little nutriment and grows slowly until the brush is cleared away and the benefits of the sunlight are received. In spite of this condition

Table XXIV Live Stock Products sold in 1916

Number of Group	Acres under cultivation	Butter		Milk and Cream	Eggs		Wool	Honey
		Amount sold	Value	Value sold	Amount sold	Value	Value sold	Value sold
1	Less than 1	146	$ 38.39	$ -	10	$ 2.80	$ -	$ -
2	1- 4.9	938	242.35	$ 50.00	15	5.00	-	$10.00
3	5- 9.9	1915	509.50	-	555	132.00	-	-
4	10-14.9	1570	447.50	148.18	548	122.69	10.00	-
5	15-19.9	3971	1174.45	535.44	1171	343.20	-	30.00
6	20-24.9	2555	692.00	312.33	579	172.85	-	-
7	25-34.9	1193	345.25	388.45	490	144.00	86.00	-
8	35-49.9	3280	1013.76	162.74	1945	537.30	14.00	-
9	50 and over	1530	371.00	914.68	326	86.00	187.45	-
Total All classes		17098	$4834.00	$3512.00	5639	$1546.00	$298.00	$540.00

there are few farms that could not profitably handle more live stock on their undeveloped lands if capital permitted.

Table XVI has shown the average total live stock valuation to be $664 per

farm. This includes all animals owned except poultry. Horses in general are of good quality and weight, but a few settlers are prone to bring in smaller animals. Large horses are desirable for the heavy work of clearing and general development, and such are found on the farms where clearing is done most rapidly. Each farm averages more than two horses; a few settlers have none, some have one, but most of them have two or more. Table XXIII shows that in 1916 there was an increase of 31 horses and 8 colts over the previous year. The average value of all horses is about $145.

Table XXV Live Stock products sold 1915

Number of Group	Acres under cultivation	Butter		Milk and cream		Eggs	Wool	Honey
		Amount sold	Value	Value sold	Amount sold	Value	Value sold	Value sold
1	Less than 1	65	$ 19.50	$ -	30	$ 9.12	$ -	$ -
2	1 - 4.9	175	50.00	45.00	200	55.00	-	900.00
3	5 - 9.9	1180	320.00	30.07	380	85.00	-	-
4	10-14.9	351	100.00	128.13	90	22.02	-	-
5	15-19.9	3302	965.09	563.35	680	197.20	-	-
6	20-24.9	1745	468.00	153.00	570	144.00	-	-
7	25-34.9	1530	420.75	85.10	857	233.00	45.00	-
8	35-49.9	2940	904.00	44.73	660	195.00	-	-
9	50 and over	1325	387.00	-	520	130.00	145.00	-
Total All classes		12613	$3634.34	$1049.38	3987	$1070.34	$190.00	$900.00

Cattle are kept and raised almost entirely for dairy purposes. They consist of scrub and grade Shorthorns, Holsteins and Guernseys, ranging from good to in-

ferior quality. In the last few years several farmers have purchased either herds or individual animals of high grade, which have greatly improved the live stock of the community. An association bull purchased in 1916 is also tending to grade up the dairy herds. In 1916 there was an increase of 34 cows and 49 heifers over the year before, which shows a marked tendency toward increased production.

Hogs are the only class of animals which has decreased; there were 99 less hogs in 1916 than in 1915, due chiefly to the difficulty of feeding hogs on feeds

Fig. 21 A herd of Holstein cattle grazing in a cut-over pasture.

grown in this community. It is for this reason that barley and Canadian field peas are recommended for this region. The bacon hog is seldom found here, but it could be profitable raised on clover, Canadian field peas and barley rather than the corn or mill feeds which must be bought.

Sheep have increased from 91 to 151 head in one year, and have become very popular among the settlers. It is generally realized that sheep are financially profitable as well as useful in clearing land, and many settlers are planning to buy sheep as soon as they are able to do so. Not only is capital necessary for

the purchase of sheep, but it must also be available to provide housing and fencing. The inexperienced settler should begin on a small scale and develop his herd for as his flock grows the knowledge of his business will increase and fewer losses will be sustained.

Poultry is a most important enterprise. On many farms the home living is largely provided from the sales of poultry and poultry products, while on others it forms a considerable part. The total value of poultry in 1916 was $1963 or about $24 per farm. Only two farms were found which kept bees, and one of these was a bee farm of 160 hives, doing a very good business. Bees thrive remarkably well on clover and tree blossoms which are found so abundantly here; more bees could profitably be kept on farms as their expense is very small and their care is relatively light.

Live stock raising has not yet reached the state where animals are being generally sold from the farm; foundation stock is still coming into the country and the animals now being sold are really culls and inferior stock which is no longer profitable. Hogs and poultry which are quick maturing and valuable chiefly for their cash sales, are raised for market. Total live stock sales aggregated $4263 for 1916 which is an average of $51 per farm. Cattle comprise 60.9 per cent, horses 16.6 per cent, hogs 12.0 per cent and other stock 10.5 per cent of the total sales. Cows form the larger share of the cattle sales, with steers and bulls ranking second. But since the number of farms which sell stock is so few, these figures have little meaning except as they have reference to farms actually selling stock. Cattle were sold on 25 farms at an average of $69 per farm; hogs on 12 farms at an average of $43 per farm; sheep on 3 farms at an average of $74, while poultry was sold on practically every farm in the community. Live stock sales for 1916 amounted to 7.0 per cent of the total live stock valuation denoting a rather slow turnover. Thus it is seen that live stock sales are very small for the community as a whole, but the marked growth in

live stock owned during the past year is evidence that the live stock industry is expanding.

Live Stock Products.

Sales of live stock products have not yet become a large factor in the settler's income, yet they are of much greater importance to the settler since their sales do not impair the farm capital. Table XXIV shows the total amount and the value of all live stock products sold in the community. Dairy products

Table XXVI Amount and per cent of farm product sales from different sources

Number of Group	Acres under cultivation	Average total value of farm products	Average receipts from farm crops		Average receipts from live stock		Average receipts from live stock products.	
		Amount	Amount	Per cent of farm products	Amount	Per cent of farm products	Amount	Per cent of farm products
1	Less than 1	$ 19.00	$ 6.00	31.5	$ 3.00	15.8	$ 10.00	52.6
2	1 - 4.9	154.00	25.00	16.2	28.00	18.2	101.00	65.6
3	5- 9.9	147.00	98.00	66.7	5.00	3.4	44.00	29.9
4	10-14.9	244.00	150.00	61.5	22.00	9.0	72.00	29.5
5	15-19.9	330.00	137.00	41.5	27.00	8.2	166.00	50.3
6	20-24.9	379.00	288.00	76.0	12.00	3.2	79.00	20.8
7	25-34.9	662.00	389.00	58.8	112.00	16.9	161.00	24.3
8	35-49.9	690.00	360.00	52.2	141.00	20.4	189.00	27.4
9	50 and over	1454.00	1034.00	71.1	183.00	12.6	237.00	16.3
All classes		$ 480.00	$ 262.00	61.1	$ 51.00	11.9	$117.00	27.0

are By far the most important live stock products sold, comprising 75.4 per cent of the total sales, which amount in the aggregate to $9740, or an average of $117 per farm. Live stock products are sold to some extent on all farms, although the amount sold on the farms with only a few acres under cultivation is very small.

Eggs were sold during the year to the extent of 5639 dozen valued at $1546, or an average of $18 per farm. Sales of wool were very small, amounting to only $298 for all farms, but the prospects are good for these sales to increase annually as sheep are well adapted to this country. Honey is a new and relatively

Fig. 22 Sheep are a valuable investment on a cut-over farm.

insignificant product, yet it is very economically produced. The total sales of honey for the community in 1916 aggregated only $540, which is less than that sold the previous year, when from a fewer number of hives $900 worth of honey was sold.

Table XIV shows the live stock products sold for the year 1915. In general, a less amount of all products were sold in that year than in the year 1916. The increase in dairy products sold in 1916 is due to several causes. In the first place the number of cows was considerably less in 1915 than in 1916. Secondly

a market was made available for the sale of more dairy products to the Grand Rapids Creamery in 1916 than at any time before, and as a consequence, the value of dairy products sold per cow owned was greater than before. The table shows the amount of milk and cream sold to have more than doubled in the two years while the total value of all dairy products increased about 36.0 per cent. Thirdly, the average price paid for butter sold in 1916 was 28.2 cents per pound, while in 1915 the price received was 25.6 cents per pound. Besides this, much greater efficiency results in the care and handling of cream due to the ability of selling the cream

Table XXVII Comparison of farm produce sales 1915 and 1916

Number of Group	Acres under cultivation	Average total value of farm products		Average receipts from farm crops		Average receipts from live stock products		Average receipts from live stock products.	
		1916	1915	1916	1915	1916	1915	1916	1915
1	less than 1	$ 19	$ 13	$ 6	$ 6	$ 3	$ -	$ 10	$ 7
2	1 - 4.9	154	225	25	10	28	63	101	190
3	5 - 9.9	147	183	98	51	5	33	44	99
4	10 -14.9	244	143	150	57	22	21	72	45
5	15 -19.9	330	312	137	114	27	66	166	132
6	20 -24.9	279	235	288	149	12	55	79	51
7	25 - 34.5	662	440	389	229	112	50	161	131
8	35- 49.9	690	362	360	108	141	147	189	127
9	50 and over	1434	858	1034	506	183	197	237	95
All classes		$ 430	$284	$252	$137	$ 51	$64	$117	$83

rather than manufacturing it into butter.

