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Subject *Thesis toward M.S.*

Name *Wm. L. Cavert.*

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AN INVESTIGATION OF FARM ORGANIZATION AND PROFITS  
AS AFFECTED BY TENURE IN NORTHFIELD TOWNSHIP,  
RICE COUNTY, MINNESOTA.

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A thesis submitted to the faculty of the  
Graduate School of the University of Min-  
nesota by

William Lane Cavert

in partial fulfillment of the requirements  
for the degree of

Master of Science .

June - 1914.

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

DIVISION OF  
ECONOMY AND FARM MANAGEMENT

April 29th, 1914.

Dean Guy Stanton Ford,  
Graduate School.

Dear Sir:-

The Committee appointed to read and pass upon the thesis of William L. Cavert, candidate for the degree of Master of Science, beg to report that the thesis has been read and carefully examined. We regard it as a creditable and valuable piece of work and recommend that it be accepted in partial fulfillment for the above degree.

Signed

L. D. Weld

Cyler D. Allen

Andrew Ross  
Chairman

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## S U M M A R Y .

### CAPITAL:

The average investment in the farm business on 67 farms operated by owners was \$14,911. On 37 farms operated by tenants, the average amount invested in the farm business was \$18,944. Of this sum, the landlord furnished \$16,912 and the tenant \$2032. In other words, by furnishing equipment worth \$2032, the tenant secured \$16,912 of additional capital. Most of the extra investment in the case of tenant farms was due to the larger area per farm. The total investment per acre for land and equipment was \$97 in the case of farms operated by owners and \$98 for farms operated by tenants. The only difference of note in the distribution of capital was that on the farms operated by owners 71.3 per cent of the total capital was in the form of bare land, and 11.5 per cent in buildings. Upon the other hand the farms operated by owners had only ~~16.57~~<sup>65.7</sup> per cent of the capital in land and 16.2 per cent in

buildings. In the case of tenant farms, 91.7 per cent of the landlord's capital was invested in real estate, while 87.6 per cent of the tenant's capital was invested in machinery and live stock. A large part of the tenant's investment in live stock was in work animals.

SIZE:

The average size of farms operated by owners was 153.7 acres, of farms operated by tenants 192.7 acres.

CROPS:

The farms operated by tenants had 2.4 per cent more of the total area in crops than those operated by owners. The tenants raised the same kind of crops as the farmers who owned their farms. The tenants also in proportion to area raised the same relative amounts of each crop as did the operators who owned their farms. The tenants raised as large crops as the operators who owned their farms.

### LIVE STOCK:

The farms operated by owners had 12 dairy cows per farm with sales of dairy products per cow of \$43, while the farms operated by tenants had 18 dairy cows per farm with sales of dairy products per cow of \$57. The farms operated by owners had 64 per cent of their receipts from live stock products from market milk, while the corresponding figure for farms operated by tenants was 94 per cent. None of the tenants kept sheep. There were relatively fewer steers on the tenant farms. The tenant farms had about the same amount of live stock in proportion to their area as the operators who owned their farms.

### RECEIPTS:

The gross receipts per farm were \$1913 for farms operated by owners, and \$2734 for farms operated by tenants. The percentage distribution of the receipts was similar except that the farms operated by tenants had 36.6 per cent of the total from sales of live stock



products, and only 13.8 per cent in the form of increase of inventory, while the corresponding figures for farms operated by owners were 28.2 per cent and 19.9 per cent.

EXPENSES:

The chief difference in the character of the cash expenses as affected by tenure was in the per cent of the total expenditure that went for machinery and repairs of machinery, and new buildings and repairs to buildings. Upon the farms operated by tenants 26.9 per cent of the total cash expense was for machinery and harness and repairs to same as compared with 17.8 per cent on the farms operated by owners. Upon the farms operated by owners 20.8 per cent of the total cash expense was for new buildings and repairs to the same, while upon the farms operated by tenants this item was only 7.3 per cent of the total.

PROFITS:

The average labor income of owners was \$217 while that of tenants was \$582. At the same time that the

tenant made a labor income of \$582 for himself, he made 5.7 per cent on the investment for the landlord. The principal reasons for the greater financial success of the tenants were probably the following: (1) The farms were larger and a proportionately greater amount of capital was invested in the farm business. (2) The returns were \$14 per cow greater in the case of the tenant farms. (3) The tenants were under the urgent necessity of farming efficiently in order that they might make a living for themselves and families, for the interest on an investment of \$2032 would not go far toward the support of a family while the interest on the owner's average investment of \$14,911 would, if the farm were clear of debt, support the family in a fair degree of comfort. (4) The tenants averaged 9 years younger than the operators who owned their farms.

#### INCREASE IN VALUE OF LAND:

In the past, one of the greatest advantages in the ownership of land has been the rapid increase in value. From 1900 to 1910, the yearly average increase



in value was \$2.50 per acre in Rice County, or \$400 per year on a 160 acre farm. Some of this increase in value was due to investment in permanent improvements.

SYSTEM OF TENANCY:

The half share system was the basis of the tenancy system in this locality. The system may be briefly outlined as follows:

<u>Furnished by Landlord:</u>	<u>Furnished by Tenant:</u>
The land and buildings	The man and horse labor
The cows	The machinery
One-half of the hogs	One half of the hogs
All the seed	All the twine
One-half of the cash threshing bill	One-half of the cash threshing bill
The taxes and insurance	
<u>Received by Landlord:</u>	<u>Received by Tenant:</u>
One-half of the crops	
One-half of the increase of cattle	Same as the landlord
One-half of the sales of dairy products	

Feeding the Live Stock.

The cows and hogs are fed on undivided farm feed.

The horses are fed undivided roughage, but tenant feeds his own grain.

FAIRNESS OF THE SYSTEM:

The half share system as practiced in this township is a fair one to both parties for the small grain crops. Inasmuch as labor is a relatively more important item of expense in the corn and dairy enterprises, the landlord has the better bargain on these enterprises. In the case of the hay crop, land rental is the largest item of expense, so that the tenant has the better of the bargain on this crop.

When one views the farm business as a whole, and makes allowance for the fact that the tenant receives free house rent, it appears that upon the average this system under the conditions prevalent in Northfield township in 1912 resulted in a reasonably fair contract for both landlord and tenant.

AGE:

The average age of tenants, landlords and operators who owned their farms was as follows:

Tenants	37
Landlords	57
Operators who owned their farms	46

FIXITY OF TENURE:

Upon the average, the tenants had been tenants for 9 years. They had been four years on the place occupied when this survey was made.

OCCUPATION OF LANDLORDS:

There is no tendency in this locality toward absentee landlordism. Of the 37 tenant farms with buildings, 34 were owned by people living in the immediate locality. Of the 37 landlords, 26 were either farmers, retired farmers, widows or daughters of farmer owners.

EDUCATION:

In this township, there was no difference in the education that farmers of the two classes have received.

## I N T R O D U C T I O N .

The data that are presented in this thesis apply to the business on the farms in Northfield township, Rice County, Minnesota.

The primary aim of this survey was to secure data from which to study the most efficient size of farm for general farming, the relation of capital to the success of the farm enterprise, and the most profitable system of farm management for the region. However, it was thought that an analysis of the data in regard to the relation of tenure to farm organization and profits might give some interesting information.

This is the first farm management survey that has been made in the state of Minnesota, and one of the first West of the Mississippi.

That the question of tenancy is intimately associated with rural sociological problems is recognized, but it is the purpose of the author to confine himself to the economic aspects of the problems of

land tenure.

Cost Accounting Data and Farm Management Surveys.

The two principal sources of information in farm management research have been cost accounting data and farm management surveys. Cost accounting as an experimental method of determining the relative profit of the various farm operations was first developed at the Minnesota Experiment Station, while the farm management survey as a means of making use of the agricultural experience of the farming population for the purpose of determining the most profitable types of farming and other economic facts relating to the farm business was developed largely at Cornell University. In cost accounting accuracy is secured by carefully kept accounts with a limited number of farms, while in farm management surveys the accuracy depends on averages from a large number of detailed estimates.

The idea of the farm management survey is forcibly expressed in Dean L. H. Bailey's statement that "Every

farm is an experiment station and every farmer the director thereof". The first application of the survey idea seems to have been in the 90's when Dean Bailey, then Professor of Horticulture at Cornell University, spent considerable time in investigating the practices of the farmers in producing the various horticultural crops of New York State, such as apples, pears, plums and peaches. Some of these observations were reported in Cornell Experiment Station bulletins, #19 and #74. In 1903 Prof. G. F. Warren of Cornell University made an apple orchard survey of Wayne County, N.Y. with a view to determining by a statistical study the relative profitability of the various systems of orchard management. The results of this survey were published in Cornell Experiment Station bulletin #226. In 1906 the survey was broadened so that it included the whole farm business, but it was not until the summer of 1908 that the methods were so perfected that satisfactory results were secured. In 1908 four townships in Tompkins County, N.Y. were studied and the results later published in



Cornell Experiment Station bulletin #295. Since that time surveys have been made in Livingston and Jefferson Counties, New York, and in representative areas in New Hampshire, Michigan, Pennsylvania, Illinois, Iowa, Indiana and Oregon. In general, it has been found that reliable data may be secured by the survey method on any subject that the farming community has worked out in its own experience.

