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Relation of land quality to the agricultural economy of Knox County

John DeWitt Rush

To the Graduate Council:

I am submitting herewith a thesis written by John DeWitt Rush entitled "Relation of land quality to the agricultural economy of Knox County." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

C. E. Allred, Major Professor

We have read this thesis and recommend its acceptance:

Eric Winters

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

December 30, 1939

To the Committee on Graduate Study:

I am submitting to you a thesis written by John DeWitt Rush entitled "Relation of Land Base Quality to the Agricultural Economy of Knox County, Tennessee". I recommend that it be accepted for nine quarter hours credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

C E Allred

Major Professor

We have read this thesis
and recommend its acceptance:

Henry Dorr Jr.

Eric W Winters

Accepted for the Committee

T. P. Smith

Dean of the Graduate School

RELATION OF LAND BASE QUALITY TO THE AGRICULTURAL ECONOMY OF KNOX COUNTY, TENNESSEE

A THESIS

Submitted to
the Committee on Graduate Study
of
The University of Tennessee
in
Partial Fulfillment of the Requirements
for the degree of
Master of Science

By

John DeWitt Rush

June 1940

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CHAPTER I

INTRODUCTION

The Purpose

The purpose of this study is to present data on the general agricultural economy of Knox County, Tennessee, more particularly the relationship of man to the land. An attempt has been made to evaluate the factor of the land base quality as a measure in analyzing the economy of the county.

From a generalized land classification scheme, data were organized to discover the relation between quality of the land base and its economic use. The study seeks to determine the practicability of an analysis of the agricultural economy by use of a generalized method of farm land appraisement strictly on the basis of the physical quality of the land.

In addition, the efforts of the Federal Government in attacking the economic problems of Knox County have been reviewed in an endeavor to show not only the method of approach of the government, but to indicate in a limited manner some of the spheres of activity and their probable influence on the present economy.

Inasmuch as Knox County has for the past several years, operated under a unified political system, costs of government, education, recreation and welfare are not definitely tied in with civil districts. Only composite data are available, and are only touched upon briefly.

While the tax rate is the same for all civil districts, a differential in assessed valuation appears. This is brought out in a comparison of land quality with appraisement by the tax assessor and the tax equalization board, by civil districts.

The study has also endeavored to explore some of the principal factors associated with the low economic status of the South. In the report to the President in 1938 by the National Emergency Countil,on " Economic Conditions of the South", in which the South was described as the nation's No. 1 economic problem, emphasis was placed on health, soil, land use and population, which suggested topics for this study.

A short historical sketch of white occupancy and the Indian culture of the county and the East Tennessee region, is given for the purpose of orientation.

It is believed that a better understanding of the problems facing the county will induce a cooperative plan of attack which will go far toward a solution.

The Problem

Unwise land use is generally considered one of the major agricultural problems of the country. Great soil losses from erosion have been descried far and wide. Maladjustments in many agricultural practices in the use of land, especially in the removal of the trees from the steeper slopes, and the subsequent cultivation or over-grazing of such hilly lands, have resulted in sheet and gully erosion, lowering of the water table, the siltation of reservoirs and the deposition of detritus over alluvial plains that once were very fertile. The net re-

sult has been a lower yield per acre at a greater cost on those acres entailing economic losses both ways.

Much has been said about the one-crop system of the South, and this one crop has been planted in too many places with the rows running down hill, accelerating instead of impeding the loss of valuable top soil. Inasmuch as nature requires several hundred years to develop a good top soil of only a few inches in depth, the extent of the problem facing the agricultural situation in Knox County is seen in part.

The fact that adventurous young persons tend to leave the farm is another cause of concern, for farming has need for efficient and intelligent entrepreneurs.

Therefore, the unwise management or the uneconomic use of land beyond its physical limitations, presents a problem that needs consideration in the economic planning of the future. It is hoped that this study may provide a basis for the use of physical data as a valuable adjunct in delineating agricultural problems, and in throwing light on the best approach to their solution.

Method of Procedure

The plan of procedure for collecting original material consisted of the preparation of an outline of related topics covering basic data dealing with a number of aspects of the physical quality of the land and of the human relationships thereto. The technique used was to discover from what source the desired information could be obtained and to interview personally, the persons in charge of the records. Many questions concerning the ultimate use of the material were put to

the investigator, and several trips were necessary to procure permission to release the information, and to procure the data in the desired form.

Considerable re-tabulation of original-source records was required, as the data, organized on the basis of civil districts, were usually not so recorded. This necessitated the elimination of figures which could not be procured on a basis comparable with other data. In the case of data on extent of land of each quality by civil districts, it was necessary to procure maps, delineate the civil district boundaries, and planimeter the land class groups, checking these in each district. With the data assembled, tables, charts and graphs were made to analyze the significance of each sector of information and its relationship to the other data.

In addition, the procedure consisted of a study of related literature, a review of general literature on the field under consideration, and the inclusion in the report of such data as would facilitate the analysis of the subject.

The Data

Because of the fact that some agricultural data by civil districts in Knox County have been obtained and presented by the United States Census, original data that would be on comparable terms were sought. Qualification of the statistics is made in the body of the report as the subjects are introduced. A close scrutiny of these qualifications is necessary in order to reach a logical appraisement. For ex-

ample, in the data on rural land classification of Knox County, areas were limited to two hundred acres in extent in delineating a particular land class. Smaller areas, even though of a different land class but lying within a continuous tract, were thrown into the category of the prevailing type.

Also the classification was completed on somewhat of an emergency schedule, inasmuch as it was desired to procure a quick physical picture of the county at a minimum of time and expense. Data on tax assessments in the various civil districts warrant explanation.

Every two years the county tax assessor employs from thirty to forty men qualified on the basis of their knowledge of the farm lands in the various districts, to visit each farm home, or as nearly every one as possible, and render an appraisement of its value. Appeal, however, can be made from the county assessor's appraisement to the Knox County Equalization Board.

In some instances data could not be analyzed according to civil districts because the system of recording this information was not required on a district basis, and there was no practical method by which the desired division could be made. This includes such data as were obtainable on relief projects of various kinds.

Location

Knox County is located in the valley of East Tennessee between the Appalachian and Cumberland Mountains. This valley, extending northeast and southwest, is drained by the Tennessee river system. The county is bisected just west of Knoxville by the 36th meridian and

the 84th latitude. See Figure 1 for location of Knoxville, county seat of Knox County.

Knox County is bounded on the North by Union and Anderson Counties, on the East by Grainger, Jefferson, and Sevier Counties, on the South by Blount County, and on the West by Anderson, Roane and Loudon Counties.

Geology

Thick beds of pure and dolomitic limestone, acid and calcareous shales, and cherty limestone constitute the principal underlying rock.[1]

Soils

The limestone and shale rock give rise to the reddish-colored soils usually prevalent throughout the county. The principal soil series of Knox County are the Decatur, Dewey, Clarksville and Fullerton originating from limestone, and the Montevallo and Dandridge originating from shale.[2] Huntington is the principal bottom soil.

The cherty ridges have withstood weathering longest and as a consequence stand out as hills in the rolling topography of the limestone valley region. The soils are of a character to withstand erosion if kept in sod or in forest cover. The county abounds in limestone sink holes, many of which serve as reservoir pools for farm livestock.

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1. Monograph No. 38, Human and Physical Resources of Tennessee, Agricultural Experiment Station, University of Tennessee, page 6.

2. Yearbook of Agriculture, 1938, pp. 1063-1064.

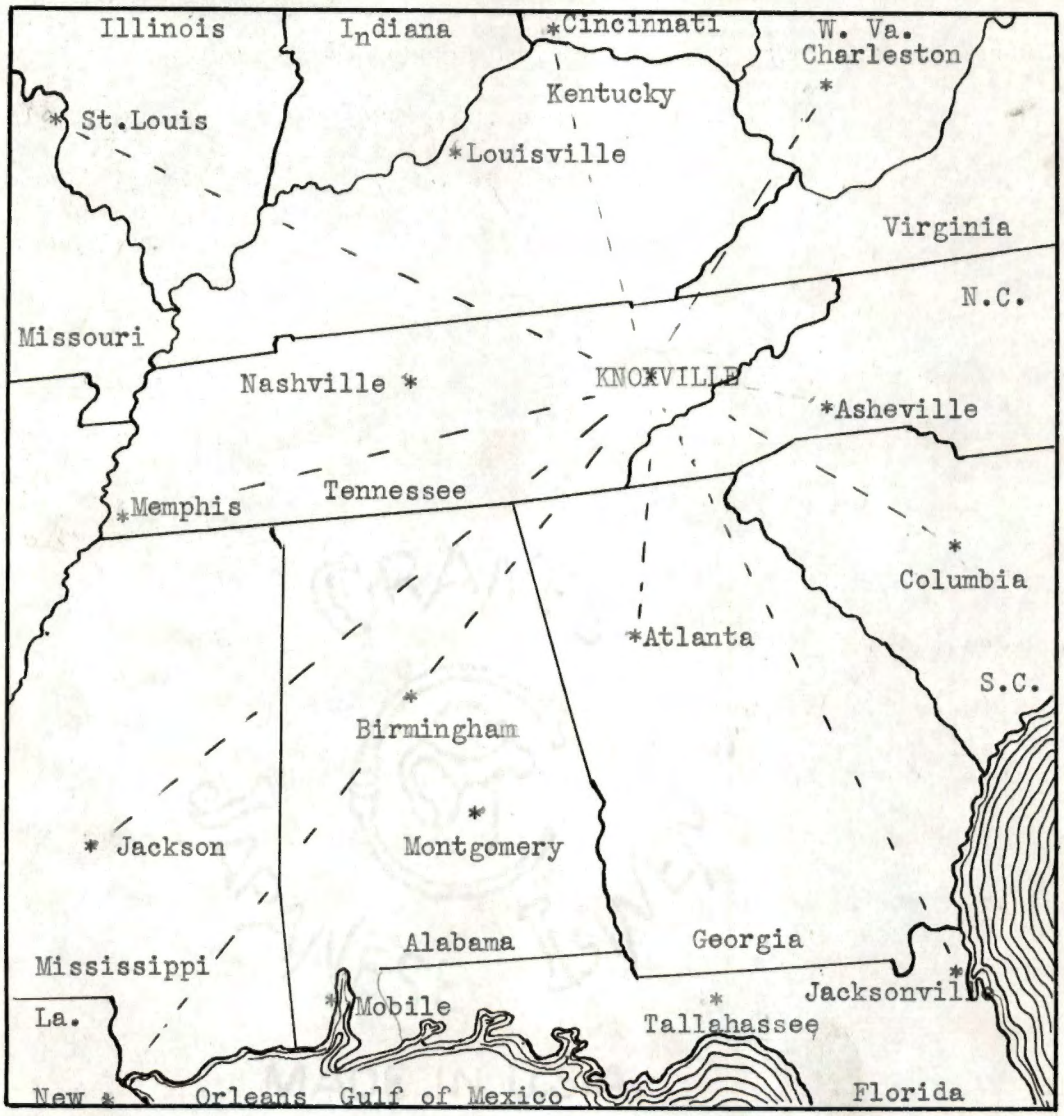


Figure 1. Location of Knoxville, county seat of Knox County, Tennessee.

CHAPTER II

HISTORY

The following historical sketch of Knox County, Tennessee, is quoted from " Counties of Tennessee " by Austin P. Foster, assistant state librarian and archivist, 1923; pages 24-26:

KNOX COUNTY

" Knox County was erected on June 11, 1792, out of Greene and Hawkins Counties, and was named in honor of General Henry Knox, Secretary of War in Washington's cabinet. On the 16th of the same month, says Ramsey, (Annals of Tennessee, page 568) ' James White, John Sawyers, Hugh Beard, John Adair, George McNutt, Jeremiah Jack, John Kerns, James Cozby, John Evans, Samuel Newell, William Wallace, Thomas McCullough, William Hamilton, David Craig and William Lowry presented a commission from Governor Blount appointing them justices of the peace for Knox County, and appeared before the Honorable David Campbell, Esq., who in the presence of Governor Blount, administered to each of them an oath to support the Constitution of the United States, and also an oath of office.

" 'Charles McClung also produced a commission from the governor appointing him Clerk of Knox County and he was in like manner qualified.

" 'June 25, Robert Houston, in like manner, commissioned and qualified as sheriff.

" 'The first court held was on the 16th of July, 1792. Present - James White, Samuel Newell, David Craig and Jeremiah Jack. James White was appointed chairman.'

" The following men eminent in the history of Tennessee, were qualified and admitted to the practice of law in this court. Luke Bowyer, Alexander Outlaw, Joseph Hamilton, Archibald Roane, Hopkins Lacy, John Rhea and James Reese.