The amount and per cent of the several farm products sold per farm is shown in Table XXVI. Farms with less than one acre under cultivation sold only $19

worth of farm products, while the remaining groups ranged from $147 to $1454 for the farms with over 50 acres under cultivation. The average total sales aggregate $430 per farm, of which farm crops comprise $262 or 59.1 per cent. A marked increase is shown in the last group where farm crops alone amount to $1034 per farm. Live Stock sales increase very irregularly with acres under cultivation, ranging from $3 per farm in the first group to $105 in the last group, and averaging $51 for all farms. Live stock products amount to 27.0 per cent of the total sales and average $117 per farm. It is noted that in general the percentage of total sales

Table XXVIII Receipts from Outside Work

Number of Group	Acres under cultivation	Average Income from outside work	Per cent of receipts for outside work from			
			Roads	Woods	Farm	Other
1	Less than 1	$ 431	36.5	-	6.9	56.5
2	1 - 4.9	414	41.5	15.6	-	42.9
3	5 - 9.9	242	31.2	30.8	23.5	37.9
4	10 - 14.9	194	40.7	26.0	-	9.8
5	15 - 19.9	457	8.7	22.3	2.2	69.0
6	20 - 24.9	240	28.8	38.6	2.4	30.2
7	25 - 34.9	128	65.6	24.2	-	7.8
8	35 - 49.9	53	41.3	38.7	6.0	23.0
9	50 and over	66	21.9	50.9	-	27.4
All classes		$ 255	28.8	24.6	3.4	43.2

represented by farm crops increases and the percentage represented by live stock products decreases with acres under cultivation, but that the percentage from live-stock itself bears no correlation with acreage.

Comparison of farm sales 1915 and 1916.

Sales of farm produce differ greatly from year to year due to changing prices, and varying crop yields. The farm income average in this community in previous years was much less than that of 1916. Table XXVII shows a comparison of all farm products sold during 1915 and 1916. Total sales for 1916 amounted to $430, while for the previous year they amounted to $284, or an increase in 1916 of $146. The cause of this increase is attributed chiefly to the sales of farm crops. As noted

Table XXIX Total receipts of farms studied.

Source of receipts	Value	Per cent of total receipts.
Farm crops	$21,726	36.9
Outside work	21,164	35.9
Live stock products	9,740	16.5
Live stock	4,265	7.3
Timber products	1,820	3.0
Rent	210	.4
Total	$58,933	100.0

in table XXXI the sales of the major crops were somewhat greater in quantity in 1916 than in 1915 and they sold for a much higher price, in some cases over 100.0 per cent in advance of the previous year.

Live stock sales were $13 less per farm in 1916 than during the previous year, at which time there were an abnormal number of sales due to an over-supply of stock for the supply of winter feeds on hand. Sales of live stock products in-

creased $34 per farm in 1916 over 1915 which is a very significant increase due in large measure to the volume of products sold.

Outside labor forms a very important part of many incomes, but the amount of such work is often unwarranted. Present wants beyond those of necessity are preferred to cumulative increments which are added to future incomes from cleared land. It is much easier to work for present gains than for deferred payments, which often appear never to come; land clearing is difficult and for a short time almost non-remunerative, while on the other hand, road work which yields a cash return is comparatively easy, and involves no initial investment. Much development owes its existence to outside work, and should be encouraged when farm development cannot be economically pursued, or where pecuniary necessity demands it.

Table XXVIII shows the average income derived from outside work to be $255. This factor decreases generally in inverse order with acres under cultivation; the first group averaged $431 per farm while the last group averaged only $66 per farm. Group 5 shows the largest amount of outside work done, which is due in part to income derived from such investments as wood sawing machinery or to particular outside jobs such as school bus driving. Road work is the largest single item, contributing 28.8 per cent of the total receipts from outside work. The opportunity of doing road work is a real aid to the settlers because the work is done usually at slack times of the year. Many new roads have been built in the past few years which have given work for man and team at the rate of $5.00 and $5.50 per day.

The second largest single source of income from outside work is the work done in the woods; this may consist of the man's labor alone, that of him and his team, or merely the rent of his team for a definite period. Work of this nature is very plentiful in the winter months and enables the settler who has no steady income from other sources to earn something when the season is dull and when he can do

little work on the farm. Of the total income from outside work, 24.6 per cent is derived from work in the woods. The amount coming from farm work done outside is very small amounting to 3.4 per cent. This is not strange, however, since the amount of work hired on farms is very little, and since nearly every settler works off his farm to earn money for his cash expenditures, it is impractical or in most cases impossible to hire much work done. The item "other work" alludes to all kinds of miscellaneous labor done off the farm other than that previously specified, which, taken in the aggregate is greater than any other factor. The

Table XIX Showing the amount and sources of Income.

Acres under cultivation	Average total income	Receipts from					
		Farm crops	Outside work	Live stock products	Live stock	Timber and Products	
Less than 1 acre	$ 472	$ 6	$451	$ 10	$ 3	$21	$ -
1 - 4.9	555	25	414	101	28	-	-
5 - 9.9	392	98	242	44	5	-	25
10 - 14.9	442	130	174	72	22	9	-
15 - 19.9	852	137	457	166	27	54	100
20 - 24.9	625	288	240	79	12	-	85
25 - 34.9	822	389	128	161	112	39	-
35 - 49.9	818	360	93	189	141	32	-
50 and Over	1569	1034	66	257	183	62	-
All classes	$ 710	$ 262	$259	$117	$ 51	$22	$ 3

Work consists of much unclassified labor as state ditching, carpentering, sitting on the jury, etc. and is not regular from any one source. A very considerable amount of such work has been available in this locality, because of government and state projects centered here.

Total Farm Income.

The total receipts for the farms under study aggregated $58,933 in 1916. Of this total, farm products forms 60.5 per cent and work done off the farm 35.9 per cent. Table XXXI shows the average total income for 11 groups, and furthermore shows from what sources they have been derived. Total income average $710 for all farms, ranging from $392 in the class with 5 to 9.9 acres under cultivation to $1569 on the farms with over 50 acres under cultivation, thus increasing directly with increased acreage under cultivation. These incomes are independent of

Fig. 25 Relative sources of income in the community.

what is raised and consumed on the farm which in many cases is very considerable.

Farm crop sales form the largest single item. They increase very markedly with increased acreage until the last group averages $1034. Outside work com-

prises 35.9 per cent of the total income and amounts to $255 per year. Outside work and farm crop sales vary inversely, the former decreasing with acres under cultivation, and the latter increasing with increased acreage. Table XXXI shows that farm crop sales increase from 1.6 per cent in the first group to 65.9 per cent in the last group, while outside work decreases from 91.4 per cent in the first group to 4.2 per cent in the last group. Sales of live stock and live stock products tend to increase with increased acreages, although in no definite ratio; such sales form 7.2 per cent and 16.5 per cent respectively of the total income for all farms.

Table XXXI Showing the source of income in percentage form.

Acres under cultivation	Acreage total income	Receipts from				
		Farm crops	Outside work	Live stock products	Live stock	Timber products
Less than ½ acre	$ 472	1.6	91.4	2.1	.6	4.4
1 - 4.9	555	4.5	72.4	18.1	5.0	-
5 - 9.9	392	24.1	61.4	11.3	1.2	-
10 - 14.9	442	28.3	43.9	16.2	4.9	1.1
15 - 19.9	852	16.4	53.7	19.5	3.2	6.3
20 - 24.9	625	46.1	38.5	12.6	2.0	-
25 - 34.9	822	47.0	15.4	19.4	13.5	4.7
35 - 49.9	818	44.1	11.4	23.3	7.3	3.9
50 and over	1599	65.9	4.2	14.2	11.7	3.6
All classes	$ 710	36.9	35.9	16.5	7.3	3.0

Table XXX shows an average income from timber products of $22 per farm. This constitutes a very small part of the total income for all farms combined although for those farms from which such products have been sold, the average sales amount

to $182 per farm. Timber sales consisted in part of cordwood, but they were chiefly composed of logs sold to the hardwood factory in Cohasset. Rent is another very minor source of income from which a total of $210 was received. This item is money received for land rental from farmers outside the community, and is a valid but relatively insignificant item of revenue.

Farm Expenditures.

Before incomes can have any significance, expenditures must be given consideration. Table XXXII shows the average expenses for all farms. The several items of expenses for all farms are divided into four classes, feed, hired labor, taxes, and other expenses which include threshing, twine, repairs, oil, insurance, seeds, rent and depreciation on machinery.

The average total expenses per farm were $218. The amounts vary widely in the several groups. The largest single item of expense is feed purchased, which amounts to $74 for the average farm, and varies from $11 on the smallest farms to $148 for the farms in the second group. This group of farms is of extraordinary character being composed of settlers, the majority of whom do almost nothing but work off the farm and consequently buy all the feed for their horses. The average feed expense for farms in this group which receive only a reasonable amount of their income from outside sources is about $30 in contrast to $148 received as an average for the whole group. Feed purchased gradually declines in the percentage it forms of the total expenses as the acres under cultivation increase. In the first group it forms 50.8 per cent of the total, and in the last group only 8.7 per cent, averaging 34.0 per cent of the total expenses for all farms. Purchased feed is a necessity on most farms since the acreage under cultivation has not yet become great enough to produce adequately for the stock owned, and at the same time provide a cash crop.