So far as the author is aware, the only bulletins dealing first hand with the results of farm management surveys are Cornell Experiment Station bulletin #295, the U.S. Bureau of Plant Industry Circ's.#75 and #128, and U.S.Dept. of Agriculture Bulletin #41. In this survey the same general plan was followed as that outlined in Cornell Experiment Station bulletin #295. The following definitions should be borne in mind in reading this work:

**CAPITAL:** Capital includes the land, houses, buildings, machinery, live stock, feed and supplies, and cash used in the farm business. It does not include household furnishings. The average capital is the aver-

age of the April 1, 1912 and April 1, 1913 inventories.

**RECEIPTS:** Receipts include all cash receipts that have to do with the farm business, such as sales of crops, live stock, and stock products. If money was received for work done off of the farm this was included as a receipt. If the total inventory in 1913 was larger than in 1912, the difference between the two inventories was figured as a receipt.

**EXPENSES:** Expenses include all cash disbursements that pertain to the farm business. The board of hired labor is included as a cash expense. If the total inventory in 1913 was less than in 1912, the difference between the two inventories was figured as an expense.

**FARM INCOME:** Farm income is the difference between receipt and expenses. It represents the returns for the capital invested and for the labor that the farmer and his family expended on the farm during the year. The farm income does not represent what the farmer himself has earned because three distinct agencies

contribute to the farm income. These are (1) the capital invested, (2) the farm work done by members of the farmer's family, who do not receive cash wages, (3) the work of the farmer himself.

**FAMILY LABOR INCOME:** The family labor income is the difference between the farm income and interest on the average capital at 5%. It represents what the farmer and his family received for wages and managing ability.

**FARMER'S LABOR INCOME:** The farmer's labor income is the family labor income, less what it would have cost to hire the work that was performed by members of the family. It represents the cash wages that the farmer himself received for his work and for his managing ability. In addition to the cash wages, he received house rent, milk, poultry, eggs, pork, garden produce and such other things as were produced on the farm and consumed there. Where there was a wood-lot on the farm, the family frequently secured firewood also. This makes it apparent that the labor income is valuable only for

comparing the success of different farmers, and not for comparing the average wage of the farmer with that of city wage earners.

#### METHODS OF SECURING DATA.

The data for this study were secured during the last half of the month of June, and the whole of the month of July, 1912. Headquarters were established at Northfield and each farmer in the township was interviewed at his farm. It was found that it ordinarily took from one to two hours to secure a satisfactory record. As the summer months are busy ones for the farmer, it was necessary to suit the farmer's convenience as much as possible. In the case of exceptionally busy farmers an appointment was often made to see them in the evening. Upon returning to the headquarters at Northfield the records were copied, and carefully checked for mistakes and omissions. In some cases, it was comparatively easy to check any mistakes, e.g. if the number of cows on hand April 1, 1911, plus the heifers that became cows, and the cows that were purchased

did not equal the number reported for April 1, 1912, plus any sales or deaths , one might be sure that an error had been made. The farmer was then asked to correct the error. The inventory of horses was checked in the same way. After some experience a person becomes quite expert in detecting errors of this kind. In general it was found that the farmers had excellent memories for any transactions involving considerable sums of money. The chief difficulty was experienced with items that involved no cash transactions, or those in which each transaction by itself was a comparatively small matter. Among these transactions may be mentioned the board of hired help, and the farm work of unpaid members of the family. It is not very difficult to estimate the value of unpaid labor, when a son spends his whole time in working on his father's farm, the same as a hired man would do, but where the work is done at irregular intervals by the women of the family or by children, who are also attending school for a portion of the time, the difficulties are considerable.

The system followed was to ask the farmer what he thought the work of these unpaid members of the family saved him in expense for hired labor, figured on the basis of the prevailing month wages, with board and lodging furnished by the farmer as was the usual custom. Figures that have been published by Bulletin #117 of the Minnesota Experiment Station show that the board and lodging received by the average month hand is equal in value to approximately 50 per cent of the cash wages received. Acting upon this basis, the farmer's estimate was arbitrarily increased by 50 per cent. This would give the total amount that it would have been necessary to pay equally good hired help in cash and board and lodging furnished. If a farmer estimated that the year's work of his grown son who lived at home would have cost \$300 in cash at the usual rate of month wages, \$150 was added to the \$300, as an allowance for the board and lodging that it would have been necessary to furnish to a hired hand. This would make \$450 as the total amount of unpaid labor aside from that of the operator.



In the class of items, where each transaction involves only a small sum, eggs may be mentioned as the best example. In this section of the country, the poultry business was ordinarily regarded as belonging exclusively to woman's sphere, but the good wife was expected to supply the family table with groceries in so far as the sales of eggs and poultry would permit. Where butter was made on the farm, it was ordinarily sold each week, and the estimation of the total sales presented the same difficulty as in the case of eggs. Where the milk was shipped to the Twin Cities or taken to the local creamery, it was usually possible to secure a fairly reliable estimate as to the average size of the monthly check, or better yet to obtain a record of receipts from the monthly statements that had been preserved.

#### THE TOWNSHIP OF NORTHFIELD.

Northfield is situated in the northeastern corner of Rice County. The city of Northfield, with a population of 3265 according to the 1910 census, is located

in the northwestern corner of the township and affords a limited local market. The city of Northfield is 39 miles south of St. Paul on the Great Western, Rock Island, Milwaukee and Dan Patch Railroads. The farmers who live sufficiently close to the railroad for the most part sell their milk to Twin City dealers, or take it to the creameries. These creameries usually ship their milk to the Twin Cities at certain seasons instead of making butter.

#### SOILS:

A soil survey of Rice County was made in 1909 by the Bureau of Soils of the United States Department of Agriculture. This survey shows that the predominant soil type is the Carrington loam, with Sioux silt loam and Carrington silt loam as the next most important types. Small areas of Meadow, Fargo silt loam, Sioux sandy loam and Boone sand are also mapped. The Carrington loam is a rich rolling upland soil, usually well drained. The Carrington silt loam is a heavier type and occupies land of a less rolling nature than the Carrington loam.

The Minnesota Experiment Station through a statist-

ical route has gathered data in this township regarding the cost of producing the various products from 1902 to 1912. The results, for the first 7 years, have been published in Minnesota bulletins #97, 117 and 124. During the same summer that this farm management survey was made, the Bureau of Research in Agricultural Economics conducted a social and economic survey of the township. The results of this research have been published by the University of Minnesota as Studies in Economics, Number 1. However, in making any comparisons between that bulletin and the present work it should be borne in mind that Northfield is an irregular township with 42 sections, and that all of these were included in the farm management survey, while only 36 sections were included in the social and economic survey.

#### THE SURVEY.

When the survey was complete it was found that 153 farmers in the township had been visited and that usable records had been secured from 114 farms. These 153 farms were classified as follows:

No. of records secured	137
" " farmers who refused information	9
" " farms which changed operators during the year	7
	<u>Total-153</u>

In this section of the country the usual time for moving is in the early fall. In all cases where the farm had changed operators during the year, it was found impossible to secure any complete record of the year's business. There were seven such farms.

The 137 records were classified as usable, special cases and incomplete, as follows:

Complete, usable records	114
Special cases	15
Incomplete records	8
	<u>Total-137</u>

The fifteen records classified as special cases were discarded because they were not comparable with ordinary farms. Some of the reasons that made them incomparable with ordinary farms were: (1) Severe damage to crops by hail, (2) farms operated by persons who gave a large share of their attention to business other than farming, (3) operation by hired managers.

The usable records were classified as to tenure with the following result:

Farms operated by owners	67
Farms operated by tenants	37
Owners who rented additional land	<u>10</u>
Total	114

Obviously in a comparison of farms operated by owners and tenants, no use could be made of those records in which part of the area was owned, and part was rented. Such an operator is neither in one class or the other.

In this connection it should be noted that it is not always easy to decide offhand whether a farm is operated as a tenant farm or not. At first thought it would seem perfectly obvious that there could be no more clear cut distinction than that between farms operated by owners and renters, but frequently one finds farms where the father rents the farm to the son, and the father or mother, or both live with the son. In such cases the terms of rental are frequently irregular and vary considerably from the usual system of renting. Frequently

they are also indefinite, due to the fact that father and son do not bargain as closely as they would were they doing business with other people. The son expects that the farm or a large share of it will be his at the father's death and as a result farms the place as he would if the title were already in his name. In this survey, farms of this character have been treated as farms operated by owners. In cases where the father had a clear cut and definite agreement with the son, and where the father did not live on the farm with the son, the farm was classified as a tenant farm.

#### INVESTMENT.

In studying the investment in the farm business under the two different types of operation, a few notes should be made as to the methods followed. The investment in land and buildings was secured by asking the operator what he thought the farm with improvements would sell for. He was then asked for the value of the house and then for the value of other buildings. The value of the land was secured by subtracting the value of the



buildings from the total value of the farm so that such improvements as fences and wells were included with the value of the bare land. If buildings were built or other distinct improvements were made during the year, the real estate inventory was increased by the amount that the improvements had cost. In no case was an increase of inventory allowed on the basis of the increasing price of farm land, as the aim was to study the farm business, not the real estate business. No allowance was made for depreciation of buildings. Money expended for repairs to buildings was figured as a cash expense.

In figuring the depreciation on machinery, harness and tools, the following method was used. An inventory was taken of all machinery, harness and tools, as of April 1, 1912. At the same time the operator was asked in the case of each article whether it had been purchased during the previous year. If he replied that it had been, the purchase price was noted. To secure the April 1, 1911 value, the April 1, 1912 value of all machinery that had been owned for the whole year was divided by 9/10.