" Knoxville, the county seat of Knox County, was founded, named and laid out in 1791. The date of the contract between James White, the founder of Knoxville, and the commission on behalf of the purchasers of lots, was October 3, 1791. But it was not until February, 1792, that much improvement was undertaken, and June 11, 1792 is the date of the founding of Knoxville. Before the contract was made with the purchasers of the lots and the naming of the town as Knoxville, this place was called White's Fort, which was a frontier stronghold.

" There were two eminent men named James White, in early Tennessee history and as they were contemporaneous for a time, they are frequently mistaken for each other by historians. One of these notable characters was Dr. James White of Davidson County, who was chosen as the Territorial representative in Congress, and the other was General James White, founder of Knoxville and father of Hugh Lawson White.

" General White donated the land upon which was located Blount College (named in honor of Governor William Blount, chartered in 1794, later named East Tennessee University, and now the University of Tennessee), the First Presbyterian Church, and the adjoining cemetery.

" When William Blount received his commission as governor of of the Southwest Territory on August 7, 1790, he immediately left for the scene of his future activities, and in the autumn of that year made his residence at the home of William Cobb in the fork of the Holston and Watauga rivers. Here were his court and his capitol until in 1792 when he made Knoxville the capitol of the territory.

" When Tennessee became the sixteenth state of the Union in 1796, Knoxville was made the Capitol. Section I of Article X, of the first Constitution of the state, adopted in 1796, reads: 'Knoxville shall be the seat of government until the year 1802.' It continued as the Capitol, however, until 1807, when the seventh General Assembly met at Kingston, but adjourned to Knoxville after two days. Knoxville remained the Capitol until 1813 when the legislature met at Nashville for the first time. The only time subsequently when Knoxville was the capitol was when the legislature met there in 1817.

Statistics

"Statistics of Knox County: population, 1920, 112,926. Assessed valuation of taxable property, 1921, $119,642,106. Area, 612 Square miles. Number of farms, 3,969. Railway mileage, 120. Drained by the Tennessee River and its tributaries. The farms are very rich and productive along the streams and in the valleys. Improved valley lands range between $50.00 and $150.00 per acre. Fine macadamized roads reach every section of the county. Lands around Knoxville are well adapted to truck farming. All kinds of early vegetables are grown and find a ready market and are shipped North.

" Knoxville, the county seat, with a population of 77,718, is one of the most enterprising and flourishing cities in the state, is the seat of the State University, and there are many other fine schools. It has many manufacturing and industrial establishments, splendid banking institutions, and a large jobbing trade with the eastern section of the state and with Kentucky and other states.

" Many fine marble quarries are operated in the vicinity of Knoxville, the quality of the marble being such that it is in demand all over the country. Railroads entering the city are the Southern, the Louisville & Nashville, and the Knoxville, Sevierville and Eastern. Knoxville has two daily newspapers and several class publications. The scholastic population is 42,995; high schools, 15; and elementary schools, 10."

Botanist's Description

Perhaps the most authoritative description of the East Tennessee region is afforded from certain excerpts of William Bartram, Philadelphia botanist, who came South in the spring of 1775 at the instance of Dr. Fothergill of London, England, to search for rare and useful plants. When it is considered that William Bartram's advent was two years before John Sevier settled on the Watauga, some idea of the value of a description of the country when it was new, by a trained botanist, is apparent.

When one follows the path of Bartram across the Appalachian mountains, it is fairly definitely proven that he came as far as the vicinity of the Tennessee-North Carolina state line at a point on the Little Tennessee River somewhere between Bryson, N. C., and Maryville, Tenn.

Having been left alone and without an available guide in the Indian village of Cowe, which by reference to a map in " Old Frontiers," by John P. Brown, is located on the Little Tennessee River just south of Highlands, North Carolina, Bartram decided to set out alone to visit the overhill towns of the Cherokees. Excerpts from Bartram's report, taken from his autobiography edited by Mark Van Doren, 1928, provide intimate glimpses of the character of the country and of the people who soon made way for the different economy of a white civilization.

Quoting Bartram: " After waiting two days at Cowe expecting a guide and protector to the overhill towns and at last being disappointed, I resolved to pursue the journey alone, though against the advice of the traders; the overhill Indians being in an ill humor with the whites in consequence of some late skirmishes between them and the frontier Virginians, most of the overhill traders having left the nation.... Passed the Jore (perhaps Ayore) village.....observed a little grove of the Cassina yupon.....the only place I had seen it grow in the Cherokee country; the Indians call it the beloved tree, and are very careful to keep it pruned and cultivated; they drink a strong infusion of the leaves, buds and tender branches of this plant.....

" When after rising several wearisome ascents, being determined at all events to cross the Jore (Smoky) Mountains, said to be the highest land in the Cherokee country, and finding myself overheated and tired, I halted at a little grassy lawn.....turned my horse to graze and sat down to rest on a green bank.....took out of my wallet some biscuit and cheese and a piece of neat's tongue, composing myself to ease and refreshment, when suddenly appeared within a few yards, advancing toward

me from behind the point, a stout likely young Indian fellow armed with a rifle gun and two dogs attending. Upon sight of me he stood and seemed a little surprised, as I was very much; but instantly recollecting himself and assuming a countenance of benignity and cheerfulness, he came briskly to me and shook hands heartily and smilingly inquired from whence I came and whither going. I presented him with some choice tobacco which was accepted with courtesy and evident pleasure, and to my enquiries concerning the roads and distances to the overhill towns, he answered me with perfect cheerfulness and good temper. We then again shook hands and parted in friendship, he descending the hills, singing as he went.

Native Flora

" Of vegetable productions observed in this region were the following, viz., Acer striatum (Maple); Acer rubrum (Red Maple); Juglans nigra (Black Walnut); Juglans alba (Butternut); Juglans hiccory (Hickory); Magnolia acuminata (Cucumber tree); Quercus alba (White oak); Q. tinctoria (Black oak); Q. Rubra (Red Oak); Q. prinus and other varieties common in Virginia: Panax ginseng (Ginseng); Angelica lucida (carrot); Convalaria majalis (Lily of the Valley); Halesia (Silverbell); stewartia (Tea); Styrax (Spice bush); Staphylea (Bladdernut); Evonimus (Arrow tree); Virburnum (Haw); Cornus Florida (Dogwood); Betula nigra (Black Burch); Morus (Mulberry); Tilia (Linden); Ulmus (Elm); Fraxinus (White Ash); Anona (Custard Apple); Bignonia sempervirens (Yellow Jassimine); Aristolochia frutescens (Gooseflower); etc.

" I began again to ascend the Jore (Smoky) Mountains which I at length accomplished, and rested on the most elevated peak from which I beheld with rapture and astonishment, a sublimely awful scene of power and magnificence, a world of mountains piled upon mountains. Having contemplated this amazing prospect of grandeur, I descended the pinnacles and again falling into the trading path, continued gently descending through a grassy plain scatteringly planted with large trees and at a distance surrounded with high forests.....at the foot of this descent the glorious Magnolia auriculata and a new species of Hydrastic were found. The next day proceeding on eight or ten miles generally through spacious high forests and flowery lawns; the soil prolific, being of an excellent quality for agriculture; came near the banks of a large creek or river where the high forest ended.....the trees became more scattered and insensibly united with a grassy glade or lawn bordering on the river; on the opposite bank of which appeared a very extensive forest consisting entirely of Hemlock spruce (P.abies) (Fir) almost encircled by distant ridges of lofty hills.....

" Soon after crossing this large branch of the Tanase (Little Tennessee) river I observed descending the heights at some distance a company of Indians, all well mounted on horseback; they came rapidly forward: on their nearer approach I observed a chief at the head of the caravan and apprehended him to be the Little Carpenter, emperor or grand chief of the Cherokees.....

Indian Agricultural Economy

Concerning the Indians' economy relative to property, agriculture and manufacture, Bartram said:

" It has been said by historians.....that they (Aborigines of America) have everything in common and no private property, which are terms in my opinion, too vague and general when applied to these people. From my own.....observation and the information of respectable character who have spent many years amongst them, I venture to set this matter in a just view before my readers.

" I shall begin with the produce of their agricultural labors. An Indian town is generally so situated as to be convenient for procuring game, secure from sudden invasion, having a large district of arable land adjoining or in its vicinity, if possible on an isthmus betwixt two waters or where the doubling of a river forms a peninsular.

" Such a situation generally comprises a sufficient body of excellent land for planting corn, potatoes, beans, squash, pumpkins, citruls, melons, etc., and is taken in with a small expense and trouble of fencing, to secure the crops from the invasion of predatory animals. At other times, however, they choose such a convenient fertile spot at some distance from their town when circumstances will not admit of having both together.

" This is their common plantation and the whole town plant in one vast field together; but yet the part or share of every individual family or habitation, is separated from the next adjoining by a narrow strip of verge of grass, or any other natural or artificial boundary.

" In the spring the ground being already prepared, on one and the same day early in the morning, the whole town is summoned by the sound of a conch shell from the mouth of the overseer, to meet at the public square whither the people repair with their hoes and axes; and

from thence proceed to their plantation where they begin to plant, not every one in his own little district assigned and laid out, but the whole community united begins on one certain part of the field where they plant on until finished; and when their rising crops are ready for dressing and cleaning, they proceed in the same manner, and so on until the crop is laid by for ripening.

" After the feast of the busk is over and all the grain is ripe, the whole town again assembles and every man carries off the fruits of his labor, from the part first allotted to him, which he deposits in his own granary which is individually his own. But previous to their carrying off their crops from the field, there is a large crib or granary, erected on the plantation, which is called the King's crib; and to this each family carries and deposits a certain quantity, according to his ability or inclination, or none at all if he so chooses; this in appearance, seems a tribute or revenue to the mico, but in fact is designed for another purpose, i.e.; that of a public treasury, supplied by a few and voluntary contributions, and to which every citizen has the right of free and equal access, when his own private stores are consumed; to serve as a surplus to fly to for succor; to assist neighboring towns whose crops may have failed; accommodate strangers or travelers; afford provisions or supplies when they go forth on hostile expeditions....and this treasure is at the disposal of the king or mico.....

" As to their mechanical arts or manufactures, at present they have scarcely anything worth observation, since they are supplied.....by the white traders. The men perform nothing except erecting their mean

habitations, forming their canoes, stone pipes, tambour, eagle's tail or standard.....for war or hunting are their principal employment. The women are more vigilant, and turn their attention to various manual employments; they make all their pottery or earthenware, moccasins, spin and weave the curious belts and diadems for the men, fabricate lace, fringe, embroider and decorate their apparel, etc. etc."

Relative to the Indiam mounds, Bartram said that the Cherokees could not give him any information as to why these had been built or by whom.

CHAPTER III

CLIMATE

Knox County has a mild climate, ample rainfall and a sufficient number of growing days for normal agricultural development in the temperate zone. An analysis of weather data kept at the Knoxville Weather bureau for periods ranging from ten to fifty-seven years, 1871 to 1927, indicates an annual mean rainfall of 48.28 inches, and an annual average of 209 growing days free from frost.

The monthly mean temperature for the 57-year period is as follows: January, 38.4 degrees; February, 41.2; March, 48.6; April, 57.9; May, 66.7; June, 73.8; July, 76.6; August, 75.5; September, 70.5; October, 58.8; November, 47.5; and December, 39.8. Extreme temperatures for this period include the highest, 102 degrees for seven days in September, 1925, and the lowest, 16 degrees for six days in January, 1884.

The monthly mean precipitation for the 57-year period follows: January, 4.70 inches; February, 4.63; March, 5.20; April, 4.45; May, 3.70; June, 4.22; July, 4.30; August, 3.98; September, 2.82; October, 2.60; November, 3.24; and December, 4.45. Extreme rainfall for this period includes the heaviest, 17.32 inches, in April, 1874, and the lightest, 0.07 inch, in October, 1904. In 1875 the annual rainfall was 73.87 inches, representing the highest for the fifty-seven-year period, and the lowest, 35.09 inches, occurred in 1904.

Killing frosts for the 57-year period, occurred on October 29th as the average date for the first frost of autumn, and on April 3rd as the average date for the last frost of spring. Extremes in the growing

season occurred in 1922, with 261 growing days free from frost, and in 1895, with 180 growing days, this being the shortest growing season on record.

The humidity for a 40-year period in the 1871-1927 interval, averaged 82 per cent at 7 A. M., and 64 per cent at 7 P. M. The average at noon, kept for ten years, was 58 per cent. Maximum moisture saturation of the air is represented at 100.

There was an annual average of 121 clear days, 125 partly cloudy days, and 119 cloudy days, according to the records kept for the 57-year period. The average hourly wind velocity for eleven years of record was six miles an hour, and the prevailing direction, southwest.

The mean annual snowfall for a 44-year period, 1884 to 1927, inclusive, was 9.2 inches. Extremes occurred in the winter of 1894-1895 with 41.6 inches, and in the winter of 1924-1925 with only slight traces of snow.