Hired labor is a small item of expense, averaging only $39 per farm. It is greatest on those farms with over 50 acres under cultivation, averaging $123 per farm. On most farms labor is not needed except at harvest time, although upon a few farms a hired man is kept for several months of the year. Taxes form an inconsiderable expense, averaging $18 per farm or 12.7 per cent of the average total farm expenses.

Other expenses amount to $76 per farm and comprise 35.0 per cent of the total expenses. They are greatest in the last two groups due to heavier farming operations. The rental charges do not include the money paid by the three tenant farmers in the community, but represent compensation for the few acres of rented

Table XXXII Showing average expenses for farms in the community

Number of Group	Acres under cultivation	Total expense per farm	Average expenses per farm							
			Feed		Hired labor	Taxes			Other Expenses	
			Amt.	Per cent of total	Amt.	Per cent of total	Amt.	Per cent of total	Amt.	Per cent of total
1	Less than 1	$ 18	$ 11	60.8	$ -	-	$ 6	33.7	$ -	5.4
2	1 - 4.9	246	148	60.2	3	1.3	14	5.7	81	33.0
3	5 - 9.9	125	28	22.4	51	40.5	17	13.3	29	23.0
4	10 - 14.9	152	66	43.5	11	7.6	18	11.6	57	37.3
5	15 - 19.9	287	96	32.5	80	27.6	29	10.2	81	27.8
6	20 - 24.9	173	78	44.8	19	10.8	28	16.9	49	28.3
7	25 - 34.9	231	99	42.7	5	2.4	44	18.5	83	36.0
8	35 - 49.9	278	78	28.2	35	12.6	33	11.7	132	47.5
9	50 and over	408	35	8.7	123	30.0	61	14.8	189	46.5
All classes		$218	$74	34.0	$ 38	17.8	$18	12.7	$ 76	35.0

land adjacent to the farms owned by settlers. Rented farms have been treated as owned farms, both shares being added together to form the total income. The expense of seeds and normal machinery depreciation are the two largest items included in this class. Depreciation was charged at the rate of 10.0 per cent for all machinery.

Real family Income.

Having determined the total incomes and total expenses, the difference is termed the real family income which designates the money available for personal

Table XXXIII Showing incomes of farmers in the community.

Number of Group	Acres under cultivation	Average gross income	Average total expense	Average real farm income	Average family income	Average acres under development this year	Average acres wholly cleared this year
1	Less than 1	$ 472	$ 18	$ 1	$ 454	0.4	0.0
2	1 - 4.9	555	246	-52	309	0.1	0.6
3	5 - 9.9	392	135	22	257	1.6	1.2
4	10 - 14.9	442	152	42	290	1.8	0.9
5	15 - 19.9	852	287	43	565	1.5	1.3
6	20 - 24.9	625	175	204	450	0.9	1.3
7	25 - 34.9	802	231	431	991	3.1	1.9
8	35 - 49.9	818	278	412	540	1.5	3.7
9	50 and over	1569	408	1050	1161	7.9	6.7
All classes		$ 710	$218	$ 237	$492	1.9	2.4

or family use, improvements or annual payments on indebtedness. It does not, however, take into consideration the farm products raised and consumed in the house-

hold. Table XXXIII shows the average family income to be $492 for all farms; the incomes range from $267 for the third group to $1161 for the last group. Of the total, four groups--which includes less than half of all the farms--have family incomes above the average. The low figure shown for the third group is due to the lack of industry among the several settlers. Of the total settlers in the group only one shows the qualities of a successful farmer, the others being of the careless, lumber-jack type who have been on their farms for a long period of years and who have made scarcely more than an existence.

Table XXXIV Showing distribution of Incomes in Community.

Income received	Number of farmers
Less than $200	19
$201 - $400	24
$401 - $600	13
$601 - $800	10
$801 - $1000	6
Over $1000	10

The income entirely attributable to the farm is shown in the column designated as real farm income. This is the money income derived from the sale of farm produce after all expenses have been deducted.* The average farm income is $237 or less than one half the family income, but the significance of this average is greatly impaired by the wide difference in the several groups. The average farm income for group 9 is $1050 while group 2 shows a minus farm income due both to the small amount of farm produce sales and to the large amount of feed purchased by this group as shown in Table XXXII.

The distribution of real family incomes is shown in table XXXIV. The modal income or the point of greatest frequency falls in the group of incomes with less

* The figures are somewhat misleading owing to the fact that the expenses incurred for outside work have been included with farm expenses.

than $200 and more than $201 per family. There are 19 settlers with family incomes of less than $200 while there are only 10 farmers with incomes over $1000. It is obviously impossible for most settlers to live on their farm incomes, with the result that they resort to outside sources of income. Thus far no cognizance has been taken of the living received from the farm. No data was collected concerning this item, but it is highly probable that the relative percentage of living received from the farm in this community is equal to or greater than that found in any well developed community of the state, due to the fact that the division of labor is not great and the family is more self sustaining.*

In addition to incomes expressed in terms of money the settler should be credited with an additional income in the form of cleared land. It is noted in Table XXXIII that those groups with the largest incomes have usually cleared the most land, and vice versa, further emphasizing the importance of personal industry in development. The average acreage cleared and totally taken out of development for all farms during the year was 2.4 acres, while 1.9 acres were brought into process of development. This is somewhat greater than the rate of development for all farms in the community during the whole period of development as shown in Table XI. The last group cleared a little less rapidly in 1916 than for the whole period, but groups 6 and 8 have increased their rate. It is also noted that group 7 which has been the longest under development maintains the same rate as the average for the whole period.

* A study of the cost of living on 22 farms in Minnesota for a series of years places the value of farm produce consumed on the farm at $181, which was 43.0 per cent of the total cost of living. F. W. Peck. Bulletin 162 Minnesota Experiment Station.

Chapter IV - Community Welfare.

The general welfare of any community is best measured by the standard of living of the people in that community. From preceding chapters it is imminent that the standard of living—the use and control of economic goods and conveniences—in the community is relatively low. This is a condition incumbent upon pioneering and one predominately influenced by the sparcity of settlement, the characteristics of the population, the amount of tillable land and the cooperative enterprise of the people.

Development in the community has been constant yet not equally progressive among the settlers with the result that many settlers have reached a stage of surplus production, making them independent of outside income while many others either of more recent residence or possessed of less desire for agricultural independence have not yet emerged from the subsistence stage of agricultural development. Their joint efforts however have greatly improved conditions and the settler is no longer a pioneer. His first duties are indeed those of self-preservation, but he no longer blazes his own trail, lives in total isolation, or suffers the hardships of the early settler.

The Farm and Its Work.

Except for a few cases of lumber-jank settlers, the farms of the community reflect thrift upon their owners. Comfort and economy have been the directing factors in the erection of buildings. It has been both practical and financially necessary in most cases to erect small buildings at first, since the settlers have no use for large buildings until their farms are sufficiently developed to raise

feed for live stock. The first buildings erected were of log construction as logs were both accessible and easy of construction; at present however about 30.0 per cent of the buildings in the community are of this type.

The highest developed farms are equipped with modern buildings, some having silos. On the less developed farms the buildings are plain but well kept. The houses whether of log or of frame construction are usually one and one-half stories high containing about five rooms. The barns are in most cases warm but very unhandy, a characteristic especially attributible to the log barn. A poultry

Fig. 24. Thirty per cent of the buildings are of log construction.

house, tool or machine shed, and a root-cellar comprise the other buildings found on most farms. The root-cellar is usually of large dimensions being built into a side-hill when possible. Wells are mostly of the driven type although there are a few drilled or dug wells. On most of the farms cultivated fields are fenced, while the area used for pasturage is also usually enclosed.

The machinery common to all farms consists chiefly of land clearing tools, hauling, tilling and haying machinery. There is less than one-half dozen stump pullers in the whole community but as clearing is done mostly with team and dynamite only the smaller tools are necessary. Heavy wagons and sleighs are

generally owned. Tilling machinery is of all kinds, types and sizes, each farm being equi ped according to its needs. Hay machinery including a mower and rake is common to nearly every settler while the large machinery such as potato diggers and grain binders are found only where development has proceeded sufficiently to make their use profitable. Cream separators are owned on nearly every farm while a few settlers have gas engines for pumping water or running wood saws.

Work on the farms is extremely heavy. It consists not only of chores and field work but also of further land clearing which at its best is most difficult. No farm in the community is entirely cleared and probably there are few farms where all stages of development do not obtain. Land clearing can be done at all times of the year and as a general rule settlers working with a definite agricultural purpose spend as many hours per day at work as they can physically endure.

The average number of hours spent at work each day varies with the stage of development, the settler and the time of year. While it is customary for the new settler who is confronted with the problems of subsistence to work 12 to 15 hours daily from early spring until late in the fall, it is not uncommon for the more thrifty settlers to do likewise. The new settler usually works off the farm whenever it is possible, clearing his land at odd times. As his development progresses, however, outside work decreases and more attention is given to the farm. Fewer hours are spent per day by the less progressive settlers but the results are registered in their incomes and in the amount of land brought under cultivation.