The result was used as the April 1, 1911 inventory of machinery. This gives the same result for the two inventories as would have been secured by taking the April 1911 inventory, and deducting 10 per cent for the April 1, 1912 inventory. To find the depreciation on machinery purchased during the year, the cost value was taken, and from this value 10 per cent was deducted for the April 1, 1912 inventory of machinery purchased during the year. To illustrate the method by a concrete example, if a farmer had machinery that ~~he~~ estimated to be worth \$400 on April 1, 1912, and no purchases had been made during the year, the April 1, 1911 inventory would be \$400 divided by  $9/10$  or \$444. But if this farmer had had \$400 worth of machinery on April 1, 1912, all of which had been on the place for a year and in addition a new binder which had cost \$150, 10 per cent of \$150, or \$15, would have been deducted from the \$150 giving \$135 as the April 1, 1912 inventory of the new binder, so that in this case the total 1912 machinery inventory would have been \$400 plus \$135 or \$535.

The author recognizes that theoretically the above method is open to the objection that the depreciation of machinery should be based upon a per cent of original cost rather than upon inventory value. However, in survey work two difficulties are encountered in using a certain per cent of the original cost as the depreciation charge.

(1) The number of questions is greatly increased by asking each farmer the age and purchase price of each piece of machinery. (a) The time consumed in tabulating the depreciation for each machine greatly increases the expense of tabulation with no material gain in accuracy.

There are two methods that may be used in farm management surveys. (1) The farmer may be asked as to the value of his machinery both at the beginning and end of the year, it being the farmer's responsibility to decide whether his purchases have about equaled depreciation, or whether purchases have more than equaled depreciation and by how much, or whether purchases have less than equaled depreciation and by how much. The above method was the one that was used in the original survey

work by the Cornell Experiment Station, but is open to the serious objection that you are asking a farmer to give you information on a subject to which he has given no particular attention and concerning which he has no very definite information. (2) The other possible method is to fix an arbitrary rate of depreciation to be figured on inventory value, such as has been done above, based on the opinion of people best informed on the subject. In any case, the error cannot be very great as the average inventory value of machinery is \$568 on the farms operated by owners and \$549 on the farms operated by tenants. If the actual depreciation should vary from the arbitrary standard of 10 per cent <sup>by</sup> as much as 3 per cent, the error would be only \$15 per farm, and in any case each group of farms would be affected in the same manner by the error.

The total investment under each type of operation and its distribution, according to the classification of land, buildings, machinery, harness and tools, live stock including work animals, feed and supplies, and cash to run

farm is shown in Table 1. In the case of tenant farms the table shows the amount of capital furnished by both landlord and tenant, and the total amount of capital that was represented by the investment of both landlord and tenant.

TABLE I.

AVERAGE CAPITAL PER FARM AND ITS DISTRIBUTION.

	Operated by Owners	Operated by Tenants		
		Landlord	Tenant	Total of landlord and tenant
Land	\$9807	\$13511		\$13511
Buildings	2416	2182		2182
Machinery, harness and tools	568	28	\$521	549
Live stock	1664	977	1259	2236
Feed and supplies	329	214	166	380
Cash to run farm	127		86	86
Total	14911	16912	2032	18944

The average farm operated by an owner represented had an investment of \$14,911. The average tenant with an investment of \$2032 in machinery, live stock, feed and supplies and cash secured the use of capital amounting to \$16,912 from his landlord, giving him an opportunity to run a farm where the total investment was \$18,944.

The extra investment of \$3704 in land in the case of farms operated by tenants was due chiefly to the fact that the tenant farms were larger, the average size of the farms operated by tenants being 192.7 acres, and that of the farms operated by owners 153.7. However, some of the extra capital invested in land in the case of farms operated by tenants was due to the fact that the average value per acre of the land without buildings was \$70 in the one case, while it was only \$64 in the case of farms operated by owners. This, of course, suggests that tenancy is somewhat more common on the better land.

If the investment be considered upon the basis of the acre as the unit, the comparative figures would be as follows:

	Farms operated by owners:	Farms operat- ed by tenants:
Bare land	\$64	\$70
Buildings	16	11
Equipment	17	17
Total-	<u>\$97</u>	<u>\$98</u>



The percentage distribution of the investment on the farms operated by owners, as compared to those operated by tenants, is shown in Table 11.

TABLE 11.

PERCENTAGE DISTRIBUTION OF THE INVESTMENT.		
	Operated by owners	Operated by tenants
Land	65.7%	71.3%
Buildings	16.2	11.5
Machinery, harness and tools	3.8	2.9
Live stock	11.2	11.8
Feed and supplies	2.2	2.0
Cash	.9	.5
Total	100	100

There is no marked difference in the percentage distribution of capital as between farms operated by tenants and owners except in the case of land and buildings. If land and buildings are grouped under one heading as real estate, each group shows approximately the same per cent of capital invested in real estate, the figures being 81.9 per cent for farms operated by owners and 82.8 per cent for farms operated by tenants,

but that the farms operated by owners have only 65.7 per cent of the total investment in land, while the farms operated by tenants have 71.3 per cent of the total in land.

The figures as given in Table 11 show that the tenant farms had only .5 per cent of the capital in the form of cash, while in the case of farms operated by owners the figure was .9 per cent. However, no special significance should be attached to this difference, as there would be little difference in the per cent of cash, if one farm in the class operated by owners were disregarded. This farmer built a new \$3200 house during the year, and at the beginning of the year had on hand the money with which he expected to build his house, and \$800 beside. At the end of the year, he had \$1800 in cash. This farmer stated that he usually carried a checking balance of about \$1800, as he wished to have the money available for use if he had an opportunity to buy some cattle or land at a bargain, but he had apparently made no such deals during the year. This man thought that a law should be passed requiring that banks pay in-

terest on checking accounts. Seemingly it had not occurred to him that the money could be invested in a savings account or certificate of deposit, when if he should wish to use the money, it would be immediately available, with the loss of no interest, except that from the last interest date to the date when the money was withdrawn.

In the case of farms operated by tenants the percentage distribution of both the landlord's and tenant's capital is shown in Table III.

TABLE III.

PERCENTAGE DISTRIBUTION OF LANDLORD'S AND TENANT'S CAPITAL.

	Landlord	Tenant
Land	79.8 %	
Buildings	12.9	
Machinery, harness, and tools	.2	25.6%
Live stock	5.8	62.0
Feed and supplies	1.3	8.2
Cash		4.2
Total	100	100

Of the tenant's capital 62.0 per cent was in the form of live stock, while 92.7 per cent of the landlord's capital was in real estate.

## CROPS AND CROP YIELDS.

Both a numerical and percentage comparison as to total acreage, tillable area, and acres in crops is given in Table IV. It will be seen that the tenant farms

TABLE IV.

RELATION OF TOTAL AREA TO TILLABLE AREA AND  
AREA IN CROPS.

	Total area	Tillable area	Per cent tillable area is of total area	Total area in crops	Percent of total area in crops
Operated by owners	10301	8422	81.8	6921	67.2
Operated by tenants	7129	6000	84.2	4965	69.6

had 2.4 per cent more of their area in tillable land and also 2.4 per cent more of their area in crops than was the case with the farms that were operated by owners.

The average area, average tillable area, and acres in crop for each kind of tenure is shown in Table V. In studying Tables IV and V, it should be noted that the area of tillable land was secured by subtracting the area in non-tillable pasture, waste land and non-tillable hay land, and in roads from the total area so that the farmstead was figured as tillable land. In figuring the area actually

in crops, all hay land that was harvested was figured as a part of the area in crops, whether it was reported as tillable or non-tillable.

TABLE V.

TOTAL AREA, TILLABLE AREA, AND AREA  
IN CROPS PER FARM.

	Av'g size of farm	Tillable area per farm	acres in crops per farm
Operated by owners	153.7	125.7	103.3
Operated by tenants	192.7	162.2	134.1

The total acres of each of the principal crops for each group of farms is shown in Table VI.

TABLE VI.

TOTAL ACRES OF PRINCIPAL CROPS GROWN UNDER  
EACH SYSTEM OF TENURE.

	Corn for grain	Corn for sil- age	Corn for fod- der	Sp. Wheat	Oats	Bar- ley	Suc- co- tash	Flax	Hay	Misc Crops	Total acres in crops
Operated by owners	920	115	644	1116	1851	493	378	56	1199	149	6921
Operated by ten- ants	540	85	510	614	1408	301	514	36	810	147	4965

The per cent of the total crop area that each of the leading crops occupied in each group of farms is given in Table VII.

TABLE VII.

PERCENTAGE RELATION OF THE AREA IN EACH OF THE LEADING CROPS, TO THE TOTAL CROP AREA FOR THE GROUP.

	Corn for Grain	Corn for sil- age	Corn for fod- der	Sp. Wheat	Oats	Bar- ley	Suc- co- tash	Flax	Hay	Misc crops	Total
Operated by owners	13.3	1.7	9.3	16.1	26.8	7.1	5.4	.8	17.3	2.2	100
Operated by tenants	10.9	1.7	10.3	12.4	28.4	6.1	10.3	.7	16.3	2.9	100

The operators who rent their farms seem to raise the same crops and in about the same proportion as the operators who own their farms, except that the tenants raise rather less wheat and more oats and succotash than the operators who own their farms. If we put in one group the leading small grains, wheat, oats, barley, succotash and flax, and in another group the corn crops, - corn for grain, corn for silage and corn fodder, it is



found that in the case of farms operated by owners, 56.2 per cent of the total area in crops was occupied by small grain and 24.3 per cent by the corn crops, while the farms operated by tenants had 57.9 per cent of the area in the leading small grain crops, and 22.9 per cent in the corn crops. The tenant farmers also had about the same per cent of their land in hay as did the operators who owned their farms. Miscellaneous crops include all crops not specifically mentioned. Some of the miscellaneous crops were potatoes, millet, sorghum and spelt. Potatoes are classed as a miscellaneous crop for the reason that no farmers in this township grow potatoes on a commercial scale. Some farmers sold potatoes, but only the surplus from a patch of family size. Practically all of the farmers grew potatoes for family use.