Notes bearing on the general geography of Knoxville and its relationship to climatic conditions, are quoted from the Annual Meterological Summary with Comparative Data, 1927, of the United States Department of Agriculture Weather Bureau, Knoxville, Tennessee, 1927, compiled by J. I. Widmyer, Meterologist, as follows: " Knoxville is situated in latitude 35 degrees 56 minutes North, and longitude 83 degrees and 58 minutes West, in a valley about fifty miles wide, extending in a northeast-southwest direction across the state, and having an average elevation of about one thousand feet above sea level.

" The valley is bounded on the southeast by the Great Smoky Mountains, with elevations from 5000 to 6500 feet, and on the northwest by the Cumberland Plateau, with an elevation of about 3000 feet. The upper end of the valley is closed by the highlands which form the watershed of the Holston River in Virginia, while the lower end becomes so narrow as to be practically closed, so far as any effect on the climate in the valley is concerned.

" The effect of the shut-in condition is to modify somewhat the temperature conditions of the valley. The high mountains of the southeast act as a barrier to divert the hot southerly winds that occur when the pressure is high off the Atlantic Coast, with the result that the maximum temperature experienced in this valley is lower than that beyond the mountains in any direction.

" On the other hand, the Cumberland Plateau on the northwest retards and weakens the force of cold waves. This weakening is not great, however, and is hardly noticeable during severe cold waves. But in the late spring and early fall cold waves with only moderate energy often fail to bring freezing temperatures into the valley, though there may be killing frosts at the same elevation on the western slope of the mountain.

" The effect of topography upon the climate of Knoxville is further shown by the direction of the winds, which blow principally up and down the valley, or from the southwest and northwest..... Sudden great changes in the temperature are comparatively rare. The mean daily range in temperature, or the difference between the day and night temperature, is large, almost twenty degrees in the summer months. As a result,

the nights are always comfortable. Sunstrokes and prostrations are practically unknown here.

" The winds are light and tornadoes are almost unknown in this valley. When tornadoes have occurred, they have developed little force and have been of short duration, apparently being broken up in the hills.

" The rainfall is ample for agricultural purposes and is very favorably distributed for the growth of crops, There are two so-called wet seasons - winter and summer, and two dry seasons - late spring and early autumn. This distribution of rainfall, together with the relatively mild winters, makes it possible to grow two crops each year on the same ground."

CHAPTER IV

POPULATION

In a classification of Knox County population from 1900 to 1930, the ratio of rural to urban population has declined considerably. The rural population was 56.08 per cent of the total in 1900, but was only 32.14 per cent in 1930, and had been slightly lower, 31.09 per cent, in 1920.

The new system of classifying rural population in 1930 indicates that only 14.95 per cent of the county population actually constituted the farming element.

TABLE I. RELATION OF RURAL TO URBAN POPULATION, KNOX COUNTY, TENNESSEE, 1900 TO 1930.

YEAR	TOTAL POPULATION	URBAN POPULATION		RURAL POPULATION			
		Total Number	Per Ct. Urban	Total Number	Rural Farm	Rural Non-Farm	Per Ct. Rural
*1930	155,902	105,802	67.9	50,000	23,309	26,791	32.1
1920	112,926	77,818	68.9	35,108	-	-	31.1
1910	94,187	41,472	44.0	52,715	-	-	56.0
1900	74,302	32,637	43.9	41,665	-	-	56.1

Source: United States Census of Population for years indicated.

(*) Part of Grainger County annexed to Knox County, in 1927.

In the decade from 1900 to 1910 the rural population of Knox County increased 26.5 per cent, while the rural population in the entire state of Tennessee was increasing only 2.9 per cent. However, in the succeeding decade, 1910 to 1920, there was a decrease of 33.4 per cent in the rural population status in Knox County as compared with a decrease of one per cent in the state. In the decade from 1920 to 1930, the rural population in Knox County increased 42.7 per cent while the rural population in the entire state lost 0.4 per cent.

Steady gains have been noted in the three decades from 1900 to 1930, in the state, with respect to the increase in urban population, while in Knox County the gains have been sporadic. During the ten-year period, 1910 to 1920, Knox County gained in urban population by 87.6 per cent, or almost doubled.

Data on the increase by decades on a comparative rate between Knox County and the state are shown in the following tabulations:

TABLE II. PER CENT INCREASES IN RURAL AND URBAN POPULATION, 1900 TO 1930, KNOX COUNTY AND TENNESSEE.

DECADE	PER CENT INCREASE IN URBAN POPULATION		PER CENT INCREASE IN RURAL POPULATION	
	Tennessee	Knox County	Tennessee	Knox County
1900-1910	31.4	27.1	2.9	26.5
1910-1920	38.6	87.6	-1.0	33.4
1920-1932	46.7	35.9	-0.4	42.7

Source: United States Census of Population for years indicated.

A study of the character of the population of Knox County indicates that the majority of the people are native-born white. The following table indicates the ratio between whites and Negroes and foreign-born whites:

TABLE III. CHARACTERISTICS OF THE POPULATION OF KNOX COUNTY, TENNESSEE, 1920 AND 1930.

CHARACTER OF POPULATION	1930		1920	
	Number	Per Cent of Total	Number	Per Cent of Total
Native White	135,738	87.1	98,657	87.4
Foreign-born White	960	0.6	959	0.8
Negro	19,198	12.3	13,310	11.8
TOTAL:	155,902	100	112,926	100

Source: U. S. Census of Population, 1930 and 1920.

Growth of population in civil district No. 1, which is now entirely within the city limits of Knoxville, has been rapid. No appreciable changes were noted in districts Nos. 5, 6, 7, 9, 10, 15, 16 and 17. All districts showed an increase from 1900 to 1930 except districts Nos. 3, 7 and 10.

While decreases are indicated for districts Nos. 2, 3 and 8, in the period from 1910 to 1930, the reason is attributed to the encroachment of the City of Knoxville by extensions.

Trends in population growth in the civil districts of Knox County covering the census years of 1900 to 1930 inclusive, are given in the following tabulation:

TABLE IV. TREND IN TOTAL POPULATION, BY CIVIL DISTRICTS, IN KNOX COUNTY, TENNESSEE, 1900 TO 1930 INCLUSIVE.

CIVIL DISTRICTS	1930	1920	1910	1900
1	105,802	77,818	36,346	10,358
2	9,209	4,414	16,417	5,911
3	2,084	869	5,149	4,349
4	4,086	2,593	2,579	2,992
5	2,268	2,131	1,919	1,822
6	1,887	1,790	1,893	1,310
7	1,864	1,524	3,159	8,143
8	5,502	3,260	13,399	2,453
9	2,744	2,596	2,366	2,095
10	2,226	2,136	2,288	2,232
11	2,915	2,049	1,986	-
13	5,538	4,668	2,500	-
14	3,495	2,213	2,325	-
15	2,283	1,998	1,871	-
16	2,249	1,525	-	-
17	1,752	1,342	-	-

U. S. Census of Population, 1930.

Note: Part of Grainger County annexed to civil district No. 7 in 1927. Knox County totals for 1900 include 32,637 of Knoxville City returned independently; parts of civil districts Nos. 2, 3, 8 and 14 annexed to the City of Knoxville; part of civil district No. 3 to form civil district No. 17; and part of civil district No. 7 to form civil district No. 16, since 1910.

CHAPTER V

RURAL HEALTH

A study of the records of the Knox County health department for the three-year period, 1936 to 1938 inclusive, indicates that the greatest number of cases represented persons who had contracted contagious diseases such as diphtheria, typhoid, scarlet fever and measles. Next in order came the social or venereal diseases. Tuberculosis was the third in order. The following tabulation of the principal diseases confronted by the health authorities is given, but these data do not include records of the city health department:

TABLE V. DISTRIBUTION OF THREE PRINCIPAL TYPES OF DISEASES, FOR THREE-YEAR PERIOD 1936-1938 INCLUSIVE, KNOX COUNTY, TENNESSEE.

KIND OF DISEASES	TOTAL NUMBER OF CASES HANDLED BY COUNTY HEALTH UNIT			
	1936	1937	1938	Total
Contagious Diseases	130	70	254	454
Venereal Diseases	59	101	203	363
Tuberculosis	40	48	80	168
Total by years:	229	219	537	

Source: Data from quarterly reports of Knox County Health Department.

Additional insight into the health status in the civil districts is afforded by the following tabulation of cases of contagious diseases for the three-year period, 1936-1938 inclusive. The smallest number of cases of contagious diseases occurred in 1937 and the largest number in 1938.

Five civil districts, three of which are situated adjacent to or near the city of Knoxville, stand out as having the largest number of recurrent cases of contagious diseases for the period under observation.

These are districts Nos. 2, 4, 8, 13 and 15. The largest number of contagious diseases are reported from district No. 4, which is located east of the juncture of the Holston and French Broad Rivers. The next largest number of cases was reported in district No. 13, situated for the most part on the north side of the Holston River and embracing the town of Mascot. Next in order are districts Nos. 2 and 8 situated north and west of the City of Knoxville, respectively.

Contagious diseases appear to be much less prevalent in districts Nos. 3, 6, 7 and 11. By reference to the census of population data, it will be seen that contagious diseases are closely associated with the density of the population while freedom from those diseases in the districts previously mentioned, is associated with thinly populated regions.

TABLE VI. STATUS OF CONTAGIOUS DISEASES ORIGINATING IN CIVIL DISTRICTS OF KNOX COUNTY, TENNESSEE, THREE-YEAR PERIOD, 1936 TO 1938 INCLUSIVE.

CIVIL DISTRICTS	NUMBER OF CASES ORIGINATING BY YEARS			
	1936	1937	1938	Total
2	24	4	35	63
3	1	3	1	5
4	23	8	41	72
5	6	6	4	16
6	1	0	4	5
7	1	1	0	2
8	24	9	30	65
9	3	4	3	10
10	8	3	11	22
11	0	0	1	1
13	13	4	54	71
14	6	6	8	20
15	5	8	42	55
16	8	12	16	36
17	7	2	4	13
TOTALS:	130	70	254	454

Source: Data from quarterly reports of Knox County Health Department.

CHAPTER VI

SOCIAL SECURITY

A new departure in planning for the future in Knox County was instituted in 1937 when the Federal government passed the Social Security Act to provide for old age assistance. Up to the summer of 1939, approximately 500 persons in the county had qualified to receive these benefits, according to officials of the Knoxville branch of this service interviewed.

Two broad classes are handled. First, the class of persons who become sixty-five years of age and have had part of their salaries deducted under what is termed "covered employment". These persons have paid one per cent of their salaries, their employers one per cent, and they receive three and one-half per cent of the amount of their total salaries during "covered employment", through Federal aid. The second class handled is to the estates of persons who have died with an accumulated security fund.

Likewise, industrial unemployment wage benefit payments have been used since 1937 in Knoxville, in which a maximum benefit of $15.00 per week for sixteen weeks, was guaranteed if a regular employee of a "covered" organization* loses his job. For this class of work insurance, the employer pays three per cent on the worker's salary while he is employed, the three per cent being divided as follows: 2.7 per cent to the State Employment Service and 0.3 per cent to the Federal Government.

(*) Covered organizations include those with eight or more employees working 20 or more weeks annually.

Both of these ventures into social security are considered in the elementary stages of their existence, as already changes in the original draft of the Social Security Act, Old Age Benefits, Title II, liberalizing the advantages to employees and providing for payments beginning in 1940, have been made, whereby monthly installments would be paid to the beneficiary for life. Beginning at the age of sixty-five, he would receive from $10.00 to $85.00 monthly, depending upon the average monthly wage and number of years in covered employment.

The following table indicates the increase in the number of social security cases and the increase in payments, beginning in January, 1937 and continuing through 1938.

TABLE VII. STATUS OF SOCIAL SECURITY PAYMENTS IN KNOX COUNTY, TENNESSEE, DURING 1937 AND 1938.

PERIOD	PAYMENT TO ESTATES		PAYMENT ON AGE ATTAINMENT	
	Number	Amount	Number	Amount
1937	32	$ 466.93	18	$ 199.29
1938	210	6,545.14	145	6,432.31
TOTALS:	242	$7,012.07	163	$6,631.60

Source: Unpublished data from records compiled in Knoxville U. S. Social Security Board offices.

The status of social security membership and payments by civil districts in Knox County given in the following table, indicates that the greatest number occur in the City of Knoxville and in districts adjacent thereto.