The longest working days occur in the summer and early fall months during which time work in the fields often continues until eight o'clock in the evening. After returning from the fields the chores have yet to be done and since milking is the heaviest at this time of the year it is often ten o'clock before the days work is completed. Similar conditions prevail at harvest time in the fall. The days are not so long at this time of the year but work continues in the fields until dark. The work of the women and children on the farms is a very significant

contribution. On most farms they care for the poultry and butter the year around. During the summer they keep the garden, help with the chores and often work in the fields at such times as haying and potato digging.

Cooperative Activities.

The earliest type of cooperation among the settlers and still widely practiced is the mutual exchange of machinery and help. As a usual thing no one settler has sufficient use for all the machinery needed that he can afford to own all the machinery that he uses, but if he can own one machine and his neighbor own another there is great economy in exchange. Likewise with labor, an

Fig. 25 Small buildings are most practicable for the new settler.

exchange of work will oftentimes accomplish tasks that could not be done otherwise. This phase of cooperation has probably reached its highest form in the western part of the community where a group of farmers have agreed to give every new settler coming into the community one days clearing. It is thought that this will make the acquaintance of the settler, teach him better and quicker methods of clearing and give him encouragement.

The first significant cooperative enterprise in the community was started in 1912 when a cooperative potato warehouse association was organized. The articles of incorporation provided for the sale of 120 shares of stock at $25 per share, three-fourths of which was to be paid in cash and the remainder was to be paid from dividends which were allowed up to 10.0 per cent. Profits above this amount were to be apportioned according to patronage. The purpose of the organization was "To carry on a cooperative business in the buying and selling of farm products and farm equipment; to conduct a society for the social and educational improvement of the members of the association; for the scientific betterment of farming and for the social and educational benefit of the community; to provide, lease, furnish, own and manage buildings, halls, offices and apartments for the use of one or more purposes above mentioned".

The shares were sold and the building was erected at Cohasset in the fall of 1912. It was leased to a Minneapolis potato dealer the first year and the lease renewed the second year but the warehouse was not opened for business. In 1915 the building was leased to another party and in the fall of 1916 it fell into receiver's hands and was sold.

Failure of the enterprise was due in the first place to the concern being cooperative in name only. Five-ninths of the stockholders were not farmers, but residents of Cohasset who knew nothing about cooperation and who were interested chiefly in profits. The enterprise was not premature. Probably no dividends would have been declared the first year and some adversities would have been met, but the desired 10.0 per cent profits could have been realized from the 1916 potato crop besides a sum providing for depreciation and interest at a charge of 5 cents per bushel. But the farmers became suspicious of their town friends, and since there was nothing in the consititution binding them to sell at the warehouse they sold wherever they could find a market.

The next efforts at cooperation sprung up in March 1914 when a telephone com-

pany was organized by a group of farmers in the western part of the community. There were 25 shareholders in the company, each of whom was initially assessed $10, required to provide his own telephone and denote 20 telephone poles. The line was built that summer. It was entirely independent of all other lines and strictly cooperative, having privileges with outside lines during the day time, through one of the merchants at Cohasset. The line is maintained by an annual assessment which during the year 1915-16 amounted to $1.00 per member. The success of the organization has caused agitation for other lines in the neighborhood and it is probable that others will be constructed in the near future.

At the time the telephone company was organized the people of the community petitioned the government for a rural route. The petition was granted and the route was installed one year later. Another cooperative activity worthy of consideration is the cooperative bull association which was organized in 1916. The association consists of ten members who own a pure bred Holstein bull which they are using to improve their grade cattle. With the prospect of dairying as the principal industry of this section in the future it would seem that the first step had been taken toward its advancement. It is seen that cooperative activities have advanced rather widely and perhaps remarkably when it is realized how diverse the relationship of the settlers has been. There have been no ties of nationality, sect or previous experience, either of which would have provided common grounds for successfully binding them together. Each instance of cooperation has been born of necessity and whether successful or not it has served to teach the settlers the essentials of cooperation and form the basis for greater activities in the future.

Marketing of Farm Products.

Although the settlers in this community are located within 50 miles of the best

market in Minnesota, the Mesaba Iron Range, marketing conditions are considered unsatisfactory. There is much adverse criticism of local buyers among the farmers who complain that the buyers exact too wide margins and that they buy produce only at certain times of the year. The farmers point out the year-round demand for all kinds of farm products on the Iron Range and claim unnecessary differences in the prices received by the farmer and those paid by the consumer on the range. Whether or not these accusations are fully warranted can be determined by an analysis of conditions.

Fig. 26. Farmers raising potatoes in great enough quantities sell them in car lots.

In the first place it should be realized that farming operations are relatively new in this locality and that the sales of farm produce have never reached large quantities. The settlers' produce until recent years has been largely sold to the lumbering interests but with the decline of the lumbering industry, new outlets were necessary for increasing supplies of farm produce. The merchants at Cohasset became local buyers for certain products; much produce was hauled to Grand Rapids or even to the Iron Range, while some settlers shipped their products to the range or elsewhere.

It is essentially this condition that exists at present and which will continue to prevail until the population becomes large enough to produce greater quantities of agricultural products or until the people cooperate more closely in selling the products they now produce. The average settler fails to realize that the amount of his sales is usually small at any one time and that he sells to the dealer very irregularily. It also seems difficult for many of the earlier settlers who have received retail prices from lumber companies in the past to realize that definite standards and grades have been set for the classification and sale of farm products. Moreover the settlers in general fail to appreciate the advantages and extent of division of labor to which farm products have been subjected in the marketing process.

The local buyer who purchases the greatest percentage of products sold in the community is indeed a middleman, but one performing valuable and necessary functions for which he is entitled to reasonable profits. It is regrettable if the price received by the producer is not at all times the market price for the commodity sold, but on the other hand the producer has redress to cooperative marketing if he so desires, and thus eliminate the excessive profits made by the local buyer. Exception is made however with products for which a low price is received but which do not lend themselves to profitable cooperative marketing. In such cases the producer must either raise other products which he can produce more cheaply--the cost of marketing being a cost of production--or accept the price offered until cooperative methods are practicable.

It has been seen that potatoes form the largest crop sold off the farm. The bulk of the crop is sold in the fall although some farmers prefer to hold part until the following spring. Very little machine grading of potatoes is done on the farm. The small potatoes are picked out and everything that is of marketable size is sold. The largest growers ship their crop either to commission firms in Duluth or to dealers on the Iron Range. In the latter case the potatoes are

usually bought before they are shipped. Several farmers were found who hauled their potatoes by wagon to the range towns and peddled them out. Most of the settlers however sell their potatoes to local buyers who handle them through the association warehouses and ship them to Duluth or to the Range towns. No objection was raised among the farmers to prices received for potatoes in 1916 as the price was high and competition in buying was keen. Complaints were made however that some years prices were lower than those paid in Grand Rapids due to the fact that a Grand Rapids concern had a monopoly at Cohasset.

Dairy products form the second largest item of farm produce sales. They are sold chiefly in the form of butter which comprises 49.7 per cent of the total live stock product sales as compared with 25.7 per cent for milk and cream sales. Butter is the most convenient form for selling the dairy product because of the absence of a permanent local cream market. Considerable agitation was found among the farmers for a cooperative creamery, but any such enterprise can not exist with less than 350 cows in the community. Butter may be sold at the stores but it is usually exchanged for goods. Some butter is sold privately, one farmer having contracted all his butter at 30 cents a pound for the entire year. During the winter months butter is sold in limited quantities to distant logging camps. Sales of milk were confined entirely to private families in the village of Cohasset while cream was sold both to the Duluth centralisers and to the Grand Rapids Creamery which ran a cream route in this community twice a week during the summer and fall of 1916.

Of the total milk and cream sold 35.6 per cent has been private sales of milk, 50.3 per cent has been creamery sales, and 13.6 per cent has been centralizer sales. Very little cream is sold from this district to the creamery during the winter time, due to inadequate transportation facilities, with the result that the cream is made into butter on the farms and sold at the stores. The prices received for butter at the stores were seldom found satisfactory and several farmers com-

plained of being unable at times to dispose of their butter. A comparison of the prices paid at the stores with those paid by the Grand Rapids Cooperative Creamery shows that the creamery paid six and eight cents more per pound in June and October respectively than the stores.

Hay ranked second in the value of farm crops sold in 1916. Most of the hay is sold loose and hauled either to Grand Rapids, Cohasset or some near-by logging camp in the winter while the rest of it is baled and shipped to the range towns.

Vegetables are chiefly sold on the Range by farmers who make regular trips to the range towns during the summer and fall months. Some vegetables are sold to the stores for local consumption but the demand is not great. Cabbage, onions and roots are sometimes bought in car lots by the merchants but the farmer usually ships his own truck crops when he has them in sufficient quantities. Meat, poultry and eggs are also hauled to the range and peddled out by the farmers marketing in this manner. Live stock and poultry however are usually sold alive to the butchers while most of the eggs are sold at the local stores.

Purchasing in the Community.

From a priori reasoning it was thought that the settlers purchasing power—that is his power of exchange—was reduced below that of the farmer in a well settled region due to the high costs of necessities in a new country and the lower prices received for commodities of surplus production. Facts substantiate this deduction, yet there is no denial that the conditions militating against the settler are for the most part the workings of inevitable economic laws. Marketing methods and conditions attendent upon the settler have already been taken up, but in order to complete our study of the settlers purchasing power it remains to show the conditions under which he bargains and the methods of purchasing which he pursues.