Table VIII shows the average crop yields that were secured under each system of operation. The tenant farms are apparently producing as large yields per acre as the farms operated by owners. The margin of error is doubtless much less in the case of the small grain crops that

are measured at threshing time, than in the case of the hay and corn crops, concerning the yields of which only estimates can be secured in most cases.

TABLE VIII.

AVERAGE CROP YIELDS PER ACRE UNDER EACH SYSTEM OF OPERATION.

	Corn for grain	Corn for sil- age	Corn for fod- der	Sp. Wheat	Oats	Bar- ley	Suc- co- tash	Flax	Hay
	Tons	T.	T.	Bu.	Bu.	Bu.	Bu.	Bu.	T.
Operated by owners	39.8	8.9	2.6	16.1	32.1	22.3	26.2	7.6	1.1
Operated by tenant	42.7	9.2	2.6	15.9	32.1	21.8	23.1	8.1	1.3

Succotash is spring wheat and oats grown in mixture. This is a popular crop with some farmers. The farmers who raise succotash say that they secure more pounds of grain per acre from a mixture of the crops than from either one alone. There are no means of drawing conclusions on this point from these data as there is not a complete record of the per cent of each grain that was obtained in the harvested crop. For this reason the comparison of yields of succotash is not very reliable.

There seems to be no fixed custom as to the proportion in which the wheat and oats are mixed, but probably the most common way is to sow about equal proportions of each by measure. The crop is frequently raised for feed. When sold, the buyer for the elevator usually tests a sample for the proportion of wheat and oats, and bases his price accordingly. Some farmers separate the grains at home, keeping the oats for feed and selling the wheat.

#### LIVE STOCK AND LIVE STOCK PRODUCTS.

The terms of rental in this township differ from those in most sections of Minnesota in that it is a common practice for the landlord to furnish the tenant with all the dairy cows, and one-half of the hogs. Upon 34 of the 37 farms, the landlord furnished a part of all of the cows, and in most cases half of the hogs. Three tenants owned all of their live stock., These three tenants paid some cash rent. No farms operating under a straight cash rent lease were found in the township.

The average amount of live stock of each kind kept

on each group of farms is shown in Table IX.

TABLE IX.

LIVE STOCK OF EACH KIND PER FARM.

	Cows	Hei- fers	Cal- ves	Bulls	Ste- ers	Hor- ses	Colts	She- ep	Hogs and pigs	Br'd sows	Hens
Operated by owners	12	7	8	1	2	5	1	2	2	3	107
Operated by tenants	18	5	5	1		5	1		2	4	79

In order to compare animals of different kinds, it is necessary to reduce them to some common basis. The animal unit is frequently used in farm management surveys as a basis of comparison. An animal unit is considered to be the approximate equal of a cow in feed consumed and manure produced. A cow, horse, bull, or steer, two years old or over has each been considered an animal unit. Two heifers or calves, two colts, seven sheep, five hogs, ten pigs and 100 hens or other poultry are each counted an animal unit. Turkeys, ducks, and geese are counted the same as chickens.

The percentage distribution of the different kinds of live stock according to animal units under each type of tenure is shown in Table X.

TABLE X.  
PERCENTAGE OF THE TOTAL ANIMAL UNITS REPRESENTED  
BY EACH CLASS OF LIVE STOCK,

	Cows and bulls	Heif- ers & calv- es	Steers	Horses	Colts	Sheep	Swine	Poul- try	To- tal
Operat- ed by owners	49.5	16.5	5.4	18.2	1.9	.8	3.5	4.2	100
Operat- ed by tenants	59.2	15.4	1.4	15.9	1.6		3.9	2.6	100

The fact that no steers on tenant farms are shown in Table 1X, while in Table X they form 1.4 per cent of the total animal units, is due to the fact that the average number of steers per tenant farm was only .4. as .4 is nearer zero than one, the fraction is not shown in the table, computations being made only to the nearest whole number. No sheep were found on any of the tenant

farms. Ten of the 67 farms operated by owners had some sheep, but only two of these farms had over 15 sheep. The most striking difference in the live stock kept under the two systems of tenure is in the greater per cent of the total that is made up of dairy cattle in the case of the tenants. The landlords are evidently willing to furnish the tenant with all the cows that he will milk. As farmers have very few hogs except brood sows on hand April 1, the importance of hogs, as one of the live stock enterprises is not accurately represented by the figures showing the condition of the farm business on April 1st.

Tenants are frequently depicted as a class of people who are soil robbers. However, if amount of live-stock kept may be taken as a means of estimating the degrees with which the fertility of the soil is conserved, Table XI would indicate that the tenants are doing about as well in this respect as their neighbors who own the farms which they operate. In estimating the amount of live stock in relation to area, there are three possible methods of procedure, (1) animal units in relation to



total acreage, (2) animal units in relation to tillable area, (3) animal units in relation to acres in crops.

In this case, at least, it makes little difference which method is used as is shown in Table XI. The results according to each method show that in proportion to area there was no material difference between farms operated by owners and tenants as to the amount of live stock kept.

TABLE XI.  
RELATION OF LIVE STOCK TO AREA.

	Farms Operated by owners	Farms operated by tenants
Acres per animal unit	6.1	6.2
Tillable acres per animal unit	5.0	5.2
Acres in crops per animal unit	4.1	4.3

STOCK PRODUCTS.

The principal live stock product sold in this locality is market milk for the Twin City trade. The aver-

amount of each kind of live stock product sold per farm is shown in Table XII. If calves were included as a live stock product, there would be added \$31. per farm in the case of the farms operated by owners, and \$53. per farm in the case of the tenant farms.

TABLE XII.  
SALES OF LIVE STOCK PRODUCTS PER FARM.

	Butter	Cream	Milk	Eggs	Wool	Misc.	Total
Operated by owners	\$34	\$90	\$347	\$65	\$2	\$2	\$540
Operated by tenants	17	2	939	41			999

The per cent of each kind of live stock product to the total sales for the group is shown in Table XIII.

TABLE XIII.  
PERCENTAGE DISTRIBUTION OF LIVE STOCK PRODUCTS.

	Butter	Cream	Milk	Eggs	Wool	Misc.	Total
Operated by owners	6.3	16.7	64.2	12.0	.4	.4	100
Operated by tenants	1.7	.2	94.0	4.1			100

Tables Xll and Xlll indicate that the tenants are much more largely engaged in the production of market milk than are the owners. This coincides with the fact that the tenants have higher priced land, if the buildings be disregarded. The land is higher priced for two reasons: (1) The tenant farms are nearer to markets; (2) In this particular township the poorer land is farthest removed from the railroads. Doubtless also a factor that causes tenants to give more attention to the production of market milk is the fact that they are younger men, who are less afraid of hard work than their neighbors who own their farms, and which, in most cases, have been paid for, or nearly so.

The average sales per cow and per hen for each group of farm is given in Table XIV.

TABLE XIV.  
SALES OF PRODUCTS PER COW AND HEN.

	Sales per cow, of milk, cream and butter	Sales per cow of milk, cream, butter & calves	Sales of eggs per hen
Owners	\$40	\$43	\$.61
Tenants	54	57	.51

These figures indicate that the tenants keep considerably better cows than the owners. The hens are poorer. However, it should be remembered that the tenants had on the average 18 cows per farm, while the operators who owned their farms had only 12, which would necessarily mean that a larger per cent of the total product would be used in the family in the latter case. Also the tenants received 98 per cent of their receipts from dairy products in the form of market milk, while the operators who owned their farms received only 74 per cent of their dairy receipts from market milk. This would suggest that some of the extra money per cow received by the tenants may in part be accounted for by the larger per cent of tenants who sold market milk. As persons who sell market milk have to make daily deliveries, where those selling to the creamery deliver only two or three times per week, it would naturally be expected that a larger price would be received to cover the extra expense of delivery. Also those who make butter at home or take their cream to a creamery have the skim milk for feeding pigs or calves.

However, after making all the allowance justifiable, it would appear that the tenants are receiving larger actual returns per cow than operators who own their farms. The fact that the owner operators received \$.61 per hen in sales of eggs while the tenant operators received only \$.51 could probably be accounted for by the fact that the average size of flock was 107 in the former case, while in the latter case it was only 79. The larger the amount of total product, the less the per cent that would be used in the family.

Aside from the larger business in general, the receipts from the farms operated by tenants are more largely made up of live stock products. On farms operated by tenants, live stock products constituted 36.6 per cent of the total receipts, while on the farms operated by owners, only 28.2 of the total receipts were from live stock products.

TABLE XV.  
AVERAGE RECEIPTS PER FARM, AND DISTRIBUTION  
OF THE SAME.