TABLE VIII. STATUS OF SOCIAL SECURITY PAYMENTS FOR 1937 AND 1938, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS.	SETTLEMENT OF ESTATES				SETTLEMENT OF AGE ATTAINMENTS			
	1937		1938		1937		1938	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
1	22	$ 354.08	180	$5434.37	15	$ 145.88	127	$5980.73
2	1	1.42	8	458.56	1	3.99	9	224.98
3	3	28.36	4	130.60	-	-	-	-
4	-	-	2	70.06	-	-	-	-
5	1	17.85	3	54.99	-	-	-	-
8	1	8.51	5	71.46	-	-	4	106.14
9	-	-	1	44.86	-	-	-	-
10	-	-	1	27.27	-	-	-	-
11	-	-	1	26.80	-	-	1	41.13
13	3	51.60	3	108.84	1	19.33	1	18.13
14	1	5.11	-	-	1	30.09	2	39.82
15	-	-	-	-	-	-	1	21.38
16	-	-	1	44.55	-	-	-	-
17	-	-	1	72.78	-	-	-	-
TOTALS:	32	$466.93	210	$6545.14	18	$199.29	145	$6432.31

Source: Unpublished data from records compiled in Knoxville office of U. S. Social Security.

CHAPTER VII

EMPLOYMENT

Less than four per cent of the total population of 1930, in Knox County, was gainfully employed in agriculture, while 35.39 per cent was employed in industry, professional service, and all other occupations, according to the census of occupation and population for 1930. For every farmer in Knox County there were nearly ten persons employed in other kinds of work.

Comparative figures for the state of Tennessee indicate similar relationships but with a greater proportion in agricultural work. A little more than 14 per cent of the total population was engaged in agriculture, while 22.23 per cent was employed in other occupations, principally industrial and professional. The 1930 ratio of gainful workers in agriculture to all other occupations, was 14 to 22 in Tennessee.

A greater per cent of the total population was employed in Knox County in 1930 than was employed in the state. The census figures on gainful employment include all persons who are ten years of age and older. Details of the comparison are shown in the following tabulation:

TABLE IX. COMPARISON OF EMPLOYMENT IN AGRICULTURE WITH ALL OTHER OCCUPATIONS, KNOX COUNTY AND TENNESSEE, 1930.

	KNOX COUNTY		TENNESSEE	
	Number	Per Cent Population	Number	Per Cent Population
Total Population	155,902	100.	2,616,556	100.
Gainful Workers	61,007	39.13	958,209	36.62
Agriculture	5,839	3.74	376,623	14.39
Other Occupations	55,168	35.39	581,557	22.23

Source: Census of Occupation and Population, 1930.

The status of employment in Knox County as revealed in a sampling method study covering portions of the three-year period, 1937-1939 inclusive, indicates that new registrations continued fairly even but with placements in jobs somewhat erratic. Officials of the local National Employment Service explained that approximately 25 per cent of jobs were certified through the governmental relief agencies and the remainder through private employment.

The sample study was made of the activity in Knox County for the months of September, 1937, and September, 1938, and of March 1938, and March 1939. A fall and spring month for each year was selected in order to include possible seasonal variations. Total registrants in the active files which are purged every 60 to 90 days, were not obtained in this study.

New registrants increased from 938 in September, 1937, to 1,060 in September, 1939, and dropped to 719 in March, 1939. Placements in jobs fell from 467 in September, 1937, to 138 in September, 1938, but climbed to 360 in March, 1939. Of a total of 3,651 new registrants for the four months of the study, 1,266 placements were made.

While this represents a ratio of 34.6 per cent of all new registrants, it does not necessarily follow that placements consisted only of new registrants.

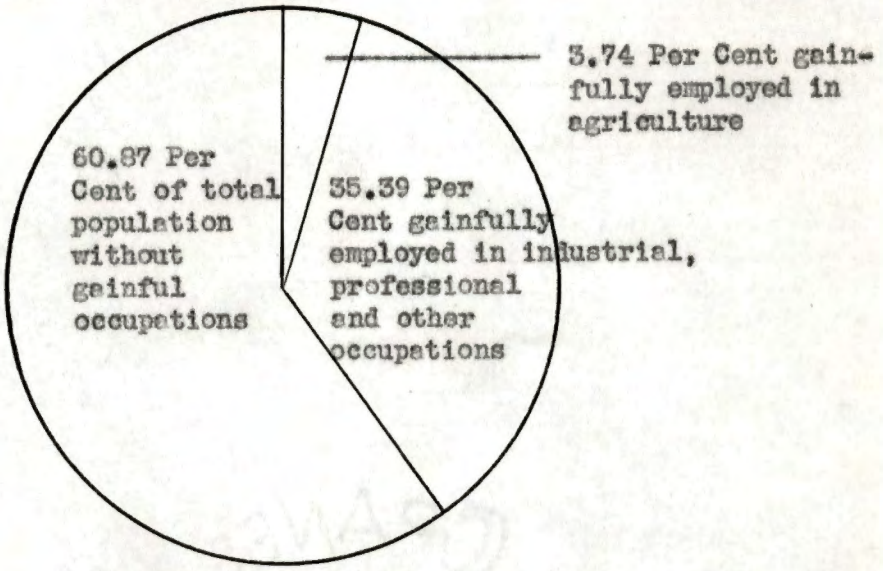
The distribution of registrants and placements is given in the following tabulation, being classified as to men, women and veterans:

TABLE X. STATUS OF EMPLOYMENT IN KNOX COUNTY BY SAMPLING METHOD COVERING PORTIONS OF PERIOD, 1937 TO 1939, INCLUSIVE.

PERIOD	NEW REGISTRATIONS				PLACEMENTS				
	Total	Distribution			Total	Distribution			Per Cent
		Men	Women	Vets		Men	Women	Vets	
Sept. 1937	938	602	336	31	467	251	216	4	49.7
March 1938	933	638	295	81	301	150	151	25	32.2
Sept. 1938	1061	637	424	41	138	64	54	4	13.0
March 1939	719	377	342	17	360	164	196	10	50.0
TOTAL:	3651				1266				34.6

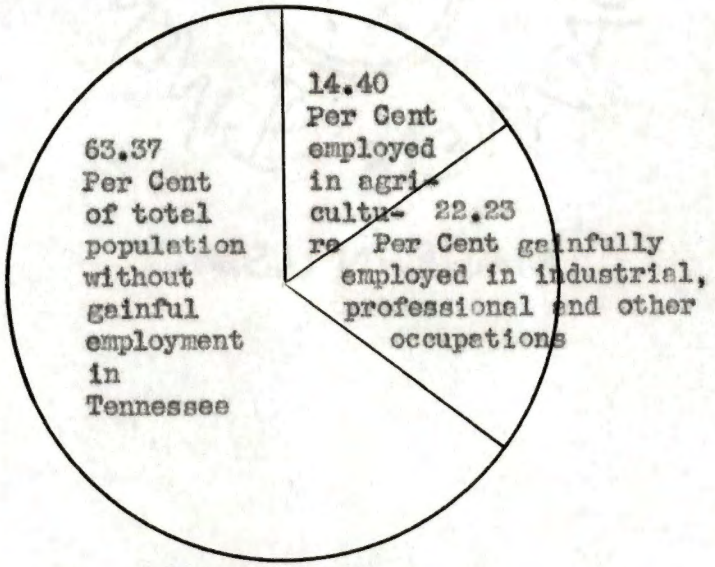
Source: Data from files of the National Employment Service, Knoxville, Tennessee.

The following charts compare Knox County and Tennessee with respect to the proportion of the 1930 population, 10 years of age or older, gainfully employed in agriculture and other occupations:



Source: See Table IX

Figure 2.- Percentage distribution of gainfully employed portion of 1930 population of Knox County, Tennessee.



Source: See Table IX

Figure 3.- Percentage distribution of gainfully employed portion of total population of Tennessee, 1930.

CHAPTER VIII

EMERGENCY RELIEF EXPENDITURES

In attacking the problems of maladjustments incident to the depression beginning about 1929, the Federal Government expended $119,716,643.27 in Tennessee from April 8, 1935, to December 31, 1938, for the dual purpose of promoting public works and providing jobs for people out of employment.

These funds, according to an announcement released from the Office of Government Reports, 210 Federal Building, Memphis, Tenn., by Amy Miles Brown, State Director, were expended principally for highway and road construction, conservation, canning and miscellaneous projects, and grants for direct relief. The principal items were as follows: $15,489,306, conservation work; $31,601,998, highways and roads; $12,746,887, canning and miscellaneous projects; and $10,803,539, grants for direct relief. Slightly more than one-half, $60,695,155, was distributed in payrolls, $25,036,511 for construction, maintenance and repairs, and $12,408,715 for supplies and materials.

Correspondence with Miss Amy Miles Brown regarding Federal expenditures in Knox County revealed that from February, 1932, to June 30, 1938, a total of $47,113,645 was expended in the form of loans or direct grants by the Federal Government. Total repayable loans aggregated $34,522,118, and non-payable loans totaled $9,368,313. Included was $3,323,213 in insured loans of the Federal Housing Administration.

Some of the grants to Knox County for agricultural rehabilitation include Agricultural Adjustment Administration payments for the 1936 conservation program of $63,847; rental and benefit payments by the same agency through June 30, 1938, of $76,548; and the Farm Security Administration grants from September 1, 1937, to June 30, 1938, of $1,304. Some of the loans to farmers of Knox County was included in the following items: Federal Land Bank and Commissioner, May 1933 to December 31, 1937, $385,300; emergency feed and crop loans, January 1933 to December 31, 1937, $9,445; and the Farm Security Administration, September 1, 1937, to June 30, 1938, $14,903.

A total of $3,377,450 in Works Progress Administration grants was expended in Knox County from May, 1935, to June 30, 1938, according to Miss Miles. This work consisted of 28 organized projects, according to a weekly resume of the certification and assignment statistics for Knox County for the week ending July 19, 1939, as released from the Nashville headquarters of the Works Progress Administration in Tennessee.

A total of 5,002 men, 693 women and 99 farmers were certified for relief work with a working quota of 2,036 men and 501 women. The farm to market road work with 1,654 certified men constituted the largest single project from the standpoint of the number of people employed. Malarial control work with 306 men certified was the second largest project. Sewing, canning, gardening, nursery schools, education, and housekeeping projects constituted the major types of work for women. Funds are prorated to approved projects on the basis of relief registration.

CHAPTER IX

LAND CLASSIFICATION

The land of Knox County is broadly divided into three use categories, namely: urban, rural and water surface areas. Comparisons of the general classification made by three agencies, indicate three slightly variable totals.

The Knox County tax assessor for 1938 reported 303,990 acres in round numbers, as rural, and by subtracting this total from the old census figures of 322,560 acres, there remains a total of 18,570 acres in urban holdings. The latter figure is the acre expression of 52,357 lots in the report of the tax assessor. Water surface area was not reported.

The Tennessee Valley Authority finds 5,705 acres in water surface, 298,648 acres in rural land, and 31,992 acres in urban development, making a total of 336,349 acres for the county.

The Bureau of Agricultural Economics, in reports of 1930 and 1935, indicates 5,880 acres in water surface, 257,953 acres in farm land, and 69,921 acres in urban and other land not in farms.

TABLE XI. COMPARISON OF THREE AGENCIES' CLASSIFICATION OF LAND IN KNOX COUNTY, TENNESSEE.

AREAL CLASSES	CLASSIFICATION BY TAX ASSESSOR 1938 (Acres)	CLASSIFICATION BY T. V. A. 1936 (Acres)	CLASSIFICATION BY B. A. E. 1930-35 (Acres)
Water Surface	-	5,705	5,880
Rural Land	303,990	298,648	-
Rural Farm Land	-	-	257,955
Urban Land	-	31,992	-
Urban and Other	18,570	- Error	69,921 Error
TOTAL:	322,560	336,345	333,754

Source: Data from Knox County Tax Assessor, Tennessee Valley Authority, and United States Department of Agriculture.

The unit area method of land classification in Knox County as developed by the Tennessee Valley Authority[1], attempts an accurate quantitative portrayal of the occupance pattern, within certain limitations. Six major types of land are recognized, as follows: a. agricultural land; b. forest land; c. land used for recreation; d. land occupied by rural settlements and villages; e. land occupied by urban development; and f. land occupied by manufactural and mining enterprises.

Agricultural land in the county was appraised and classified first, on the basis of the agricultural quality of the present physical condition of the land; second, on the basis of the quality of the present agricultural use of the land; and third, on the basis of the economic status of the people and the physical condition of the land.

1. Unit Method of Land Classification by Dr. G. Donald Hudson, reprinted from Annals of the Association of American Geographers, Vol. XXVI, June 1936, No. 2.

Briefly, a generalized description of the five broad agricultural land classes may be given, as follows:

Class I.- Units of 200 acres or more, in which no significant agricultural problems are apparent, with an excellent standard of living, and by land that is suited for both general and specialized types of farming. These units are characterized by relatively level topography, adequate drainage, little or no erosion, and deep fertile soil with little or no rock exposure. They are also represented by medium or large uninterrupted fields free from weedy or brushy cover, little or no idle land, excellent farmsteads and farm equipment.