The settlers of the community do their trading at either Cohasset or Grand Rapids. Grand Rapids offers greater variety and often pays more for produce in exchange than does Cohasset, but due to the added distance for most of the settlers the bulk of the trading is done at Cohasset. Cohasset has three general stores, one small grocery store kept in conjunction with the post-office and jewelry store, a small clothing store owned by an invalid real estate man, a lumber yard, butcher shop, confectionery store and a bank.

Of the total business done by these establishments except for the bank and lumber yards, over 90.0 per cent is done by the three general stores. Groceries, flour and feeds and hardware are handled by all three stores while dry goods are handled by all but one of them. The gross sales of the three stores aggregated about $70,000 in 1916 while the capital invested in goods amounted to approximately $15,500. The average total margin exacted for all goods varies from 20.0 per cent to 30.0 per cent for the different stores. One store figures the profits on the investment at 8.0 per cent and the operating cost at 22.0 per cent, 75.0 per cent of which is labor. The greatest margin of profit is taken from dry goods which averages about 30.0 per cent. The average margin taken for hardware is 25.0 per cent, for groceries 20.0 per cent, and for flour and feeds 15.0 per cent.

According to the manager of one of the stores 20.0 per cent of the business is done with lumber camps, 40.0 per cent with the farmers and 40.0 per cent with the village people. Approximately the same percentage was given by one of the other stores while the third does no business with the lumber camps. Two of the stores do a credit business while the third requires cash sales. The two stores doing a credit business had approximately $9000 worth of bad debts when this survey was taken. This condition was due to the fact that many men working in the pail and box factory prior to its failure in 1916 were provided with supplies for a considerable length of time when they were pending payment from the factory. The

total amount of bad debts previous to the time of the failure amounted approximately to $3000.

It was found that 56.0 per cent of the farmers carried store credit. Table XXXV shows that of the 82 farms studied only 36 farmers were carrying no account at the stores. Of the 26 settlers carrying accounts 18 averaged one month in time, while the others ranged up to one year. The average credit account carried at the time the survey was conducted was $42, while the greatest amount carried at any one time in the year was approximately $48 per family. All stores accept

Table XXXV Showing status of farmers' accounts at the stores.

Total number of settlers.	82
Number settlers having credit accounts.	46
Number settlers having no credit accounts.	36
Number accounts running 30 days or less.	18
Number accounts running 1 to 3 months.	13
Number accounts running 3 to 6 months.	9
Number accounts running 6 to 12 months.	6
Average amount of credit carried at time of survey.	$ 42.00
Greatest amount of credit carried at any one time during 1916.	$ 47.70

certain farm produce in exchange. Figures were not attainable to determine how much of the business was done by this method but one of the stores estimated that 25.0 per cent of its business was conducted by trading. Another estimated 30.0 per cent while the third refused to give any figure. Only 19 settlers reported no exchange of produce at the stores. The amount of such trading varied from very little to practically all of the purchases made for the household. Much feed was also obtained in exchange. It was noted in most cases that the settlers

doing little or no trading at the stores were those who had the least land under cultivation.

The mail-order business in the community is rather significant, the average amount bought per family buying from mail-order houses in 1916 being $65.70. The articles bought are chiefly clothing, shoes and some groceries. The purchases are made largely from Chicago, although Minneapolis shares in the business. It is the prevailing opinion among the farmers that the local stores are exacting too large profits, and upon this assumption the settlers justify their purchasing from catalogue houses.

Reports from farmers in the community show that cooperative buying was attempted only once. In 1915 the Helping Hand Farmers Club in the western part of the community bought a car of corn upon which 25 cents per bushel was saved according to the farmers who bought. No objection was voiced among the farmers because of their venture but it seems there has been no further cooperative purchasing since that time. The chief difficulty according to the farmers questioned was the matter of financing. Few settlers have sufficient cash that they could advance for the necessary time with the result that they continue buying their supplies as they need them at the stores on credit even though the charges are excessive. It seems however that this objection could easily be removed if a farmers organization was formed and their credit offered jointly for supplies or necessities.

Mortgagal Conditions.

A comparison of farms classified according to credit conditions in the community is shown in Table XXXVI. It is noted that 41.3 per cent of all farms are free of indebtedness. Of the remaining incumbered farms 25.0 per cent is held by contract and 33.7 per cent is subject to mortgage. The farms held by contract

mainly consist of lands which were sold by the state subject to payment in 40 years with 4.0 per cent interest payable annually. The interest rate on these lands has been sufficiently low to warrant holding back the title until maturity, with the result that in several instances settlers have invested their money elsewhere rather than to assume the title. The other contracts which usually cover a period of several years have been made to settlers of small means. The mortgage is most often given however, since it is to the interest of the seller to receive the largest initial payment possible.

Table XXXVI Showing comparison of Mortgaged and Unmortgaged Farms.

Mortgagal condition	Number of farms	Per cent of total farms	Average acres per farm	Average acreage under cultivation
Unincumbered farms	38	41.3	78*	14.5*
Farms bought on contract	23	25.0	93	21.3
Mortgaged farms	31	33.7	107**	22.8**
All farms	92	100.0	98	21.2

* Figures represent averages of 36 farms. Two farms were eliminated because of their extreme size.

** Figures represent averages of 30 farms, one farm being omitted due to its excessively large incumberance.

Of the total farms under development in the community 58.7 per cent is incumbered, thus showing a much higher percentage than that for Itasca county which

was 30.0 per cent in 1910. It is interesting to note the differences occurring in the three classes of farms when compared with one another. Mortgaged farms are the largest, averaging one hundred and seven acres; those farms held under contract rank second with ninety three acres while those carrying no indebtedness are the smallest and average seventy eight acres. Acreage under cultivation is about the same as that for the incumbered farms indicating the relationship of capital to farm development and showing the advantages of increased capital.

Fig. 27 Risks are no greater on properly appraised out-over farms than on well developed farms.

The mortgagal condition of farms is given in detail in Table XXXVII. This table shows the factors entering into all the mortgaged farms except four which have been omitted either for reasons of identification or for lack of adequate information. The figures are those given by the farmers themselves and have not been further verified. The amount of the mortgages in most instances is small, only seven of the 31 exceeding $1000. The average size is $692 which is 18.2 per

cent of the land value. The percent that the mortgage forms of the land value of the farms mortgaged in Minnesota and Itasca County in 1910 was 20.1 per cent and 21.1 per cent respectively, showing that the farms in this community are less heavily mortgaged than those for the state at large or even for Itasca county.

Table XXXVII Showing details of mortgaged farms in the Community.

Size of farm	Acres under cultivation	Value of land	Value of buildings	Total value of farm	Amount of mortgage	Years to run	Rate of interest	Where Borrowed
30	-1	$ 360	$ 150	$ 510	$ 300	5	10.0	Bank
55	2	1100	2000	3100	1500	1	8.0	Bank
160	8	2400	25	2425	600	4	8.0	Real Estate Company
21	10	420	500	920	200	Indefinite	7.0	Private
160	9	4000	1010	5010	600	3	8.0	Bank
160	7	2400	300	2700	650	1	7.0*	Bank
40	12	1000	650	1650	250	2	8.0	Private
40	12	1200	525	1725	400	5	8.0	Bank
80	15	3200	2000	5200	1200	5	8.0	Bank
120	24	3000	275	3275	700	5	6.0	Private
80	20	2800	750	3550	1370	2	7.0	Private
160	19	2880	400	3280	400	3	10.0	Real Estate Company
160	18	4000	850	4850	225	2	10.0	Bank
50	31	2250	475	2725	350	6	10.0	Bank
147	40	6660	1200	7860	1000	3	6.0	Private
165	39	4125	2100	6225	1000	6	8.0	Bank
148	35	4440	325	4765	800	5	8.0	Bank
137	43	4795	950	5745	1200	10	6.0	Private
80	35	2400	600	3000	600	5	8.0	Bank
159	46	4770	900	5670	1000	10	7.0	Real Estate Company
157	41	4710	025	5735	640	5	6.0	Private
78	25	3120	450	3570	600	4	7.0*	Real Estate Company
275	58	8250	200	8450	1100	3	.0	Bank
160	20	4000	160	4160	400	3	8.0	Bank
80	18	2000	10	2010	200	6	8.0	Bank
40	13	1600	325	1925	500	5	9.0	Bank
32	8	2640	400	3040	300	7	10.0	Private

* 2.0 per cent commission in addition to interest.

The average mortgaged farm containg 110 acres thus bearing an indebtedness of $6.30 per acre.

The interest rate varies from 6.0 per cent to 10.0 per cent averaging 8.1 per cent for all mortgages. Five loans were made at 10.0 per cent and 3 at 6.0

per cent, the others ranging between the two extremes. Commissions of 2.0 per cent were charged on two of the loans but this is not a common practice. One large loan not included in the list shown in the table was made for 9.5 per cent. The average time for which mortgages run is 4.7 years. The number of mortgages made out for less than the average is 11 while the modal period is 5 years. Few of the mortgages are ever paid at maturity but they are renewed for another period of years. The last column in the table shows that banks furnish money for more than one half of the mortgage loans. Real estate companies have provided the capital for four loans and private individuals for the remainder. It is noted that the highest rates of interest are exacted by the banks. It should be stated however that the two loans made at 9.0 per cent and the three loans made at 10.0 per cent were made by one bank.