	Receipts per Farm		Percentage Distribution	
	Operated by owners	Operated by tenants	Operated by owners	Operated by tenants
Crops	\$621	\$806	32.5	29.5
Live stock products	540	999	28.2	36.6
* Net live stock sales	341	512	17.8	18.7
- Increase of in- ventory	380	378	19.9	13.8
Labor	19	38	1.0	1.4
Miscellaneous	12	1	.6	
Total	\$1913	\$2734	100	100

\* In this table and others dealing with the figures for live stock sales, the purchases of live stock were deducted from the total sales of live stock.

- In securing the increase of inventory, the total decrease of inventory was subtracted from the total increase of inventory to secure the net increase.



The most conspicuous difference, as regards receipts, between the operators who owned their farms, and those who rented their farms was the fact that the tenants had considerably more to sell from each of the principal enterprises; viz, crops, live stock products and live stock (Table Xv).

#### INCREASE OF INVENTORY.

One of the striking features of Table XV is that it emphasizes the importance of the increase of inventory from year to year as a farm receipt. On farms operated by owners, the increase of inventory constituted 19.9 per cent of the total receipt and on farms operated by tenants, 13.8 per cent. The increase of inventory was made up of the following items, (1) increase in value of real estate due to improvements made during the year, (2) machinery, harness, and tools purchased in excess of depreciation charges; (3) increase of the 1912 live stock inventory over that of 1911; (4) increase of the 1912 feed and supplies inventory over the 1911 inventory.

The distribution of the increase of inventory among these items is shown in Table XVI.

TABLE XVI.

WHERE THE INCREASE OF INVENTORY OCCURRED.

	Farms operated by owners	Farms operated by tenants	
		Landlord	Tenant
Real estate improvements	\$131	\$33	
Machinery, tools and harness	54	4	\$124
Live stock	144	13	127
Feed and supplies	51	34	43
<b>Total</b>	<b>\$380</b>	<b>\$84</b>	<b>\$294</b>

The distribution of receipts between landlord and tenant is shown in Table XVII.

TABLE XVLL.

DISTRIBUTION OF RECEIPTS BETWEEN LANDLORD AND  
TENANT.

	Receipts		Percentage Distribution of receipts	
	Landlord	Tenant	Landlord	Tenant
Crops	\$459	\$347	36.7	23.3
Live stock products	460	539	36.7	36.2
Live stock	243	269	19.4	18.1
Increase inventory	84	294	6.7	19.8
Labor		38		2.6
- Miscellaneous	6		.5	
Total	\$1252	\$1487	100	100

- Cash rent paid to the landlord is included in his miscellaneous receipts.

\* The combined receipts of landlord and tenant do not equal the total receipts per farm operated by tenants as given in Table XV, because of the fact that cash rent is not included in the former case.

As would be expected, the landlord received a larger per cent of his receipts from crops than did his tenant, the landlord having 36.7 per cent of his total receipts from crops and the tenant 23.3 per cent.

#### EXPENSES.

The average cash expenses per farm under each type of operator are shown in Table XVlll.

TABLE XVlll.

AVERAGE CASH EXPENSES PER FARM AND PERCENTAGE DISTRIBUTION OF SAME.

	Cash Expenses per Farm		Percentage Distribution	
	Operated by owners	Operated by tenants	Operated by owners	Operated by tenants
Labor and board of labor	\$179	\$157	24.9	19.8
Seed	23	48	3.2	6.1
Hay and grain	59	73	8.2	9.2
Machinery, harness and repairs	128	213	17.8	26.9
Fences and repairs	9	13	1.2	1.6
New buildings and repairs to buildings	150	58	20.8	7.3
Twine, threshing, silo filling and shredding	62	88	8.6	11.4
Insurance and taxes	82	107	11.4	13.5
Miscellaneous	28	33	3.9	4.2
<b>Total x</b>	<b>\$720</b>	<b>\$790</b>	<b>100</b>	<b>100</b>

x Money expended for purchases of stock and decrease of inventory is not included as it was deducted in getting net sales of stock and net increase of inventory.

The most conspicuous difference between the farms operated by owners and those operated by tenants as to expenditures was that 20.8 per cent of the total expenditures in the former case went for buildings and repairs to buildings, while in the latter case only 7.3 per cent of the total was thus expended. On farms operated by tenants, machinery constituted 26.9 per cent of the total expense, while on farms operated by owners only 17.8 per cent of the total expense was for machinery (Table XVlll). This can doubtless be accounted for by the fact that most of the tenants have not been farming many years, and are increasing their equipment as they can afford it, while the owners are pretty well provided with machinery, due to the fact that they have been in business for a larger number of years. That this was the case is shown by the fact that the increase of inventory on machinery in the case of the farms operated by owners was \$54. per farm, while in the case of farms operated by tenants, it was \$128. per farm.

The distribution of the cash expenses between

landlord and tenant on farms operated by tenants is shown in Table XIX.

TABLE XIX.

CASH EXPENSES OF LANDLORD AND TENANT AND PERCENTAGE DISTRIBUTION OF THE EXPENSES OF EACH.

I T E M	Cash Expenses		Percentage Dis-tribution of Cash Expenses	
	Land-lord	Tenant	Land-lord	Tenant
Labor and board of laborers		\$157		30.9
Seed	\$48		16.7	
Hay and grain	29	44	10.1	8.7
Machinery, harness and repairing	7	206	2.4	40.5
Fences and repairs	12	1	4.2	.2
New buildings and repairs to buildings	58		20.2	
Twine, threshing, silo filling and shredding	32	56	11.2	11.0
Insurance and taxes	100	7	34.9	1.4
Miscellaneous	1	32	.3	6.3
Cash rent		5.		1.0
<b>Total</b>	<b>\$287</b>	<b>\$508.</b>	<b>100</b>	<b>100</b>

\* The sum of the landlord's and tenant's expenses does not equal the total cash expenses per tenant farm as given in Table XVIII, because of the fact that cash rent is not included in the former case.



The largest single class of expense for the landlord was taxes and insurance, this item being 34.9 per cent of the landlord's total expense. In the case of the tenant, the largest items of cash expense were, (1) machinery, harness and tools, (2) labor and board of laborers, the former constituting 40.5 per cent and the latter 30.9 per cent of the tenant's total cash expense (Table XI).

#### PROFITS.

A summary of the year's business under each system of tenure is given in Table XX. The most striking feature of this table is the fact that the farms operated by owners returned an average labor income of only \$217 while the farms operated by tenants returned an average labor income of \$582. to the operator, and at the same time made 5.7 per cent on the investment for the landlord.

TABLE XX.

A SUMMARY OF THE YEAR'S BUSINESS ON FARMS  
OPERATED BY OWNERS AND BY  
TENANTS.

	Operated by owners	Operated by tenants	
		Landlord	Tenant
Number of farms	67	-41	37
Average capital	\$14911.	\$16912	\$2032
Average receipts	1913	1252	1487
Average expenses	720	287	536
Farm income	1193	965	951
Interest at 5 per cent	746		102
Income from unpaid labor including operator's	447		849
Value of unpaid labor ex- cept operator's	230		267
Labor income	217		582
Landlord's per cent		5.7	

- The fact that there are 41 landlords and only 37 tenants is explained by the fact that 4 tenants rented land from two landlords. In these cases, the total area that the tenant operated is treated as one farm unit.

The fact that the operators who rented their farms made a labor income of \$582 as compared to \$217 for those operators, who owned their farms, cannot be taken to mean that it is more desirable to operate a farm as a tenant than as an owner for at the same time that they made a labor income of \$582 for themselves they made 5.7 per cent on the investment for the landlord. Figuring 5 per cent as the current rate of interest, this would mean that operating as an owner, and with equally efficient farming the same farmer would have made \$702 as his labor income for he would have increased his labor income by the amount of .7 per cent interest on the landlord's average capital of \$16912. It seems probable that the chief factors in the greater financial success of the farms operated by tenants was due to the following facts.

- (1) The average size of the farms in the former case was 192.7 acres as compared to 153.7 acres in the latter.
- (2) The average total investment on the farms operated by tenants was \$18,944 as compared to \$14,911 on the farms operated by tenants.
- (3) The tenants received larger returns per cow than did the owners.
- (4) The

average age of the tenant was only 37 years as compared to an average of 46 years for the farmers who operated their own farms. Only 8 per cent of the tenants were 51 years of age or over, while of the operators who owned their farms, 34 per cent were 51 years of age or over. In this connection it should be noted that Warren and Livermore found in Tompkins County, New York, that the labor income of all farmers over 50 years of age averaged about one-half that of those under 50 years.

In studying these figures it should be remembered that the labor income is not an index of the amount available for the personal expenses of the farmer and his family during the year. This fact may best be illustrated by a concrete example. One farmer had a labor income of only \$69, but, if free of debt, there would have been \$1176 available for the personal expenses of the family.

A statement of the figures is as follows:

Capital	\$13688
Receipts, including \$27 increase of inventory	1504
Cash expenses	301
Farm income	1203
* Less increase of inventory	27
Cash available for family expenses	1176

\* Would not be available as increase of inventory is not a cash receipt.

In order to obtain the labor income one would take from the farm income of \$1203 interest on an investment of \$13,688 or \$684, and \$450 the estimated value of the work that was done by his son, who took the place of a hired man;  $\$1203 - (\$684 \text{ plus } \$450) = \$69$  labor income.

The amount available in cash for family expenses under each system of tenure is given in Table XXI.

TABLE XXI.

MONEY AVAILABLE FOR THE FAMILY EXPENSES OF THE OPERATOR, IF THE FARMER HAD NO INTEREST BEARING DEBTS.