Class II.- Units of 200 acres or more, in which the apparent agricultural problems are not critical. These problems, in most cases, can be solved readily by programs of education and demonstration. These units are characterized by a good standard of living and by land that is well suited for both general and specialized types of agriculture. Particularly the indices relate to medium or large uninterrupted fields free from weedy or brushy cover, good farmsteads and farm equipment, and other evidence of a good standard of living; also by relatively level to undulating surface, adequate drainage, little denudation by erosion, deep fertile soil, and free from stone and limited rock exposure.

Class III.- Units of 200 acres or more in which agricultural problems are moderately critical. These problems, in most cases, can be solved by intensive programs of education and demonstration. The units are characterized by a medium standard of living and by land that

can be used for general crops or for special crops under proper management. The indices relate to small or medium uninterrupted fields with limited weedy or brushy cover, considerable idle land, medium quality homesteads and farm equipment, and other evidence of a medium quality standard of living. In addition, indices of this classification relate to undulating to moderately hilly surface, adequate drainage, denudation by sheet erosion or moderate gullying to a stage at which erosion control is economically feasible, soils of moderate fertility, and stoniness and limited rock exposure.

Class IV.- Units of 200 acres or more in which agricultural problems are very critical. Some of these problems may be solved through intensive programs of education and demonstration, but most of them will require marked readjustment, and/or a re-orientation of economic activities. These units are characterized by a moderately low standard of living and by land which for the most part, is unsuited for cultivated crops.

Further characteristics are small and/or interrupted fields, heavy weedy or brushy covers, considerable idle land, poor farmsteads and farm equipment, and other evidence of a moderately low standard of living. This class is also characterized by hilly surface configuration, poor or excessive drainage, denudation by sheet or gully erosion to a depth that renders cultivation difficult, or to a state that further tillage would result in deterioation beyond the point of economically feasible rehabilitation for pastoral purposes, shallow or stony soils, very low in fertility and with considerable rock exposure.

Class V.- Units of 200 acres or more that in most cases are suitable only for forest use. Some areas may prove of value for recreational purposes, game preserves, etc.; some might be truly waste land. These units are characterized by a very low standard of living and by land that is virtually in all classes unsuited for agriculture. As to use, this class is characterized by very small and/or interrupted fields with coarse weedy or brushy field covers, excessive areas of idle land, very poor farmsteads and farm equipment, and other evidence of a very low standard of living.

As to physical condition and topography, this class is characterized by steep slopes, very poor or excessive drainage, denudation by sheet or gully erosion beyond the point of cultivation and economically feasible rehabilitation other than for reforestation, shallow or stony soils very low in fertility and with excessive rock exposure.

Nearly 80 per cent of the total land surface of 330,664 acres in Knox County is in agricultural land use, according to the rural land classification schedule of the county by the Tennessee Valley Authority. A little more than 10 per cent is in forest land, into which category is added small areas in mining and recreation.

On this classification distribution by civil districts, it will be noted that districts Nos. 9, 13, 11, 6 and 14 represent in the order named, the largest districts from an areal standpoint. Also districts Nos. 9, 13 and 11 rank highest on the basis of the per cent the total agricultural land in the districts is to the county total.

Forestry areas are largest in civil districts Nos. 6, 13 and 9. Civil district No. 1 is entirely urban, and strong urban influences are reflected in districts Nos. 2, 14, 11, 13 and 8.

TABLE XII. CLASSIFICATION OF LAND IN KNOX COUNTY BY CIVIL DISTRICTS, AS TO AGRICULTURAL, FOREST AND URBAN USES.

CIVIL DISTS.	TOTAL AREA		AGRICULTURAL LAND		FOREST LAND		URBAN LAND	
	Acres	Per Ct. of Total	Acres	Per Ct. of Total	Acres	Per Ct. of Total	Acres	Per Ct. of Total
1	15,484	4.68					15,484	48.40
2	16,703	5.05	6,691	2.54	1,503	4.21	8,508	26.59
3	5,381	1.63	4,944	1.88	63	.18	374	1.17
4	19,132	5.79	18,497	7.03	505	1.42	130	.41
5	21,575	6.53	20,655	7.85	842	2.36	78	.24
6	24,483	7.40	14,911	5.67	9,572	26.84	0	. 0
7	18,114	5.48	16,044	6.10	1,194	5.44	129	.41
8	12,055	3.64	10,755	4.09	636	1.78	664	2.08
9	35,378	10.70	30,100	11.45	4,996	14.01	282	.68
10	20,157	6.10	17,994	6.84	1,850	5.19	313	.98
11	30,265	9.15	27,389	10.42	1,429	4.01	1,447	4.52
13	34,394	10.40	27,947	10.63	5,281	14.81	1,166	3.64
14	23,670	7.16	18,536	7.05	2,132	5.98	3,002	9.39
15	22,590	6.83	21,855	8.31	692	1.94	43	.13
16	15,740	4.76	12,756	4.85	2,733	7.66	251	.78
17	15,524	4.70	13,917	5.29	1,486	4.17	121	.38
TOTAL:	330,644	100	262,991	100	35,661	100	31,992	100
Per Cent of County Total	100		79.54		10.79		9.67	

Source: Planimetered data calculated from 1936 Rural Land Classification of Knox County, on mosaics furnished to R. M. Murphy, County Agricultural Agent, by the Tennessee Valley Authority.

An analysis of the percentage distribution of lands in agriculture, forests and urban uses, by civil districts in Knox County, gives emphasis to the urban influences which utilizes nearly a tenth of the land area, embracing all of district No. 1, and portions of districts Nos. 2, 3, 8 and 14.

In making a practical adaptation of the Knox County land classification by the Tennessee Valley Authority, three broad groupings of rural land use are suggested. Class I and Class II lands are recognized as good farm land, and for the purpose of this analysis, are combined. Class III land suggests the marginal aspect of ordinary agricultural operations, and for that reason was considered as one of the main classes.

Class IV and Class V lands suggest a complete change in the general system of farming, as, for example, from intensivity to extensivity. Therefore, these classes were combined with the land already exclusively in forests, to make up a classification in which grazing and/or forestry operations appear most feasible.

As a result of the classification, the following table was prepared. It shows fairly high proportions of good farm land in districts Nos. 8, 10 and 16, with very low percentages of good land in districts Nos. 3, 6 and 9.

High percentages of marginal land prevail in districts Nos. 3, 5, 7, 8 and 9. High proportions of land suited only for grazing and for forestry are noted in districts Nos. 4, 6, 15 and 17. District No. 1 which is entirely within the City of Knoxville, is not shown in the tabulations.

TABLE XIII. THREE MAJOR CLASSES OF RURAL LAND IN KNOX COUNTY, TENNESSEE, BY CIVIL DISTRICTS.

CIVIL DISTS.	GOOD FARM LAND		MARGINAL FARM LAND		LAND SUITED FOR GRAZING AND/OR FORESTRY		TOTAL PER CENT IN DISTRICT
	Acres	Per Ct. in Dist.	Acres	Per Ct. in Dist.	Acres	Per Ct in Dist.	
2	3,529	21.1	3,162	18.9	1,503	9.1	49.1
3	515	9.6	3,010	55.9	1,482	27.5	93.0
4	3,838	20.2	5,345	27.8	9,810	51.2	99.2
5	4,255	19.8	9,577	44.3	7,665	35.5	99.6
6	29	.1	6,125	25.0	18,329	74.9	100.0
7	3,993	22.2	7,330	40.3	6,662	36.8	99.3
8	5,270	46.3	5,477	42.8	644	5.4	94.5
9	2,627	7.5	17,465	49.3	15,004	42.4	99.2
10	7,779	39.1	6,617	32.3	5,448	27.0	98.4
11	7,698	26.7	9,687	30.7	11,433	37.8	95.2
13	5,172	15.6	12,557	35.9	15,499	45.1	96.6
14	3,285	15.9	8,071	32.1	9,312	39.3	87.3
15	3,609	16.0	7,021	31.1	11,917	52.8	99.9
16	6,198	40.0	4,090	25.4	5,201	33.1	98.5
17	1,769	11.5	3,949	25.3	9,685	62.4	99.2
County Average	18.0%		33.1%		39.2%		90.3%

Source: See Table XII.

Agricultural land predominates in civil districts Nos. 15, 4 and 5 especially. The greatest areal extent of forested lands occur in civil district No. 6, followed in order but not closely, by districts Nos. 7, 16, 13, 9, 10, 17 and 14.

TABLE XIV. PERCENTAGE DISTRIBUTION OF LAND IN AGRICULTURAL, FOREST AND URBAN USES, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

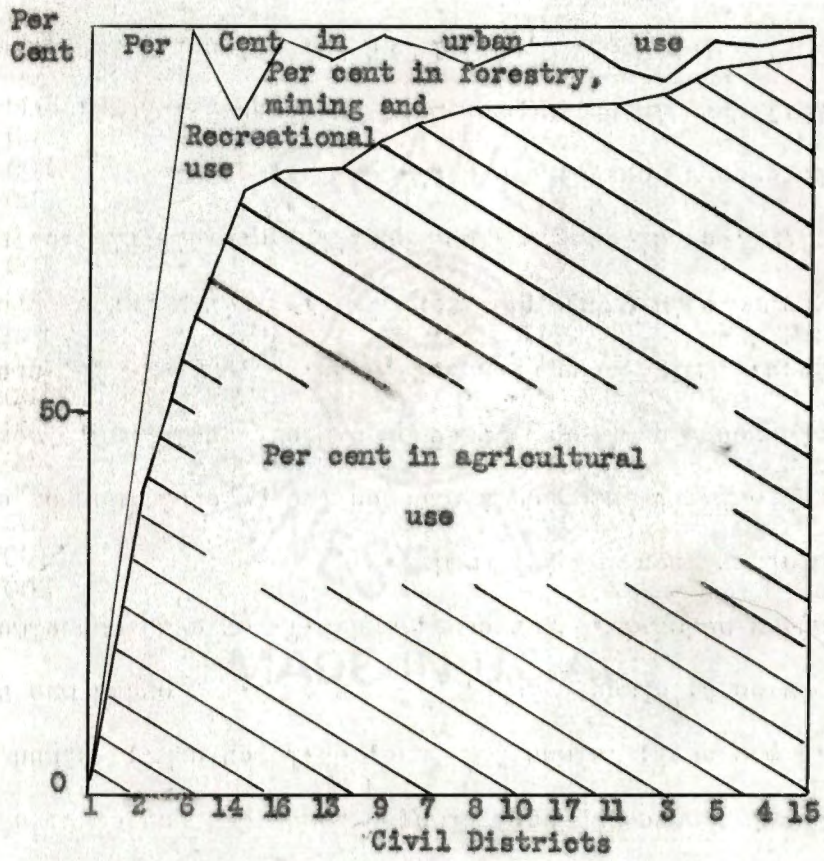
CIVIL DISTS.	PER CENT OF TOTAL LAND IN AGRICULTURAL USE	PER CENT OF TOTAL LAND IN FOREST AND/OR GRAZING, MINING, RECREATION USES	PER CENT OF TOTAL LAND IN URBAN DEVELOPMENT	GRAND TOTAL
1	-	-	100	100
2	40.0	9.1	50.9	100
3	91.9	1.1	7.0	100
4	96.6	2.6	0.3	100
5	95.7	3.9	0.4	100
6	60.9	39.1	.0	100
7	88.6	10.7	0.7	100
8	89.2	5.3	5.5	100
9	85.1	14.1	0.8	100
10	89.2	9.2	1.6	100
11	90.5	4.7	4.8	100
13	81.2	15.4	3.4	100
14	78.3	9.0	12.7	100
15	96.8	3.1	0.1	100
16	81.1	17.4	1.5	100
17	89.6	9.6	0.8	100
County Average:	79.54	10.79	9.67	100

Source: See Table XII.

The relative distribution on a percentage basis, of agricultural land, forestry (including mining, recreation and grazing) and urban development in the various civil districts, is depicted in the following component-part chart. The chart graphically illustrates the relatively small areas remaining exclusively in forests. One should not confuse the forest area here with farm woodlot lands. Forests in the

unit basis classification of the Tennessee Valley Authority, compose usually contiguous bodies of forests not a part of a farmstead, but in use other than in farm units.

The following chart illustrates the situation in civil district No. 6 which has 60.9 per cent of its area in agricultural lands, and 39.1 per cent in forest lands. No other district has near so much forest land as obtains in district No. 6.