It would seem from the foregoing facts that many more loans could be safely and profitably made in the community. Many farmers state however that they will not borrow money for clearing land or for purchasing live stock at such high rates. On the other hand there are many settlers who are opposed to borrowing money because of the responsibility incurred. For the latter class there is no redress, but for those farmers who are willing to borrow under reasonable conditions there should be some source of supply. Loans made to responsible parties on out-over properly appraised incur no greater risk than those placed upon lands in a well developed country. What the farmer needs is a sufficiently large loan at a reasonable rate of interest, probably not to exceed 6.0 per cent, covering a long period of years.

Borrowing on short time credit was found to be rather prevalent, most farmers who had credit either having a loan at the time the survey was made or having had one some time during the past year. The size of such loans is usually small, seldom exceeding $200. They are obtained for about the same rate of interest as long term money although certain banks demand 10.0 per cent. Single named paper

is acceptable in most instances, chattel paper being required for the larger loans. It is needless to say that short term money is always available to farmers who command credit, but the need for short term loans is of less importance than for the loans which can be put in clearing land, purchasing of live stock or into making of other farm improvements.

Taxation.

Taxation is little understood by the people of the community. Most settlers believe their taxes are too high, failing to appreciate the fact that the country is new and that the ever increasing improvements require money. Investigation shows however that the tax rate is not high when compared with other townships. The total taxes collected in Bass Brook township for the year ending June 1916 was $14387. Of this amount 76.6 per cent was collected from real estate, 15.8 per cent from mineral holdings and 7.4 per cent from personal property. In township 55 range 27 the total amount collected was $3398 of which 87.7 per cent was real estate and 12.3 per cent personal property. Disbursements of these moneys for each township is shown in Table XXXXI. Of the total taxes levied in Bass Brook township 44.0 per cent were spent for schools, 34.8 per cent went to the township, 14.9 per cent to the county, 5.3 per cent to the state and 1.9 per cent for liquidating state loans to the township. In township 55 range 27 the percentage spent for schools was 54.7 per cent of the total. Administrative town expenses are handled by the county commissioners but the township has been assessed to the extent of 25.0 per cent of its total expenditures for the road and bridge fund. The amounts allotted to the county and state are relatively the same as for Bass Brook township.

Considerable agitation was found among the settlers for exempting personal property from taxation. Some settlers were of the opinion that real estate should be exempt from taxation until the settler had developed his land to a certain point; while others thought that the settler should not be penalized for clearing his land by having to pay a greater tax on cleared land than on wild land. These questions involved the justice of the whole taxation scheme, a discussion of which can not be taken up here; suffice it to say that the ideals of the settlers are largely realized although most of them are not aware of it. An investigation into personal property valuation reveals the fact that the value of personal property is assessed very low. On the other hand undeveloped land is assessed at values no lower than adjacent cultivated land of like quality which not only helps the settler but tends to confiscate a part of the unearned increment created by the settler on undeveloped adjacent land.

Table XXXVIII Showing amount and sources of taxes in community.

Tax	Bass Brook Township		Township 55 Range 27	
	Amount of tax	Per cent of total	Amount of tax	Per cent of total
Total tax	$14387	100.0	$3598	100.0
Real Estate	11031	76.8	3156	87.7
Personal	1072	7.4	442	12.3
Mineral	2283	15.8	-	-

• Such a law was passed in Michigan in 1913 but results from 14 counties—Oceana, Missaukee, Mio, Ludington, Lake, Kaska, Iosco, Harrison, Harrisonville, Manzie, Antrim, Wayne, Sheboygan, Montmorency—show that only six have made any use of the law. The total number of farmers who are taking advantage of the law number 120 (June 1917).

It has been seen that the resident holders of land constitute only 28.9 per cent of the total land holders but notwithstanding this fact, the non-resident owner plays an important role in the improvement of the country. In the first place he induces new settlers to come into the community. The importance of this fact is frequently exaggerated however since the total cost is often so great as to be wholly uneconomic both to the settler and to society at large. In the second place he provides taxes for the general use of the community and settlers are benefitted by the expenditure of these funds.

Table XXXIX Showing disbursements of taxes for the Community.

Source of expenditure	Bass Brook Township		Township 55 Range 27	
	Amount of expenditure	Per cent of total	Amount of expenditure	Per cent of total
State	$ 771	5.3	$ 217	6.0
County	2021	14.0	595	16.3
School	6320	44.0	1965	54.7
State loans to township	222	1.9	-	-
Township	5050	34.8	-	-
Unorganized road and bridge	-	-	831	23.0
Total	$14307	100.0	$3598	100.0

A very much mistaken opinion is held among land holders in general concerning the relation of taxation to land values. It is generally held that the land owner has an ethical right to an annual rise in land values equal to the amount of his tax, but nothing could be further from the truth. As shown on page 46 the price paid for land represents the present capitalised earning capacity of the land plus that earning capacity which the owner expects to realize in the

future and for which he is willing to wait. There is no economic justification for an annual rise of land value equal to the amount of the tax for this has already been discounted in the purchase price and can not be exacted again.

Education.

Educational facilities in the community compare favorably with those found anywhere in the state. The schools in Bass Brook township are under different supervision than those of the unorganized township west of Bass Brook. Bass Brook township is included in the school district number one which is managed by a board of education comprised of three members who are elected from the district at large for a term of three years. This board in turn appoints a superintendent who puts into execution the powers of the board. Those schools in the western part of the community are technically under the supervision of a county board of education which has charge of schools in unorganized townships.

District number one contains 62 congressional townships or 2232 square miles. "It has a total length of 60 miles, north and south and is 53 miles in breadth at its widest point of measure." The district contains the schools of seven towns besides the 60 schools found in the rural district. "One would naturally expect that the towns and the open country might try to pull apart and establish districts independent of one another, or, at least, that each town or village would insist on its own independent organization. Thus, for example, Grand Rapids, with a population of 2,500 people, has the central high school of the district, while Cohasset, with a population of 800, has only a graded school. The latter town seems to have no desire to establish a district of its own, however, since its interests are the interests of the entire district, and the town really has all that it can wish in educational facilities. The district has erected here a $40,000 building for the eight grades, including an excellent equipment for do-

mestic science and manual training."

All schools in Bass Brook township outside of Cohasset have been discontinued except one which is known as the Thorofare School and which is located in a remote part of the township. Only three children were in attendance at this school in the fall of 1916. The per capita expense for the school year 1915-16 was $117. All other children of graded school age in the township are conveyed to Cohasset daily. The total attendance in the fall of 1916 was 149, as compared with 165 in 1915 and 175 in 1914. Expense of education for the school year 1915-16 is

Fig. 26 Rural school abandoned for the greater educational advantage of the consolidated school.

shown in Table XL. The per capita cost of education was $52. Children of high school age in Cohasset are conveyed daily to the high school of Grand Rapids which affords far better facilities than Cohasset would be able to offer were it to operate its own high school. The number of pupils so conveyed in the fall of 1916 was 18.

The high school at Grand Rapids is a state high school of the first class, offering work in agriculture, domestic science and normal training. Children outside of Cohasset in Bass Brook township have equal privileges with those living

within conveying distance since each child is entitled to $7.50 per month from the school district toward defraying his living expenses while in school. Only two students were taking advantage of this opportunity in the fall of 1916.

While the schools located in the unorganized district in the western part of the community are technically under the jurisdiction of the county superintendent they are in reality under the control of a local school board. There are three rural schools in this district each of which is well equipped and modernly built. The average attendance throughout the school year varies from 10 to 20 students.

Table XL. Showing costs of operating Comasset graded school 1915-16.

Salaries	$5,686
Transportation	1,819
General supplies	750
Manual training	380
Total	$8,635

Another phase of community education is the reading matter taken in the homes. The rural mail route has greatly increased the number of papers available to the farmers thereby keeping them in closer touch with the agricultural and political conditions throughout the country. Three instances were found where no papers were taken. In each case illiteracy was the reason. It was found that 26.8 per cent of the farmers take daily papers, 79.2 per cent take the local weekly paper, 50.0 per cent take other weekly papers, 67.0 per cent take agricultural papers, 26.8 per cent take cheap story papers and 9.6 per cent take the better magazines. Of the farmers taking the local weekly papers 29 take both Grand Rapids papers. The class called "other weekly papers" consists of about half weekly papers edited in the towns from whence the settlers have come and half of other weekly newspapers. Of the families taking the agricultural papers 23 take

one paper, 18 take two papers and 14 take three papers.

There seemed to be no antagnotism toward scientific agriculture. All farmers seemed anxious to learn new ideas and better methods. Most farmers had some knowledge of the work being done by the state experiment station at Grand Rapids, but it seemed to be the consensus of opinion that the station had made too few experiments in land clearing. It was learned that 28 of the settlers consulted the agricultural instructor of the district frequently about various problems and that 27 farmers were receiving bulletins from the United States Department of Agriculture regularly.

Religious Activities in the Community.