	Operator who owned his farm	Operator who rented his farm
Farm income (receipts above cash expenses)	\$1193	\$951
Less increase of inventory (not a cash receipt)	380	294
Money available for family use	813	657

The fact that in spite of his larger labor income the family of the tenant has only \$657 to live on, while

the family of the operator with the much smaller labor income has \$813, may help to account for the difference in labor income for it is apparent that the tenant is under the necessity of making a good labor income in order to support his family. On the other hand the operator who owns a fertile 160 acre farm that is clear of debt need have no anxiety as to how he will keep the wolf from his door<sup>for</sup> if the farmer received no wages above interest for the work of himself and family on the farm, he still has the interest on an investment of \$15,000 with which to provide for the wants of himself and his family. Doubtless when one does not need to work very energetically, there is considerable temptation to take life easy.

The most conspicuous advantage in operating a farm as an owner, as compared to operating a farm as a tenant is the fact that as an owner, the increase in value of the land adds materially to the profits.

The rate at which the farm lands of Rice County have increased in value from 1860 to 1910 as revealed by the U.S. Census reports is given in Table XXII. It will

be noted that the average increase in value per acre for the county from 1900 to 1912 was \$25. This means that each year the owner saw his land increase in value \$2.50 per acre. On a 160 acre farm this would amount to \$400 per year, a very excellent reason for a tenant desiring to become an owner as soon as possible. Neglecting outlay for improvements, this increase in value from \$40 to \$65 per acre in 10 years was the same as getting 5 per cent interest, compounded annually, on the value of the investment at the beginning of the 10 year period in addition to the actual returns from the land above the cost of production except interest. As to what the future will bring forth in land values, the author is making no predictions.



TABLE XXII.  
 AVERAGE VALUE PER ACRE OF FARM LAND IN RICE COUNTY  
 AT EACH U.S. CENSUS, 1860 - 1910 INCLUSIVE.

Census year	Average value of farm land per acre
1910	\$65
1900	40
1890	26
1880	22
1870	x 14
1860	7

Not all of this increase in value represents un-earned increment as the 1910 census showed that for each acre of farm land in Rice County there was an investment of \$14 in farm buildings. In addition to the investment in buildings, considerable amounts have been invested in breaking of the land, and in such minor improvements as wells, windmills, and fences. The average amount invest-

ed in buildings per acre for the 104 farms under consideration was \$14. The writer is of the opinion that \$20 per acre would be a fair estimate for the total amount invested in buildings, breaking, fences, wells and the like. To these improvements that are the personal property of the owner of the land, should be added the public improvements that have been made by the community at large through the medium of local taxation or contributions. Such improvements as roads, schools, and churches would come in this class. We have no figures as to how large an investment this class of property represents in the average rural community, but it would certainly be only a fraction of that invested in the improving of the farm itself. Inasmuch as the question of whether the unearned increment should not be taxed because of the fact that this extra value has been created by the community as a whole is a question that belongs to the field of political economy rather than to farm management, the author will content himself by pointing out that during recent years the unearned increment has been a very

substantial portion of the profits from owning farm land in Rice County in particular, and over the Central West in general.

TERMS OF CONTRACT.

The following is a brief outline of the most common form of contract between tenant and landlord in this community.

The landlord furnishes the cattle, and the grass and grain seed. He pays the taxes, and half of the threshing and silo filling bills. The tenant is given the house rent free of charge. The tenant furnishes all labor, horses, machinery and twine.

The tenant received half of the receipts from cream or milk, half of the increase of the cattle, and half of the crops. The hogs are owned in equal partnership. The hogs and cattle are fed from undivided feed.

The tenant usually keeps such poultry as he wishes, feeds it from his own grain, and has all the receipts for his own. The horses are fed from the tenant's own grain, but from farm roughage. If colts are raised the

tenant pays the service fee, feeds them with his own feed and hires pasture for them from the landlord or a neighbor, and has them for his own. There are a number of minor points over which considerable dickering is frequently done with the results that the terms of rental vary between tenants in details. Some of these points concerning which there is not a uniform practice are the following. (1) The working of the road tax. Sometimes the tenant works the road tax in return for favors from the landlord, such as the free use of a garden and ground for raising as many potatoes as will supply the needs of the tenant's family, or for the furnishing of pasture for the tenant's horses. (a) As to whether the landlord shall take his grain at the threshing machine or as to whether the tenant shall deliver it at the local elevator. (3) The ownership of the herd bull. The bull may be owned by the landlord alone, or by the landlord and tenant in partnership. (4) The ownership of the manure spreader. Inasmuch as the use of the manure spreader is a factor in maintaining the fertility

the land, the landlord is frequently willing to own one in partnership with the tenant. Aside from a share in the manure spreader, any machinery furnished by the landlord is usually some that the landlord left on the place when he retired from active farming, and took up his abode in town.

In its broad features the above form of contract was followed on 33 of the 37 farms. On the other four farms the tenant owned all his cattle and hogs. Two of the four had all the crops on share rent, and worked the road tax in return for the pasture land. The other two tenants paid cash rent for the pasture and hay and had the rest of the crops under the share rent system. None of these tenants paid cash rent for all of the farm, or for even the major part of it. On several of the 33 farms, where no cash rent was paid, the tenant furnished a portion of the cattle, usually the tenant's share of cows that had been raised on the place and which he had not sold. Sometimes the tenant endeavors to accumulate cattle of his own so that he may be in a position to furnish his own cattle and rent a portion of the farm

for cash as this is a step toward independence.

When one interviews a landlord in this vicinity in relation to his problem, he is struck by the frequency with which the landlord insists that the only way to farm profitably is to keep plenty of cows. That this is good logic from the landlord's view point is shown by Table XXIII. This table has been prepared by using Table X from Minnesota Bulletin #124 as a basis. The original table shows the average cost of maintenance of a dairy cow on the Northfield statistical route for the years 1905 - 1909 inclusive. In Table XXIII the original figures are shown. In parallel columns are shown the portion of the expense of maintenance which would fall to the landlord and tenant respectively under a system of partnership such as has been described.

TABLE XXIII.

ANNUAL COST OF MAINTENANCE OF A COW AND PRO -  
PORTION OF EXPENSE BORNE BY LANDLORD AND TENANT.

I T E M	Annual Cost of Mainte- nance	Half Share System	
		Landlord	Tenant
Cash sundries	\$ .75	\$ .37	\$ .37
Cash feed	3.65	1.83	1.83
Farm feed	23.85	11.92	11.92
Labor	18.66		18.66
General expense	2.53	1.27	1.27
Shelter	2.45	2.46	
Depreciation	3.19	3.19	
Machinery and equipment	.58	.29	.29
Herd bulls	1.98	.99	.99
Interest on investment	2.35	2.35	
<b>Total</b>	<b>\$ 60.00</b>	<b>\$24.67</b>	<b>\$35.33</b>

In the above table, cash sundries and general expense have been divided equally between landlord and tenant. Cash sundries have to do with miscellaneous items for which cash was paid, - ropes, halters, veterinary service and medicine. General expense is made up of those items which are regarded as a charge to the entire farm. At the close of the year the total general expense is apportioned among the various farm en-



terprises, of which the dairy is one.

Of the total average expense of maintaining a cow 41.2 per cent would be borne by the landlord and 58.8 per cent by the tenant, or stated in another way for every \$1.00 of expense that the landlord has, the tenant has \$1.43. It would seem that as far as the dairy enterprise is concerned that the landlord has much the better bargain. If one enters into an equal partnership as regards receipts it should also be an equal partnership as regards expenses. If high priced cows were kept the landlord's expense for interest, and depreciation would be increased while the tenant's expense would remain the same. Obviously if the tenant is going into this sort of a bargain, he should be very particular that the landlord furnished good cows.

Tables XXIV - XXXI inclusive are based on data for the years 1902-1907 from the Northfield statistical route. They show how the expense of producing the common crops under the half share system would be divided between landlord and tenant.

TABLE XXIV.

COST OF PRODUCING OATS ON FALL PLOWED  
LAND AND PROPORTION OF EXPENSE BORNE BY LANDLORD  
AND TENANT.

	Total cost per acre.	Half Share System	
		Landlord's expense	Tenant's expense
Seed	\$ .997	\$ .997	
Cleaning seed	.023		\$ .023
Plowing	1.256		1.256
Dragging	.285		.285
Seeding	.261		.261
Cutting	.401		.401
Twine	.335		.335
Shocking	.165		.165
Stacking	.772		.772
Stack threshing (labor)	.568		.568
Stack threshing, cash cost	.774	.387	.387
Machinery cost	.517		.517
Land rental	3.500	3.500	
<b>Total</b>	<b>\$9.854</b>	<b>\$4.884</b>	<b>\$4.970</b>

In these tables, no figures are given in the original tables as to the general expense charge per acre. It is believed that the inclusion of the general expense charge would not materially change the proportion of expense borne by landlord and tenant.

In these tables, it is assumed that the tenant furnishes all of the horse labor. Inasmuch as the landlord furnishes half of the roughage for the horses, he does make a small contribution toward the expense for horse labor.

TABLE XXV.

COST OF PRODUCING SPRING WHEAT ON FALL PLOWED LAND, AND PROPORTION OF EXPENSE BORNE BY LANDLORD AND TENANT.