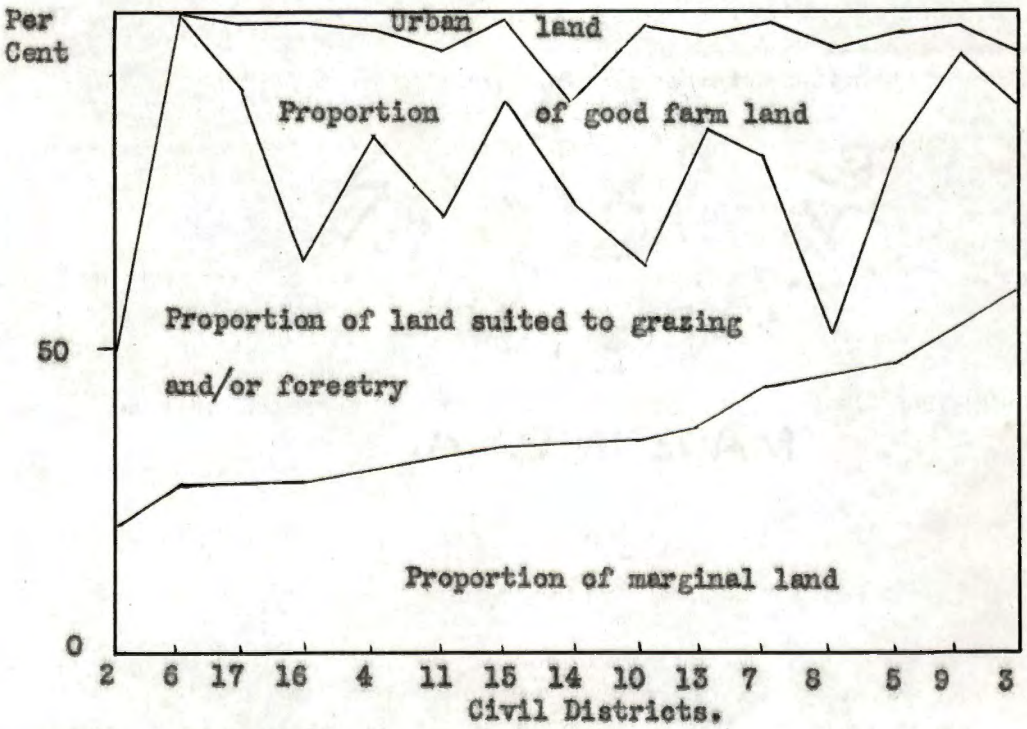


Source: Adaptation from Tennessee Valley Authority rural land classification.

Figure 4.- Percentage distribution of principal use classification of land in Knox County, by civil districts.

The percentage distribution of good farm land, submarginal land areas suitable only for forestry or grazing, or a combination of these two uses, are shown for all civil districts in Knox County, in the following chart. Urban land use is recognized as the difference between the rural and total percentage of all land by districts.

Extremes are quickly noted. For example, civil district No. 6 has scarcely any good farm land, no urban development, and a great proportion of the land is suitable only for forestry or grazing. On the other hand, district No. 8 has the highest proportion of good farm land, a fairly high percentage of marginal farm land, only a little forest or grazing land, and with a decided urban influence. The situation in district No. 2 indicates a high degree of urbanization.



Source: See Table XII.

Figure 5.- Component-part distribution of broad classes of land by civil districts in Knox County (Adaptation from the Tennessee Valley Authority land classification).

The detailed distribution of land of the various classes, as planimetered from the Tennessee Valley Authority mosaics, indicate the following percentages: Class I land, 3.5 per cent; class II land, 14.5 per cent; class III land, 33.1 per cent; class IV land, 25.9 per cent; class V land, 2.5 per cent. Forest and recreational areas added 10.8 per cent, and 9.7 per cent was classed as urban and other uses not in farming.

The following tabulation indicates the general lack of class I land, considered the highest grade of agricultural land, in five rural districts. Only three districts, Nos. 10, 11 and 16, show an appreciable acreage in extra good farm land. Fairly large acreages of class II land, considered of good quality, are distributed among all districts except Nos. 3, 6 and 17.

Marginal farm lands, represented by class III land, are more extensive in districts Nos. 5, 9, 11 and 13. Class IV land, considered best suited for grazing or forests, is extensive in districts Nos. 9, 13 and 15.

Forests or recreational lands are more extensive in districts Nos. 6, 9 and 13, while urban influences appear in districts Nos. 1, 2, 3, 8, 11, 13 and 14.

TABLE XV. DETAILED CLASSIFICATION OF LAND SURFACE IN KNOX COUNTY (PLANIMETERED FROM TENNESSEE VALLEY AUTHORITY MOSAICS).

CIVIL DIST.	CLASS I LAND (Acres)	CLASS II LAND (Acres)	CLASS III LAND (Acres)	CLASS IV LAND (Acres)	CLASS V LAND (Acres)	FOREST AND RECREATION (Acres)	URBAN AND OTHER LAND (Acres)
1	-	-	-	-	-	-	15,484
2	875	2,654	3,162	-	-	1,503	8,508
3	-	515	3,010	532	887	63	374
4	848	2,990	5,354	7,908	1,397	505	130
5	-	4,255	9,577	6,781	42	842	78
6	-	29	6,125	6,982	1,775	9,572	-
7	-	3,993	7,330	3,736	985	1,941	129
8	349	4,921	5,477	8	-	656	664
9	-	2,627	17,465	9,476	532	4,996	282
10	2,079	5,700	6,617	3,598	-	1,850	313
11	3,525	4,173	9,667	8,902	1,102	1,429	1,447
13	652	4,520	12,557	9,841	377	5,281	1,166
14	729	2,556	8,071	6,410	770	2,132	3,002
15	579	3,030	7,021	10,980	245	692	43
16	1,469	4,729	4,090	2,465	3	2,733	251
17	579	1,190	3,949	7,897	302	1,486	121
TOTAL:	11,684	47,882	109,492	85,516	8,417	35,661	31,992
PER CENT OF TOTAL:	3.5%	14.5%	33.1%	25.9%	2.5%	10.8%	9.7%

Source: See Table XII.

CHAPTER X

FARM LAND VALUATIONS

The average per acre value of farm land and buildings, ranging from $28.00 to $212.00, is high in civil districts Nos. 2 and 8, both of which are situated on the outskirts of the City of Knoxville, while the lowest valuations obtain in districts Nos. 15 and 17. The range in the average value of land and buildings per farm, is $5,687 in district No. 11, to $1,333 in district No. 17.

Very little relationship is exhibited, although a definite trend is observed when the average value of farm land and buildings per acre is compared with the per cent of good farm land by districts.

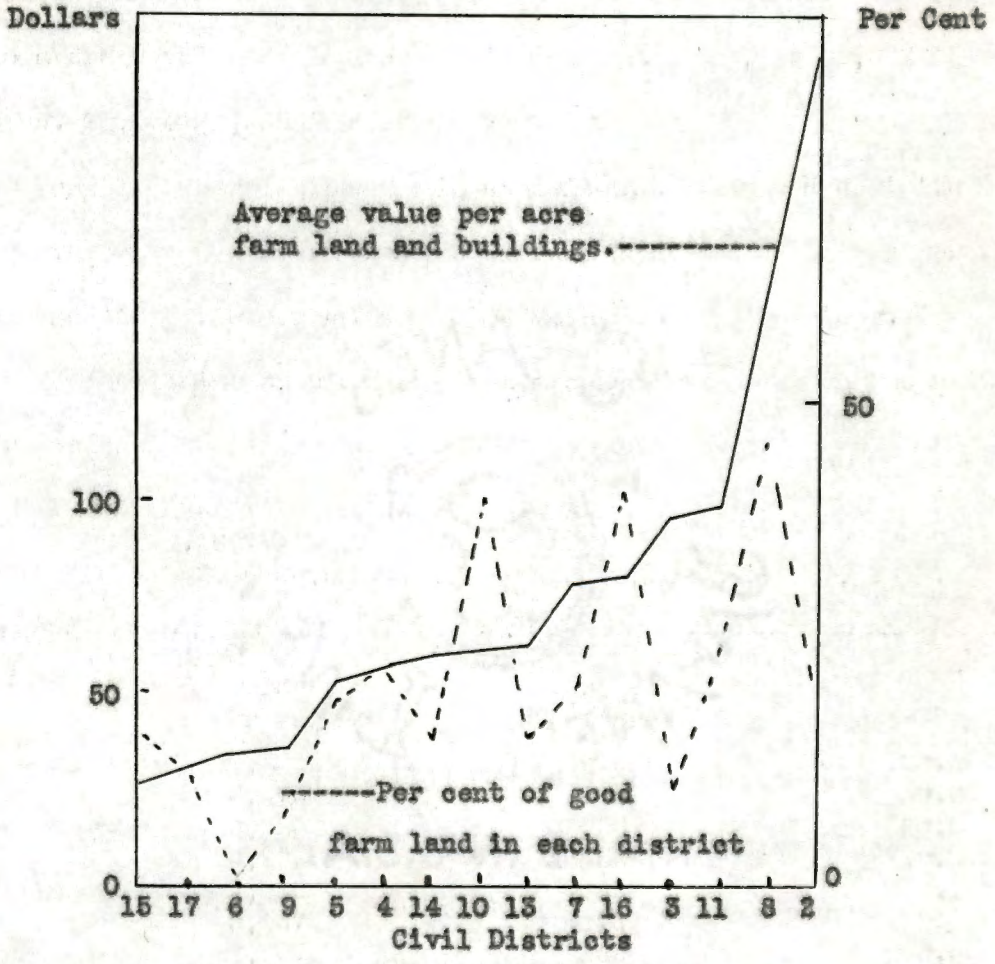
The following tabulation gives a comparison between the units of farm valuation and the per cent of good farm land:

TABLE XVI. COMPARISON OF AVERAGE FARM VALUES AND PER CENT OF GOOD FARM LAND, BY CIVIL DISTRICTS, KNOX COUNTY, TENN.

CIVIL DISTRICTS	VALUE OF FARM LAND AND BUILDINGS		PER CENT OF GOOD FARM LAND
	Average Per Farm	Average Per Acre	
2	$4,534	$212	21.1
3	3,875	95	9.6
4	3,045	56	20.2
5	3,208	52	19.8
6	1,822	42	.1
7	3,067	78	22.2
8	4,804	162	46.3
9	2,861	46	7.5
10	4,042	61	39.1
11	5,687	98	26.7
13	2,898	63	15.6
14	3,210	59	15.9
15	1,533	28	16.0
16	2,825	79	40.0
17	1,333	37	11.5
Average:	$3,256	$ 69	18.0

Source: U. S. Census of Agriculture, 1935, and Knox County land classification maps by the Tennessee Valley Authority.

Trends only are related in the following chart which attempts to compare the average per acre value of farm land and buildings as designated by the Census of Agriculture, and the per cent of good farm land in civil districts of Knox County. The range in the average valuation of farm land and buildings per acre was from $212.00 in district No. 2, to $28.00 in district No. 15.



Source: U. S. Census of Agriculture, 1935, and T. V. A. Land Classification.

Figure 6.-Comparison of Unit Farm Land and Building Valuation with Per Cent of Good Farm Land in each Civil District, Knox County, Tennessee.

A fairly close relationship is observed between the valuation data of the Census of Agriculture and the tax assessment valuation as placed by the county tax assessor. In comparing the per acre value of farm land and buildings as listed by the 1935 Census of Agriculture, with the per acre value as assigned by the tax assessor, very close relationships are observed in civil districts Nos. 2, 3, 4, 13 and 15. In only two districts, Nos. 2 and 4, were the tax assessment valuations higher than the census figures.