Religious activities are centered in Cohasset. The various churches represented here are the Methodist, Catholic, Presbyterian and Christian. The Methodist and Catholic denominations maintain separate churches while the latter two occupy the old village school house. The Methodist church supports a pastor and holds meetings every Sunday while the Catholic church conducts services bi-monthly. The other two churches have Sunday School regularly and hold church services when they can get a preacher. Some settlers living south and east of Cohasset attend church at Grand Rapids while those in the western part of the neighborhood attend meetings held periodically in the Rice Rapids school house, located seven miles southwest of Cohasset.

Of the total families in the community 54.0 per cent belong to some church. The Catholic faith claims 21 families, the Methodist 11, the Luthern 8, the Christian and Congregational each 3, and the Presbyterian, Reformed, Episcopal and Advent churches each one. Of the 42 families belonging to no church 17 express their preference as follows: Methodist 8, Christian 6, Luthern 2 and Baptist 1. It is interesting to note that among the Protestant denominations the number of

non-members attending church regularly is identical with the number of church members. The number of member families attending irregularly is only one in excess of the non-members attending irregularly; irregularly being interpreted as attending church once a month. There were seven Catholic families reporting regular attandance while 9 others reported irregular attendance. Of the 43 families never attending church 5 are Catholic, 12 are Protestant and 26 belong to no church. There were 8 church member families, and 10 non-member familes reporting

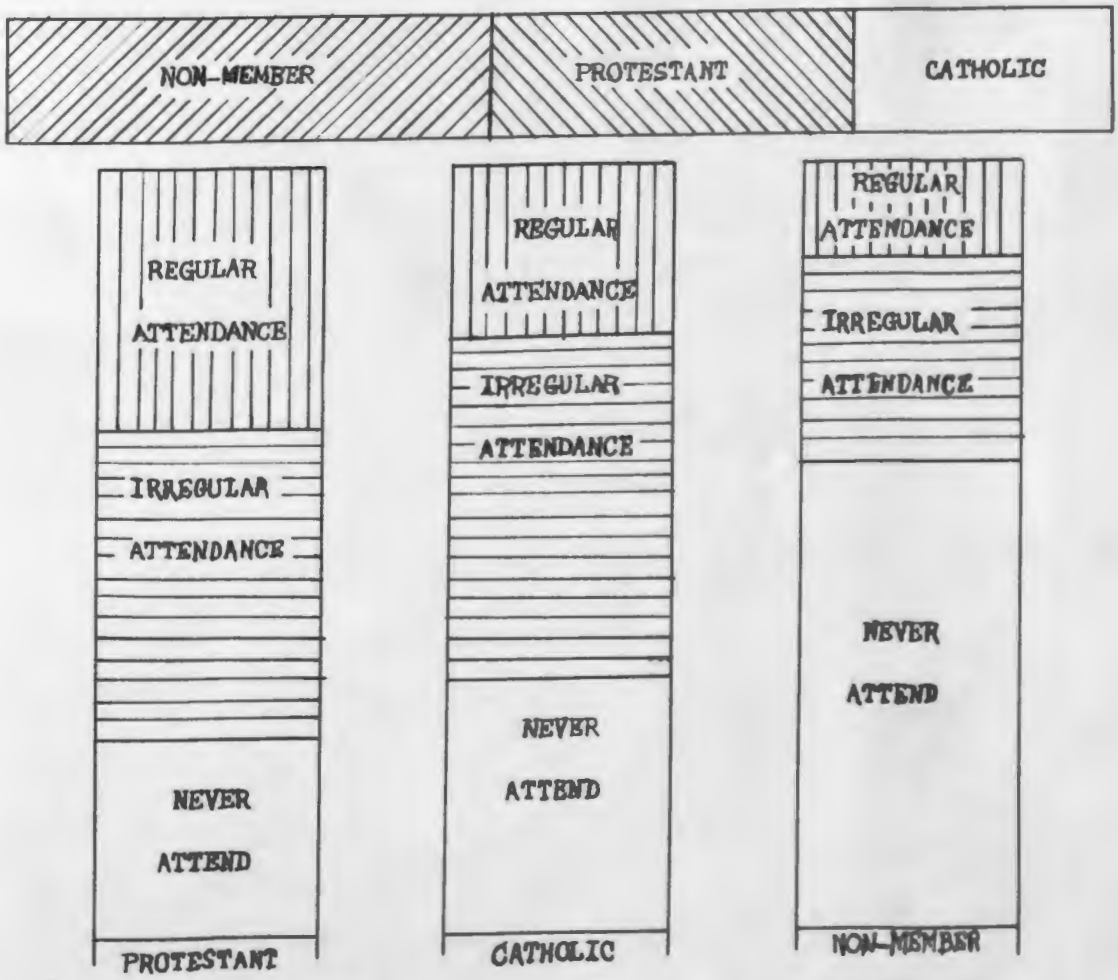


Fig. 29 Diagram showing condition of church membership in the community and regularity of attendance.

children in the various Sunday Schools.

The churches in Cohasset are supported in the main by town folk. There is no real antagonism in the country toward the church yet among the men especially

there is a measure of indifference. Many of the women take concern in church activities but they complain that it is a physical impossibility to get to church on Sunday. The distance is too great and everyone is too tired to get ready for church. Some people complain that they have no suitable conveyances and maintain that their horses need rest on Sunday.

Social Life in the Community.

It is a singular and significant fact that there are no isolated settlers in the community. Town roads lead to or near all farms, no settler living more than one mile from a neighbor and in most instances less than this distance. Contrary to conditions in most cut-over land settlements, funds available for roads and bridges have been very liberal with the result that except in outlying districts the roads compare favorably with the average rural district in the state. Moreover it has been the policy of the county commissioners to give every settler a road as soon as possible. The total mileage of state and town roads in Bass Brook township in 1916 was 9 and 21 miles respectively while that for the unorganized township was 6 and 14 miles respectively, making a total of 50 miles in the community.

Social intercourse however has not become very extensive. For the most part the people are congenial, hospitable and neighborly, having wide acquaintance throughout the community, but the extent of their social life is chiefly confined to family relationships and certain neighbors. It was difficult to obtain information concerning the amount of visitation among the people but of the 92 families interviewed 47 reported. The remaining 45 settlers either refused to answer the questions or evaded them by stating that they could not say. Of the 30 families reporting regular visits with the neighbors, an average shows that they visit back and forth with 6 families. There were 4 families which did

no visiting at all while certain others stated they did very little. Most of the visiting is done on Sunday although certain settlers said that they often spent the evening at some of the neighbors when the work was not so heavy. Those settlers having a telephone stated that the telephone had taken the place of making visits. There were six families which could see no use for any more settlers in the community, socially or otherwise. A few people in the country exchanged visits with the town people but their relations are chiefly of a business nature, due in part to choice and in part to the factor of distance,

Fig. 30 Methodist church and consolidated school located in Cohasset.

settlers living on a average of 5.6 miles from town. A certain antipathy was noticeable toward the town people in that they were termed cliquish and were said to care nothing for the farmers interests.

In spite of their sporadic existence the farmers clubs have been one of the greatest agencies in promoting the social welfare of the community. The first club was started in the winter of 1915. The club met for some time at the homes of the various members but it was soon decided to meet at the Cohasset school house in order to be more centrally located. Bi-monthly meetings were held at

which various subjects of agricultural interest such as, cooperative marketing, aiding new settlers, dairying, crop methods, and clearing land were discussed. After each meeting lunch was served and a social hour followed. The club flourished splendidly during the first year, attracting the attention of the town people who were permitted to attend the program. Soon however the village people

Fig. 31 One of the state roads in the community.

were allowed to become members and to determine policy with the result that the club was converted into a social organization. Enthusiasm among the farmer members began to wane and disintegration was complete by the fall of 1916. The initial membership of the club was 59. At the beginning of the second quarter

in 1915 it was 38; at the beginning of the third, 34 and at the beginning of the fourth, 27. The membership at the beginning of the first quarter in 1916 increased to 36 but by the second quarter it was 24 and by the third quarter it had dwindled to 12 members. It may be said at present (fall 1916) that the club is entirely inactive; certain farmer members however are waiting their opportunity to organize another club expecting to profit by the experiences of the past.

A second club was organized in the western part of the community about the

Fig. 32 View of a town road showing in the distance one of the numerous lakes in the community.

same time but it was in existence only a few months. The club started off with considerable life and success. The meetings were regular and the attendance was good. The only instance of cooperative buying in the community is accredited to the organization which bought a car of corn for its members in the spring of 1915. The constitution of the club made provision for cessation of meetings during the summer months, activities to begin again in the fall. The club assembled on July 4 of that year for a celebration but it never met again. No reports of

ill-feeling between members of the club could be found, and according to the president of the organization there was no sufficient reason for not convening again except that he had never taken time to call the club together.

Inquiry concerning amusements showed that dancing was the most common pastime. Besides the public dances which were held periodically at Cohasset there were many private country dances. Cards formed an important pastime especially with the older settlers. Basket socials and parties were held both in the country and in the village. The young peoples' organizations in the churches were exceptionally active in giving parties or other social gatherings. Medicine shows came to Cohasset frequently for an extended period but the latest attraction brought to the community was a moving picture show which gave entertainments on certain nights of the week.

Chapter V - Summary and Conclusions.