I T E M	Total cost per acre	Half Share System	
		Landlord's expense	Tenant's expense
Seed	\$1.350	\$1.350	
Plowing	1.256		\$1.256
Dragging	.239		.239
Seeding	.371		.371
Cutting (binder)	.460		.460
Twine	.287		.287
Shocking	.218		.218
Stacking	.789		.789
Stack threshing (labor)	.528		.528
Threshing, cash cost	.346	.173	.173
Machinery cost	.517		.517
Land rental	3.500	3.500	
<b>Total</b>	<b>\$9.861</b>	<b>\$ 5.023</b>	<b>\$4.838</b>

TABLE XXVI.

COST OF PRODUCING BARLEY ON FALL PLOWED LAND AND  
PROPORTION OF EXPENSE BORNE BY LANDLORD AND  
TENANT.

I T E M	Total cost	Half Share System	
		Landlord's expense	Tenant's expense
Seed	\$1.011	\$1.011	
Cleaning seed	.042		\$.042
Plowing	1.256		1.256
Dragging	.336		.336
Seeding	.273		.273
Cutting	.452		.452
Twine	.293		.293
Shocking	.169		.169
Stacking	.683		.683
Stack threshing (labor)	.496		.496
Threshing (cash cost)	.619	\$ .309	.309
Machinery cost	.517		.517
Land rental	3.500	3.500	
Total	\$9.647	\$4.820	\$4.826

TABLE XXVII.

COST OF PRODUCING TIMOTHY AND CLOVER HAY, (ONE CUTTING)  
AND PROPORTION OF EXPENSE BORNE BY LANDLORD AND TENANT.

I t e m	Total cost	Half Share System	
		Landlord's exp.	Tenants Exp.
Seed	\$.293	\$.293	
Mowing	.368		\$.368
Raking	.179		.178
Cocking and spreading	.199		.199
Hauling in	1.099		1.099
Machinery cost	.548		.548
Land rental	3.500	3.500	
<b>Total</b>	<b>\$6.185</b>	<b>\$3.793</b>	<b>\$2.392</b>

TABLE XXVIII.

COST OF PRODUCING CORN - EARS HUSKED FROM STANDING  
STALKS AND PROPORTION OF EXPENSE BORNE BY LANDLORD AND  
TENANT.

I t e m	Total cost per acre	Half Share System	
		Landlord	Tenant
Seed	\$.226	\$.226	
Shelling seed	.026		\$.026
Plowing	1.311		1.311
Dragging	.544		.544
Planting	.240		.240
Cultivating	1.806		1.806
Husking	3.456		3.456
Machinery cost	.549		.549
Land rental	3.500	3.500	
<b>Total</b>	<b>11.658</b>	<b>\$3.726</b>	<b>\$7.932</b>

TABLE XXIX.

COST OF PRODUCING CORN, CUT, SHOCKED AND  
SHREDDED, AND PROPORTION OF EXPENSE BORNE BY  
LANDLORD AND TENANT.

I t e m	Total cost per acre	Half Share System	
		Landlord	Tenant
Seed	\$.226	\$.226	
Shelling seed	.026	.	\$.026
Plowing	1.311		1.311
Dragging	.544		.544
Planting	.240		.240
Cultivating	1.806		1.806
Cutting (corn binder)	.728		.728
Shocking and tying	.509		.509
Twine	.447		.447
Picking up ears	.249		.249
Shredding	3.963	1.981	1.981
Machinery cost	1.748		1.748
Land rental	3.500	3.500	
Total	\$15.297	\$5.707	\$9.589

x TABLE XXX

COST OF PRODUCING ENSILAGE AND PROPORTION OF  
EXPENSE BORNE BY LANDLORD AND TENANT.

I t e m	Total cost per acre	Half Share System	
		Landlord	Tenant
Seed	\$ .436	\$ .436	
Plowing	1.311		\$1.311
Dragging	.531		.531
Planting	.295		.295
Cultivating	1.218		1.218
Cutting (corn binder)	.662		.662
Twine	.589		.589
Hauling from field	2.606		2.606
Loading, feeding, packing	1.632		1.632
Coal	.499	.249	.249
Rental, power machinery	1.628	.814	.814
Values consumed in ensilage cutter	.666	.666	
Interest on silo investm't	.533	.533	
Silo depreciation	1.333	1.333	
Farm machinery cost	1.748		1.748
Land rental	3.500	3.500	
<b>Total</b>	<b>19.187</b>	<b>\$7.531</b>	<b>\$11.655</b>

x Figures from Minn. Experiment Station 1905-1907  
with the expense for seed, plowing, harrowing,  
planting, and cultivating as if from the North-  
field statistical route.



TABLE XXXI.

COST OF PRODUCING FODDER CORN PLANTED THICK FOR FORAGE - CUT AND SHOCKED IN THE FIELD AND PROPORTION OF EXPENSE BORNE BY LANDLORD AND TENANT.

I t e m	Total cost per acre	Half Share System	
		Landlord	Tenant
Seed	\$.436	\$.436	\$1.311
Plowing	1.311		.531
Dragging	.531		.295
Planting	.295		1.218
Cultivating	1.218		.696
Cutting (binder)	.696		.509
Shocking and tying	.509		.489
Twine	.489		1.748
Machinery cost	1.748	3.500	
Land rental	3.500		
Total	10.733	\$3.936	\$6.797

It will be seen from Tables XLV - XXVI inclusive that the half share system as described in this article is an evenly balanced partnership under the conditions prevailing at Northfield during the years 1902 - 1907 for the small grain crops. Cutting the hay

crop on half shares is a good bargain for the tenant, due to the fact that the land rental is the biggest <sup>item</sup> of expense connected with this crop.

The corn crop in all of its forms, ear corn husked from the standing stalks, ear corn, cut, shocked and shredded, <sup>and</sup> corn planted thickly for fodder or ensilage, is apparently a bad bargain for the tenant under the half share system, due to the fact that the corn crop is a crop requiring more labor than the small grain or hay crops. The value of the land in all of these tables is figured at \$70 per acre with 5 per cent interest. This corresponds closely with the value of the bare land on these tenant farms.

The crop should be charged only with the rental value of the bare land for the buildings have nothing to do with the production of the ordinary farm crops, except in so far as they are used for storage purposes.

Table XXXI presents a summary of Tables XXIV -  
XXXI.

TABLE XXXII.

COST OF KEEPING A DAIRY COW AND PER ACRE  
COST OF PRODUCING THE PRINCIPAL CROPS WITH DISTRI-  
BUTION OF EXPENSES BETWEEN LANDLORD AND  
TENANT.

Enterprise	Total cost per cow or per acre	Half Share System		
		Landlor's expense per animal or acre	Tenant's expense per ani- mal or A.	Tenant's expense for each dollar of expense to landlord
Dairy cows	\$60.00	\$24.67	\$35.33	\$1.43
Oats	\$9.854	4.884	4.970	1.02
Spring wheat	9.861	5.023	4.838	.96
Barley	9.647	4.820	4.826	1.00
Timothy and clover hay	6.185	3.793	2.392	.63
Corn husked from standing stalks	11.658	3.726	7.932	2.13
Corn, cut, shocked and shredded	15.297	5.707	9.589	1.68
Corn for fodder planted thick for forage	10.733	3.936	6.797	1.73
Corn for ensilage	19.187	7.531	11.655	1.55

Table XXX111 has been prepared by taking the average number of dairy cows, and the average acres in each of the principal crops, and multiplying the average number of cows, and acres in crops by the landlord's expense per cow or acre, and also the tenant's expense per cow or acre as taken from Table XXX11. The sum of the landlord's items would give his approximate expenses for the year for the principal enterprises, and the sum of the tenant's items would give the approximate expenses of the tenant for the year. These figures show that on this basis the total expense of the landlord would be \$1038, while that of the tenant would be \$1301.

TABLE XXXIII.

HOW THE EXPENSES FOR THE PRINCIPAL ENTERPRISES WOULD BE DIVIDED BETWEEN LANDLORD AND TENANT, WITH THE AVERAGE NUMBER OF COWS AND ACRES OF PRINCIPAL CROPS FOUND ON 37 TENANT FARMS.

Enterprise	Acres or Av'g No. of animals	Expense per Acre or Animal		Total Expense	
		Landlord	Tenant	Landlord	Tenant
Dairy Cows	17.7	\$24.67	\$35.33	\$437	\$625
Oats	38.0	4.88	4.97	186	189
Spring wheat	16.6	5.02	4.84	83	80
Succotash	13.9	5.02	4.84	70	67
Barley	8.1	4.82	4.83	39	39
Timothy and clover hay	21.9	3.79	2.39	83	52
Corn husked from standing stalks	7.3	3.73	7.93	27	58
Corn cut, shock- ed and shredded	7.3	5.71	9.59	42	70
Corn for fodder	13.8	3.94	6.80	54	94
Corn for ensil- age	2.3	7.53	11.66	17	27
<b>Total</b>				<b>\$1038</b>	<b>\$1301</b>

In Table XXXI11 the figures as to the cost of production of wheat are applied to succotash, as there are no data available on this crop. There is no reason to believe that the figures would be appreciably different from those for clear wheat. The figures for timothy and clover hay are applied to all the acreage in hay, so that some wild hay is included under this head. This would make no material difference, as the figures from the Northfield statistical route show that there is no appreciable difference between the per acre cost of wild and tame hay.