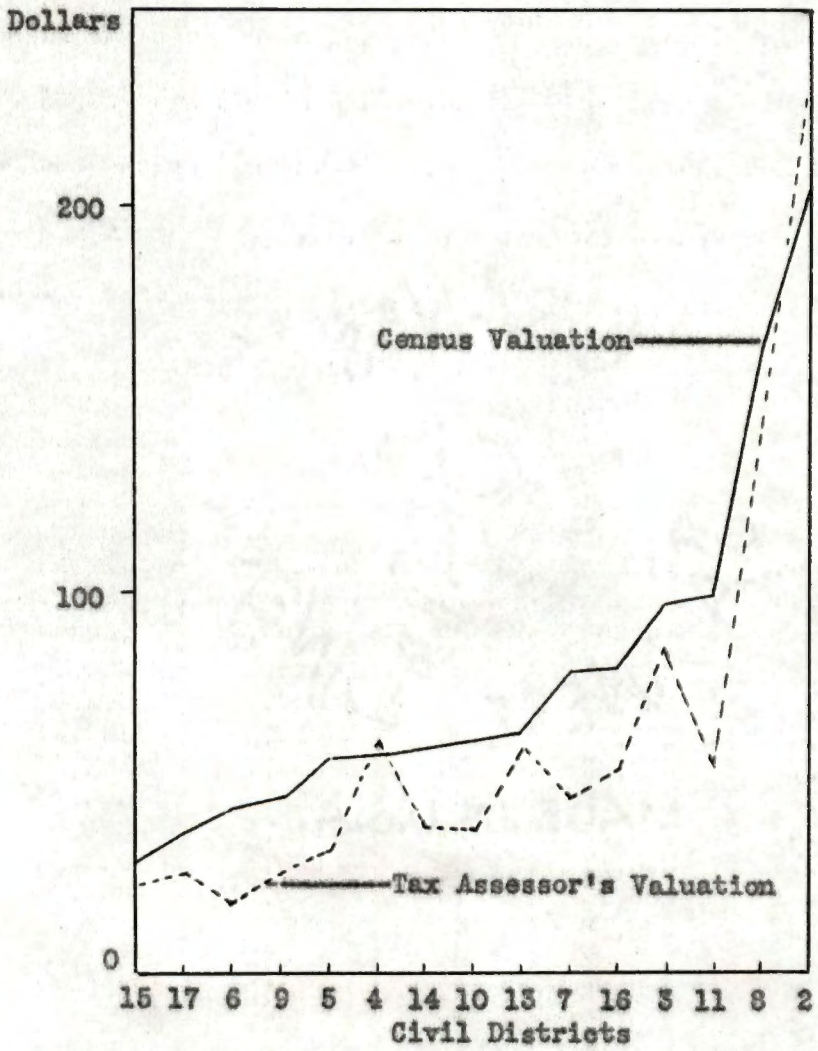
Rather wide variations in valuations obtained in districts Nos. 5, 6, 7, 9, 10, 11, 14 and 16. The census average per acre for the county was $69.00 while the average per acre tax assessment valuation was $52.00. Details of these relationships are indicated in the following tabulation:

TABLE XVII. COMPARISON OF CENSUS VALUE OF FARM LAND AND BUILDINGS WITH TAX ASSESSOR'S VALUATION, KNOX COUNTY.

CIVIL DISTRICTS	CENSUS VALUATION PER ACRE 1935	TAX ASSESSOR'S VALUATION 1938	
		Per Acre	Per Cent of Census Value
2	$212.00*	$227.00	10.71
3	95.00	84.00	88.4
4	56.00	59.00	105.3
5	52.00	31.00	59.6
6	42.00	19.00	45.2
7	78.00	47.00	60.2
8	162.00	132.00	81.4
9	46.00	26.00	56.5
10	61.00	37.00	60.6
11	98.00	54.00	55.1
13	63.00	59.00	92.1
14	59.00	39.00	66.1
15	28.00	23.00	82.1
16	79.00	54.00	68.3
17	37.00	26.00	70.2
County Average:	$ 69.00	$ 52.00	75.3

Source: U. S. Census of Agriculture, 1935, and data from Knox County Tax Assessor, 1938.

The rather close relationship between the valuation per acre of farm land and buildings as given by the 1935 Census of Agriculture figures, and the 1938 tax assessment valuation per acre, is shown in the following chart. The relationship was very close in districts Nos. 4, 13 and 15, and was widest in districts Nos. 7, 8 and 11.



Source: U. S. Census of Agriculture, 1935, and data from Knox County Tax Assessor, 1938.

Figure 7.-Comparison of per acre valuation of farm land and buildings by 1935 census and by Knox County Tax Assessor for 1938.

CHAPTER XI

LAND USE

In the five-year period from 1930 to 1935, certain definite trends in land use are observed. In 1930 a greater acreage in total farm land was noted in civil districts Nos. 9, 13 and 15 than in 1935. There was little change in districts Nos. 3, 4, 6, 8, 10 and 16. An increase in the acreage in farm land use was noted in districts Nos. 2, 5, 7, 11, 14 and 17, in 1935 over 1930.

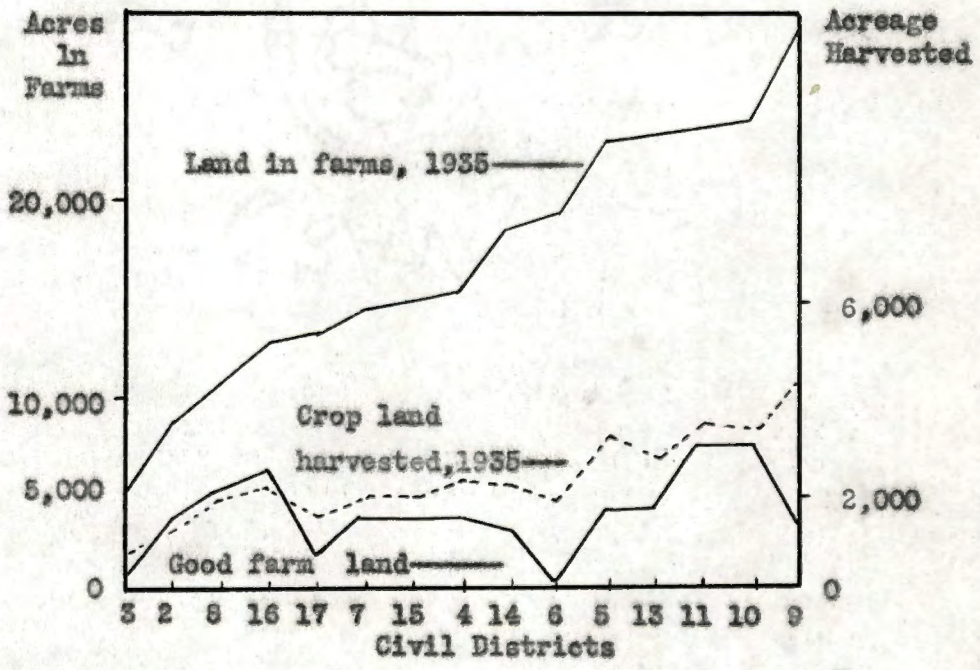
There was an increase in crop land harvested from 1930 to 1935 in civil districts Nos. 2, 3, 4, 5, 6, 8, 11, 14, 16 and 17, and a decrease in districts Nos. 7, 10, 13 and 15.

TABLE XVIII. TREND IN FARM LAND AND CROP LAND HARVESTED, FIVE-YEAR PERIOD 1930 TO 1935, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS	1935			1930		
	Land in Farms (acres)	Crop Land Harvested (Acres)	Per Ct Harvested	Land in Farms (Acres)	Crop Land Harvested (Acres)	Per Ct Harvested
2	8,582	2,996	35	6,932	2,206	31
3	4,803	1,732	35	5,158	1,504	29
4	15,551	5,910	38	15,421	5,000	32
5	23,205	7,945	34	22,715	7,205	31
6	19,365	4,608	23	19,351	4,393	23
7	14,192	4,844	34	12,956	5,229	40
8	11,590	4,628	39	11,385	4,354	38
9	29,336	10,884	37	30,860	10,724	34
10	24,279	8,052	33	24,026	8,254	34
11	24,173	8,489	35	20,358	6,913	34
13	23,583	6,902	29	27,399	7,559	27
14	18,960	5,239	28	15,675	3,845	24
15	14,599	4,983	34	18,814	5,640	30
16	12,829	5,002	39	13,420	4,251	31
17	12,906	3,815	29	9,358	2,837	30
TOTAL:	257,953	86,029		253,828	79,914	

Source: U. S. Census of Agriculture, 1930 and 1935.

While the data is not strictly comparable, a comparison of the extent of crop land harvested and of the amount of good farm land, by civil districts in Knox County, indicates that the equivalent of the good land is not used in districts Nos. 2, 8 and 16, while the reverse is the case in all other districts. Certain uneconomic land use problems are apparent in districts Nos. 5, 6, 9 and 17. The Tennessee Valley Authority's classification of good farm land includes all land on the farm, whether crop land or woodland. The following chart indicates details of this comparison:

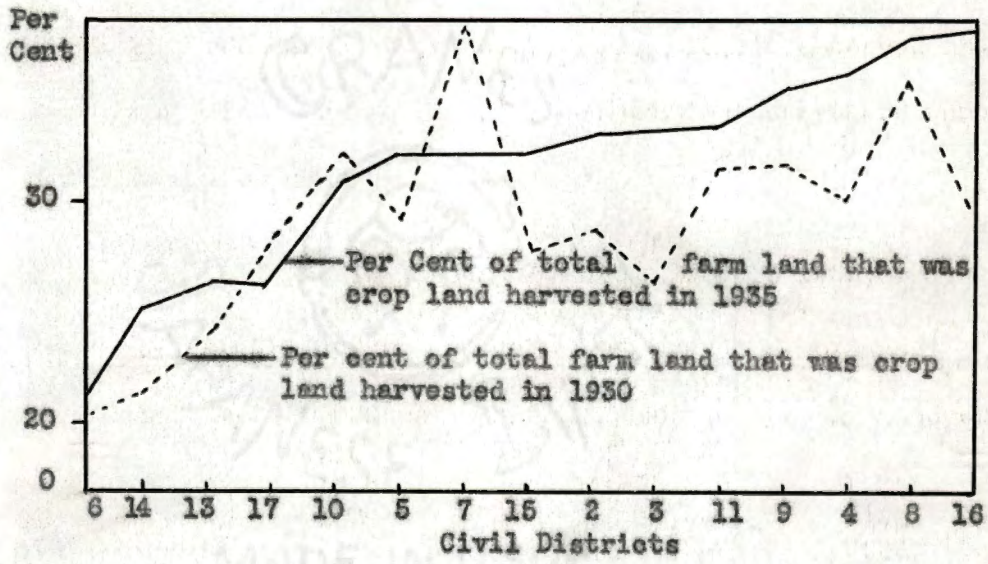


Source: U. S. Census of Agriculture, 1935, and Tennessee Valley Authority.

Figure 8.- Relation between land in farms and extent of crop land harvested in 1935 and acres of good farm land, by civil districts, Knox County, Tennessee.

A definite change in the proportion of total crop land harvested was noted from 1930 to 1935, according to the census data. Decreases in the crop land harvested of the total land in farms were noted in civil districts Nos. 7, 10 and 17, from 1930 to 1935. Increases were observed in all other districts except No. 6, which had no change.

The following chart indicates the extent of the changes in the relation of crop land harvested to the total area of all land in farms by civil districts, during the five-year period, 1930 to 1935:



Source: U. S. Census of Agriculture, 1930 and 1935.

Figure 9.-Relationships between per cent of crop land harvested and total farm land, by civil districts, Knox County, Tennessee, 1930 and 1935.

CHAPTER XII

NUMBER OF FARMS

A considerable increase in the number of farms in the five-year period from 1930 to 1935, was noted in civil districts Nos. 2, 8, 16 and 17, according to the following table. Increases of lesser degree occurred in districts Nos. 6, 7, 10, 11, 13 and 14. Decreases were noted in districts Nos. 3 and 5 while little change was apparent in districts Nos. 4, 9 and 15.

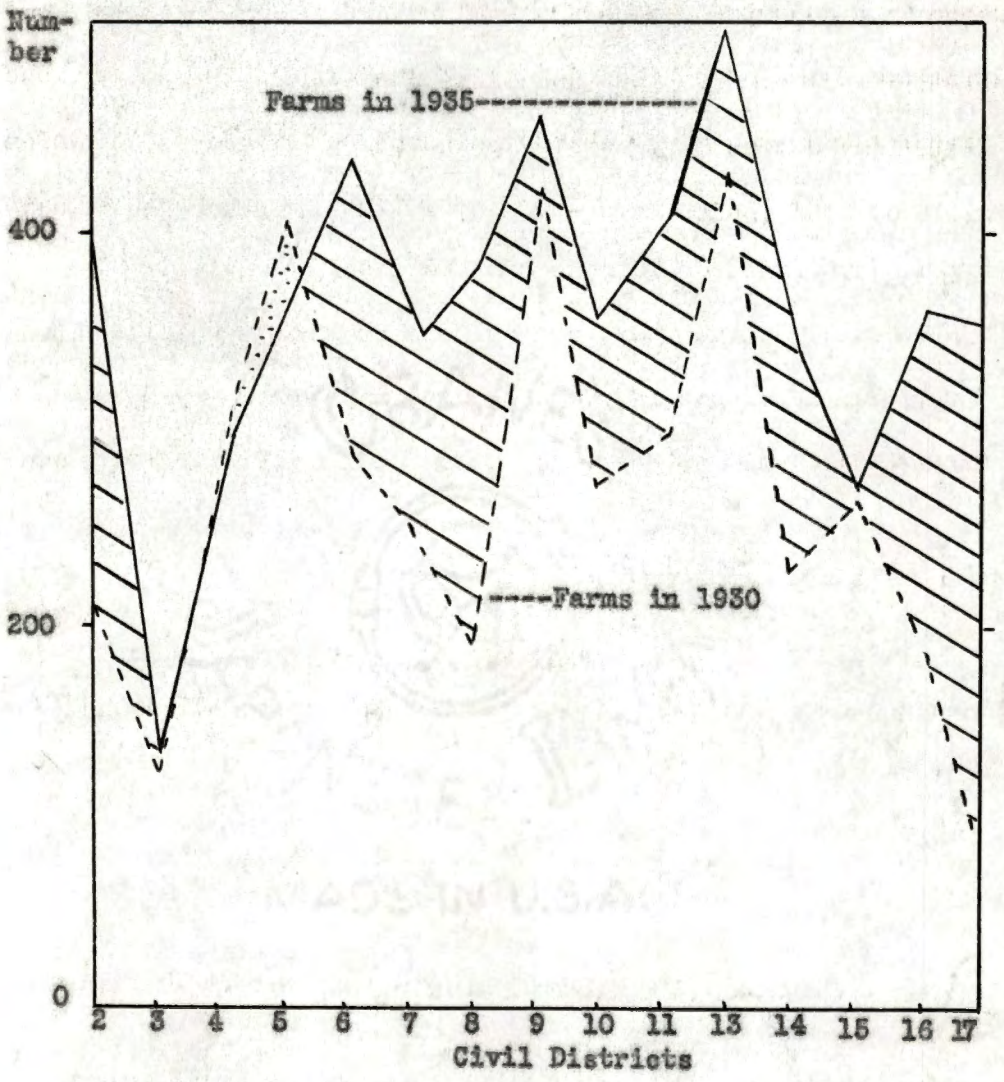
In comparing the 1938 data from the Agricultural Adjustment Administration cooperators with census data for 1930 and 1935, it was noted that in three districts, Nos. 7, 11 and 15, it appeared that more farmers applied for the A. A. A. cooperation than there were farms in the 1930 and 1935 census reports.