Farm development in the cut-over regions is necessarily slow. The work itself is difficult which together with the fact that the settlers are thrown into a new environment, makes it unreasonable to expect a rapid rate of development. The rate for all settlers in the community under study during the entire period of their development has been slightly over two acres per year. However, the rate has been accelerating during recent years, due to more activity of recent settlers.

The following are the most potent factors affecting the rate of development: (1) thrift of the settler; (2) capital; (3) length of time under development; (4) method of development; (5) work done off the farm; (6) sales of timber products; (7) land under cultivation before development began; (8) terms of payment; (9) occupation before settlement; (10) misleading and fallacious advertising; (11) inflated prices and common mal-practices of real estate dealers and others.

No factor affecting development is more significant than thrift of the individual. Instances are known of settlers having no other asset but who have made better farmers in a shorter time than other settlers possessing all or several of the desirable conditions. Whatever other assets the settler may have, if thrift is lacking he is doomed to a long, tedious period of development.

Capital is the most significant tangible factor. It should be in sufficient quantity to meet the first payment, and to keep the family for at least one year, as the amount of crops raised during that time is necessarily very limited.

Furthermore, as development proceeds capital should be available to provide buildings and live stock to equip the farm according to needs.

The length of time under development is often considered the most important factor but this study indicates that time must be given a rank among the most important factors. It is shown that settlers who have been developing for the longest period have not as much land under cultivation as those of fewer years development.

The method of development should be determined by conditions found on the farm and the stage of clearing operations. A certain amount of land is necessary for immediate use and expensive methods of development may be warranted for its clearing, but after clearing has advanced the most economical methods should be used. In cases where capital is limited merchantable timber should be sold even though it brings slightly in excess of a going wage. The cost of clearing is reduced from one-half to one-third by postponing stumping from three to six years after clearing.

Work done off the farm is necessary in many cases, but the practice is often abused. It should not occur where capital is available to tide over the non-productive period, except in the winter when clearing can not be done profitably. Ready cash is inviting to the settler, and it is often considered more valuable than the future increment derived from land that could be cleared while the settler is working elsewhere. The practice in all cases should be kept at the minimum except where farm work can not be done profitably.

Settlers having timber to sell have developed at a slightly less rate per year than settlers selling no timber, but they have had a financial advantage due to timber sales slightly outweighing the advantages of somewhat more rapid development. Settlers find distinct advantages in having some land cleared when they take up their farms. From experiences of most settlers it seems advisable that at least five acres should be cleared before settlement begins.

Impossible and unreasonable terms are often exacted from the settlers. In few cases is it advisable to pay down the entire purchase price. The settler should have from ten to fifteen years to pay for his farm with interest at a rate not to exceed seven per cent. On the contrary, the term of payment exacted of the settler was found to be usually five years with interest ranging from eight to ten per cent.

Fallacious advertising has retarded settlement to a great extent. It is not practiced as much as previously, however the state and other agencies continue to make statements which should be greatly modified for the best ultimate interests of the community.

The total capital invested per farm is $4957 which is less than half the farm valuation in southern Minnesota. Land forms a smaller percentage, while buildings, live stock and machinery form a larger percentage of the total investment than in the southern part of the state. Land averages $3163 per farm; buildings $921; live stock $664; machinery $209. Operating capital forms 17.4 per cent of the total investment in the community as compared with 14.5 per cent in southern Minnesota, showing that the relative amount of capital necessary for operating expenses in a cut-over country is greater than that in the southern part of the state.

The crops raised are hay, oats, potatoes, barley, corn and roots. The yields of all these crops are high if properly planted, cared for and harvested. Corn is grown largely for silage or fodder. Barley is a good carbohydrate feed, yields well and should be grown more extensively. Other leguminous crops such as field peas or beans could be grown profitably.

The average crop sales per farm in 1916 were $262 of which potatoes and hay formed 69.1 per cent and 20.8 per cent respectively. Rotation of crops is not widely practiced, due to insufficient acreage under cultivation. A three year rotation of grain, clover and cultivated crops is recommended.

The average value of live stock owned per farm is $664. On most farms the amount of live stock per farm is inadequate. Horses are often lacking for the required work and more cattle and sheep could be raised profitably on every farm. Cattle are generally of inferior quality, and as a result the cows are of low production, yet they have been the means whereby settlers have made ends meet. The total number of animals increases annually with an accompanying improvement in quality due to the introduction of better breeding stock.

Live stock products consist chiefly of butter, cream and eggs. Local stores constitute the chief market, although considerable cream was sold to the Grand Rapids creamery in 1916. Some cream was shipped also to distant centralizers. Sales of live stock products in 1916 increased more than $34 per farm over the previous year. This increase was due to a greater number of cows, higher prices, better markets and greater conservation of product.

Farm products sold in 1916 amounted to $430 per farm. Crop sales brought $262, live stock sales $71 and live stock products $117. In 1915 the total crop sales amounted to $284 or $146 less than in 1916. This increase is due in a degree to somewhat smaller yields, but chiefly to increased prices.

Outside work in 1916 contributed $255 to the average income, or 36.9 per cent of the total gross income. Receipts from road work formed 28.8 per cent, receipts from work in the woods 24.6 per cent and receipts from other outside work formed 45.2 per cent of this total. Some farmers of all classes do outside work. The amount done decreases in proportion to the acres under cultivation.

The average gross income for all farms in 1916 was $710. The total expenses amounted to $218, of which purchased feed amounted to $74, hired labor $59, taxes $18 and other expenses $76. The average family income amounted to $492 per farm, out of which was paid all family expenses, interest payments and new investments. The average real farm income or that income derived exclusively from the sale of farm products amounted to $237 per farm. In addition to the money income received,

the average acreage totally cleared in 1916 was 7.4 acres per farm and the average acreage under development was 1.9 acres per farm.

There is a wide divergence in the incomes received per family; 19 families receive an annual income of less than $200 while 10 others receive an income in excess of $1000. The modal income falls in the group of incomes between $201 and $400.

Small buildings are erected at the time development begins but as clearing proceeds larger and better buildings are constructed to meet the needs of the farm. About one-third of the buildings in the community are of log construction. Each farm is supplied with land clearing tools, hauling, tilling and haying machinery. Larger machinery is found only where development has progressed sufficiently to make it profitable.

Cooperative activities have not developed to a high degree yet much effort in that direction has taught the community valuable lessons. The largest cooperative enterprise of the community was a cooperative potato warehouse association organized in 1912. The organization was a failure from the start but it has probably served best to illustrate the fundamental principles of cooperation. The cooperative telephone company has been one of the most successful cooperative enterprises, the success of which has pointed out the benefits of organized efforts and prompted the settlers to further organization.

The status of marketing is at present very unsatisfactory to the producers, even though one of the best markets in Minnesota lies within 30 miles of the community. This fact is due to the limited supply of the different kinds of produce marketed, to the irregularity of the settlers' sales and to the lack of sufficient cooperative spirit among the settlers. This is a condition in accordance with economic laws and one which will be altered only as the community grows and is put on an equally competitive production basis with other agricultural communities of like production.

The purchasing power of the settler is less than that of the farmer in a well-developed community due to his greater costs of production and the necessity of paying higher prices for commodities. Most of the trading in the community is done at the Cohasset stores. The mail-order houses in 1916 received $65.70 per family buying from them. Cooperative buying is not popular due in the main to credit conditions. It was found that 56.0 per cent of the settlers carried store credit and that the average amount carried in the fall of 1916 was $42 per family.

Mortgagal conditions indicate that something should be done for the settlers desiring credit. Of the total farms 41.3 per cent is free of indebtedness, 25.0 per cent of the remainder is held on contract and 33.7 per cent is mortgaged. The average size mortgage is $692 or 18.2 per cent of the land value, showing that a much greater average loan could safely be made. The high interest rate and the short term of payment was given in most instances as the reason for carrying so little or no indebtedness. The average interest rate was found to be 8.1 per cent for all mortgages, several loans being made at 10.0 per cent. Short term credit is available at about the same rates.

Taxation is little understood by the people of the community. Land under development is assessed no higher than wild land, everything else being equal. Taxes of the non-resident holders are very large and aid greatly in community development. About 80.0 per cent of the taxes collected remain in the community. Forty-four per cent and 54.7 per cent of the total taxes in Bass Brook township and Township 55 Range 27 respectively are spent for schools. Taxes collected from land holders can not be considered as equitable claims for an equal advance in the price of land. Taxes have been deducted in the purchase price of land.

Educational facilities are excellent. Except for one rural school in the remoter part of the community, all children of graded school age in Bass Brook township attend the Cohasset consolidated school. Special privileges are granted the children of high school age at the Grand Rapids High School. There are three

rural schools in Township 55 Range 27. The theory of education in the community maintains that every child should have the same opportunities for education no matter where he is located.

Religious activities are centered at Cohasset. Of the total families in the community 54.0 per cent belong to some church, those of the Catholic faith leading. Membership is not a criterion of church activity, however, the number of non-members attending church is about equal to those belonging to church. Indifference towards religious affairs together with distance and lack of suitable conveyances are reasons for the small degree of church activity in the community.

Although no family in the community is more than one mile from neighbors, social intercourse is not extensive. Visits are confined to relatives or to a small circle of families. Farmers clubs have been the greatest agencies for social development but internal dissension has caused their decadence. Dances and parties are the most frequent forms of amusement for the young people.

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