In the case of the corn crop, the survey records did not distinguish between corn husked from the standing stalks, and corn cut, shocked and shredded, and corn cut, shocked and husked by hand. In Table XXXI11 it is arbitrarily assumed that the corn for grain was equally divided between corn husked from the standing stalks, and corn cut, shocked and shredded. No account is taken of the following enterprises: cattle other than dairy cows, swine and miscellaneous crops. Including flax and

potatoes as miscellaneous crops there was an average of 5 acres of miscellaneous crops per farm. No figures are available that could be applied to cattle other than dairy cows and swine. It would seem that growing cattle and swine would be, at least, a fair proposition for the tenant, as there is not a great amount of labor connected with them.

The tenant in all cases had his house rent free of charge. The average value of the house on these 37 farms was \$991. Also the tenant had shelter and half of the roughage for his horses; shelter for his machinery, poultry, hay and grain and the use of a garden.

The estimated value of these items to the tenant would be as follows:

Rent of \$991 house at 10% of value	\$99
Shelter for 5 horses and a colt	15
One half of the roughage for 5 horses, 9 tons at \$6.00	54
Shelter for machinery	15
Shelter for tenant's share of the hay and grain	20
Garden	2
Shelter for tenant's poultry	5
	<u>\$210</u>



That landlord's share of the expense of dairy cattle and crop production was \$1038. Allowing \$210 as the annual cost to the landlord of the other items furnished to the tenant, this would make a total of \$1038 plus \$210 or \$1248 as the total amount of the landlord's annual expense.

The following would be a summary of the expenses of both parties to the partnership:

Landlord's total expense	\$1248
Tenant's total expense	1301
Expense of tenant to each	
\$1.00 of expense of landlord	1.04

From the above, it would seem that the system herein outlined results in a reasonably fair division of expense between landlord and tenant under the average conditions prevailing in Northfield township. However, in the case of individual farms, the system would not necessarily be a fair one. The following would be some of the most important considerations in determining the fairness of this system of rental for individual farms.

(1) The number of cows kept and their productive capacity. (2) The value of the house rent furnished to the

tenant. (3) The ease with which the land may be worked. Land infested with quack grass or cut up by sloughs would be more expensive to work than land in large fields free from obstructions. (4) The amount of corn and hay grown in proportion to other crops, especially if all or a part of the corn is put in the silo. The corn crop seems to be much the better bargain for the landlord, while the hay crop gives the tenant the better bargain. (5) The value and productive capacity of the land would greatly influence the fairness of the system. If the value of land increased, a readjustment would be necessary unless the cost of man and horse labor increased proportionately. In the case of land that was sandy or poorly drained, all of the tenant's expenses per acre would be practically the same as on the best land, while the per acre value of the land rental furnished by the landlord would be much less. By keeping a set of cost accounts, and applying their findings in the manner used in the preceding tables, one could work out a fair system of rental for any particular farm.

SOME OF THE FEATURES OF TENANCY  
AS COMPARED TO OPERATION OF FARMS BY OWNERS.

AGE OF TENANTS:

In the past, one of the gratifying features of tenancy on American farms was the fact that it was merely a step toward ownership. Frequently the young man desirous of becoming a farmer worked as a hired man until he married. Upon marriage, he rented a farm and after a few years was able to buy it by mortgaging it for a large portion of its value. Because of the rapid rise in land values during recent years, many believe that in the future we are likely to have a more or less permanent tenant class. It is reasonable to suppose, at least, that a man could not expect to become an owner at as early an age as formerly. The data for Northfield township do not reveal any tendency toward the formation of a permanent tenant class, as is shown by the fact that there was only one of the 37 tenants who was over 60 years of age, and only three who were over 50 years of age, while among the 67 operators who owned their farms,

23, or 34 percent were over 50. There was a marked difference between the average age of tenants, and that of their landlords. Also there was a marked difference between the ages of tenants and their neighbors who operated their farms as owners. The figures as to the average age of these different classes are as follows:

Tenants	37
Landlords	57
Operators who owned their farms	46

FIXITY OF TENURE:

Figures were secured from 34 of the 37 tenants as to the length of time they had been tenants, and the number of years they had been on their present farm at the time visited. The average of these 34 farms shows that on the average they had been tenants for 9 years. They had been on the place occupied when visited four years. One of the great defects in our American system of tenancy is that the tenant has no assurance of the length of time that he will be permitted to remain as a tenant, and coupled with this uncertainty of tenure is the fact that the tenant upon leaving the

place cannot collect from the landlord for the value of improvements that may have been made to the place at his own expense during the tenancy.

In England and Scotland this subject has received considerable attention from legislators for the last 40 years, and a brief statement of the system in vogue there and of its development may be of interest.

The Agricultural Holdings Act of 1883 provided that a tenant might collect from the landlord for the unexhausted value of certain specified kinds of improvements, but the method of procedure was so cumbrous and expensive to the tenant that it was little used. However, it was valuable in that it recognized the legal right of the tenant to the unexhausted value of certain kinds of improvements made at his own expense during his tenancy.

The Act of 1883 was simplified and its scope enlarged by the Agricultural Holdings Acts of 1900 and 1906.

Improvements for which compensation may be claimed, are divided into three classes: (1) Improvements for

which the consent of the landlord is required if a demand for compensation is to be made. Improvements belonging to this class are the erection of new buildings and the planting of orchards. In the case of market gardens, compensation may be claimed for the planting of orchards, small fruits, asparagus and rhubarb, although such improvements are made without the consent of the landlord. (2) Improvements requiring that the landlord be notified and be given an opportunity to make on his own account. If the landlord fails to make them before the expiration of a certain specified time, the tenant may make them and then collect for the unexhausted value of such improvements at the termination of his tenancy. Improvements belonging to this class are repairs to buildings necessary for the proper cultivation or working of the holding, and the drainage of land. (3) Improvements which the tenant may make entirely upon his own initiative without any notice to the landlord. To this class belong all improvements due to the application of lime and fertilizers and the feeding of purchased feeds to livestock on the farm.



In all cases, the tenant at the termination of his lease , may claim compensation only for the unexhausted value of improvements made during his tenancy, or in other words, for their value to the oncoming tenant.

The outgoing tenant has a legal claim for the unexhausted value of improvements only against the landlord, but the landlord ordinarily shifts this charge to the oncoming tenant.

The value of the unexhausted improvements to the oncoming tenant is determined by a referee, or referees, if the landlord and tenant are unable to agree without the aid of legal procedure.

The question at once arises as to whether such a law is needed in Minnesota. It is the opinion of the author that a law giving the tenant the right to claim compensation at the expiration of his tenancy for improvements made to the landlord's farm would be applicable to Minnesota conditions in two cases. (1) If a tenant moves upon a farm badly infested with quack grass or other weeds that seriously interfere with the produc-



tion of crops, and goes to the expense of special tillage for the eradication of these weeds, he should be entitled to compensation upon leaving the farm. Upon the other hand, if a farm becomes infested with quack grass or other bad weeds through the negligence of the tenant, the landlord should be entitled to compensation. In practice the landlord would probably find it difficult to secure compensation as the kind of tenant that allows a farm to become infested with quack grass is not usually financially responsible. (2) In the case of farms having small sloughs that seriously interfere with the economical cultivation of the farm, and that can be drained at reasonable expense, the law should provide that the tenant may drain the land and upon the expiration of his tenancy have a claim against the landlord for the unexhausted value of the improvements, if the landlord were first given an opportunity to make the improvement at his own expense.

Inasmuch as our farming has not yet reached the stage in which much attention is given to the careful

utilization of all manure and straw so as to secure its maximum fertilizing value, it is not probable that a law giving the tenant the right to claim compensation for the unexhausted manurial value of feeds purchased and fed on the farm would receive much support from either landlords or tenants.

In the case of farms rented on the share system, the improvements would be of as much immediate advantage to the landlord as to the tenant. In such cases, the law might provide that the expense of the improvements should be borne in the same proportion as the crops are divided. At the expiration of the tenancy, the tenant should have a legal claim for the unexhausted value of his share of the improvements. In cases where the landlord refused to provide money for his share of the improvements, the landlord's share of the expense should become a lien upon his share of the crops.

OCCUPATION OF LANDLORDS:

One of the gratifying features of tenancy in this township is that there is practically no tendency to absentee landlordism. Of the 37 tenant farms, 34 were owned by people who live in the immediate locality, mostly in the city of Northfield. Many of these landlords had quite an active oversight of their farms, especially the retired farmers. The occupations of these owners were as follows:

Farmers	10
Retired farmers	10
Women (widows or daughters of former owners)	6
Storekeepers	3
Elevator business	2
Laundry	1
Real estate	1
Harnessmaker	1
Cattle dealer	1
College professor	1
Painter	1
Total	<u>37</u>

EDUCATION:

In making a classification as to education, two groupings were made. (1) Those who had had only a

district school education. (2) Those who had had additional training in addition to that offered by the country school, such as high school, business college or agricultural short courses. Fourteen of the 67 operators who owned their farms reported that they had had some education in addition to that offered by the country school. Of the 37 tenants, 8 reported some school training in addition to the country school. Thus 21 per cent of the operators who owned their farms and 22 per cent of the tenants had had some schooling in addition to that offered by the country school. Apparently there is no appreciable difference in this case in the education of the two classes of farm operators. Warren and Livermore report that in Tompkins County, New York, only 17 per cent of the tenants had gone beyond the district school, while 30 per cent of the owners had done so. The Office of Farm Management of the United States Department of Agriculture found in representative areas in Indiana, Illinois and Iowa that 23 per cent of the tenants had had more than a district school education, while only 20 per cent of the owners had had such training.

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