TABLE XIX. TREND IN NUMBER OF FARMS, 1930 TO 1935, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTRICTS	NUMBER OF FARMS		
	1930 Census	1935 Census	1938 AAA Cooperators
2	216	402	84
3	125	120	45
4	285	288	178
5	419	374	344
6	290	449	278
7	255	359	386
8	194	390	126
9	442	470	461
10	273	366	336
11	301	418	429
13	451	515	410
14	226	351	217
15	270	271	307
16	201	361	142
17	91	356	123
TOTALS:	4,039	5,490	3,866
PER CENT	100%	135.9%	95.7%

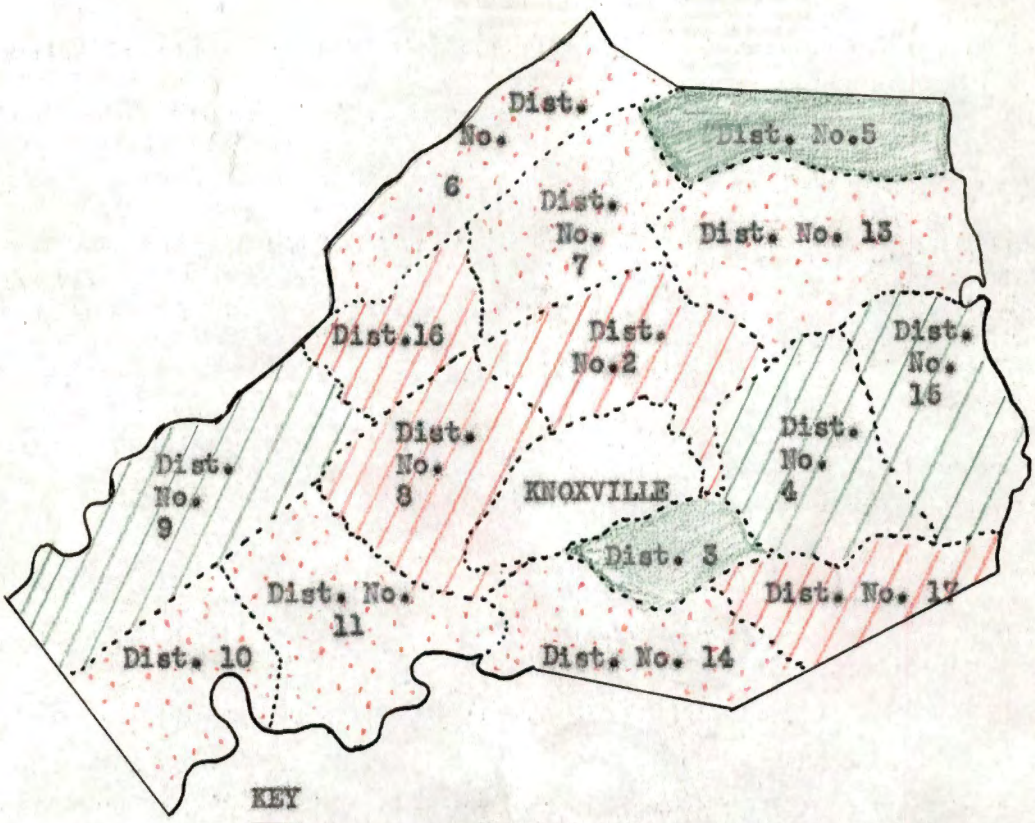
Source: U. S. Census of Agriculture, 1930 and 1935, and A.A.A.Schedules for Knox County, Tennessee.

The following chart illustrates the trends covering the period from 1930 to 1935 with respect to changes in the number of farms by civil districts in Knox County:



Source: See Table XIX

Figure 10.- Trend in number of farms, 1930 to 1935, by civil districts, Knox County, Tennessee.



KEY

Civil districts with increase of 160 or more farms.

Civil districts with increase of 90 to 159 farms.

Civil districts with increase of 1 to 89 farms.

Civil districts with decrease in number of farms.

Source: U.S. Census of Agriculture, 1930 and 1935.

Figure 11.- Comparison of number of farms by civil districts, 1930 and 1935, Knox County, Tennessee.

CHAPTER XIII

SIZE OF FARMS

A definite trend toward smaller size farm units is indicated in both Knox County and the State of Tennessee, according to census data. While the trend is definite in the direction of smaller size holdings, there have been some deviations in the normal tendencies in the state since 1920, and in Knox County since 1910.

The data pictures a rapid decline in the size of farms from 1860 to 1880, after which, especially after 1900, the decreases slowed down considerably. It is observed that the rapid decrease in size of farm units occurred in the period covered by the Civil War, and the irregularities of the period - 1920 to 1935, occurred concurrently with the intervening depression.

In the span of eighty-five years the average size of farm unit in Tennessee decreased from 261 acres to 69.7 acres, or, to 26.7 per cent of the original area. In Knox County the decrease in size of farms during the period from 1900 to 1935, while irregular, has been greater than the decrease in the whole state for the corresponding period.

Details of the decreases and sporadic increases are indicated in the following tabulations:

TABLE XX. TREND IN SIZE OF FARM HOLDINGS IN KNOX COUNTY AND IN THE STATE, 1850-1935.

YEARS	AVERAGE SIZE OF FARMS				
	TENNESSEE			KONX COUNTY	
	Average Acres	Per Cent of 1850	Per Cent of 1900	Average Acres	Per Cent of 1900
1935	69.7	26.7	76.9	47.0	62.4
1930	73.3	28.0	80.9	62.8	83.3
1925	70.8	27.1	78.1	58.1	77.1
1920	77.2	29.5	85.2	69.7	92.5
1910	81.5	31.2	89.9	67.2	89.2
1900	90.6	34.7	100.0	75.3	100.0
1890	115.6	44.2	-	-	-
1880	124.8	47.8	-	-	-
1870	165.7	63.4	-	-	-
1860	250.9	96.1	-	-	-
1850	261.0	100.0	-	-	-

Source: U. S. Census of Agriculture, 1850-1935.

Proceeding on the basis of the axiom that the size of farms decrease as the population increases, the opportunity for studying the relationships between the trend in size of farm holdings and the growth of the population presents itself for proof or refutation.

By comparing the trend in Tennessee as to the size of farm units, with the growth in population, it first appears that they are in inverse ratio with each other. For example, the greater the growth in population the smaller the size of the farm units. But, it is noted in the data that the greatest decrease, 48.3 per cent, in size of farm holdings occurred in the 20-year period from 1860 to 1880, while the population was increasing only 46 per cent.

Still wider variations occur if other periods are compared. For the period from 1880 to 1900, the size of farms decreased 13.1 per cent while the population increased 47.7 per cent.

Again a comparison of the 30-year period from 1900 to 1930, shows the size of farms has decreased eight per cent while the population has increased 59.5 per cent.

In Knox County the size of farms in the 35-year period, 1900 to 1935, decreased 37.6 per cent while the population, it is estimated, was increasing more than 454 per cent. In the 25-year period, 1900 to 1925, the size of farms decreased 23.9 per cent while the population figures, by interpolation, increased approximately 200 per cent. For the 30-year period, 1900 to 1930, the size of farms decreased 16.7 per cent while the population was increasing 433.9 per cent. By comparison, Knox County has a greater population growth than the average growth for the entire state.

Growth of population data on Knox County and on the state, together with the percentage increases, are indicated in the following tabulation:

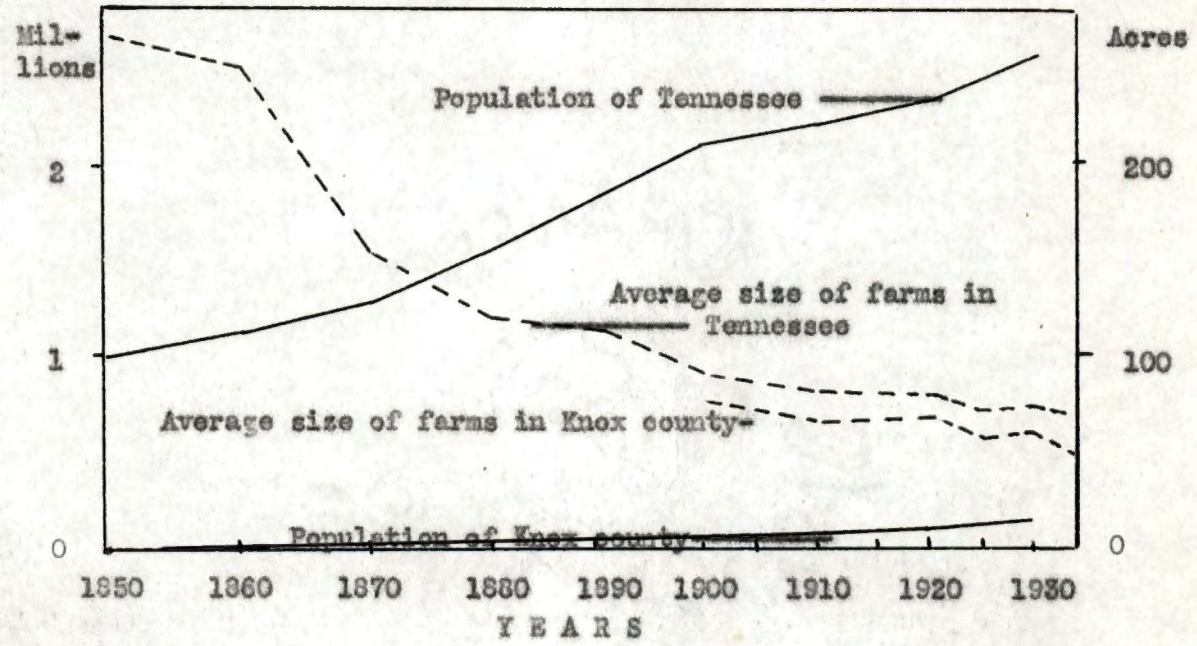
TABLE XXI. POPULATION GROWTH BY CENSUS PERIODS, TENNESSEE AND KNOX COUNTY, 1850-1935.

YEARS	TOTAL POPULATION			
	TENNESSEE		KNOX COUNTY	
	Number	Per Cent of 1850	Number	Per Cent of 1850
1930	2,617,000	260.9	155,902	828.9
1920	2,338,000	233.1	112,926	600.4
1910	2,185,000	217.8	94,187	500.8
1900	2,021,000	201.4	74,302	395.0
1890	1,769,000	176.3	59,557	316.6
1880	1,542,000	153.7	39,124	208.0
1870	1,259,000	125.5	28,990	154.1
1860	1,110,000	107.7	22,813	121.3
1850	1,003,000	100.0	18,807	100.0

Source: U.S. Census of Population, 1850-1930.

The greatest rate of reduction in the average size of farms of Tennessee occurred during the period from 1860 to 1880. Since 1900 the rate of decrease in size of farms has slowed down somewhat. There are some deviations from the normal trend observed during the interval from 1910 to 1935.

Details are indicated in the following figure, which depicts the inverse positions of average size of farms and growth of population, both in the state and for a limited period in Knox County:



Source: See Tables XXI, XXII and U.S. Census of Population.

Figure 12.- Size of farms and population trends, Knox County and Tennessee, 1850 to 1930

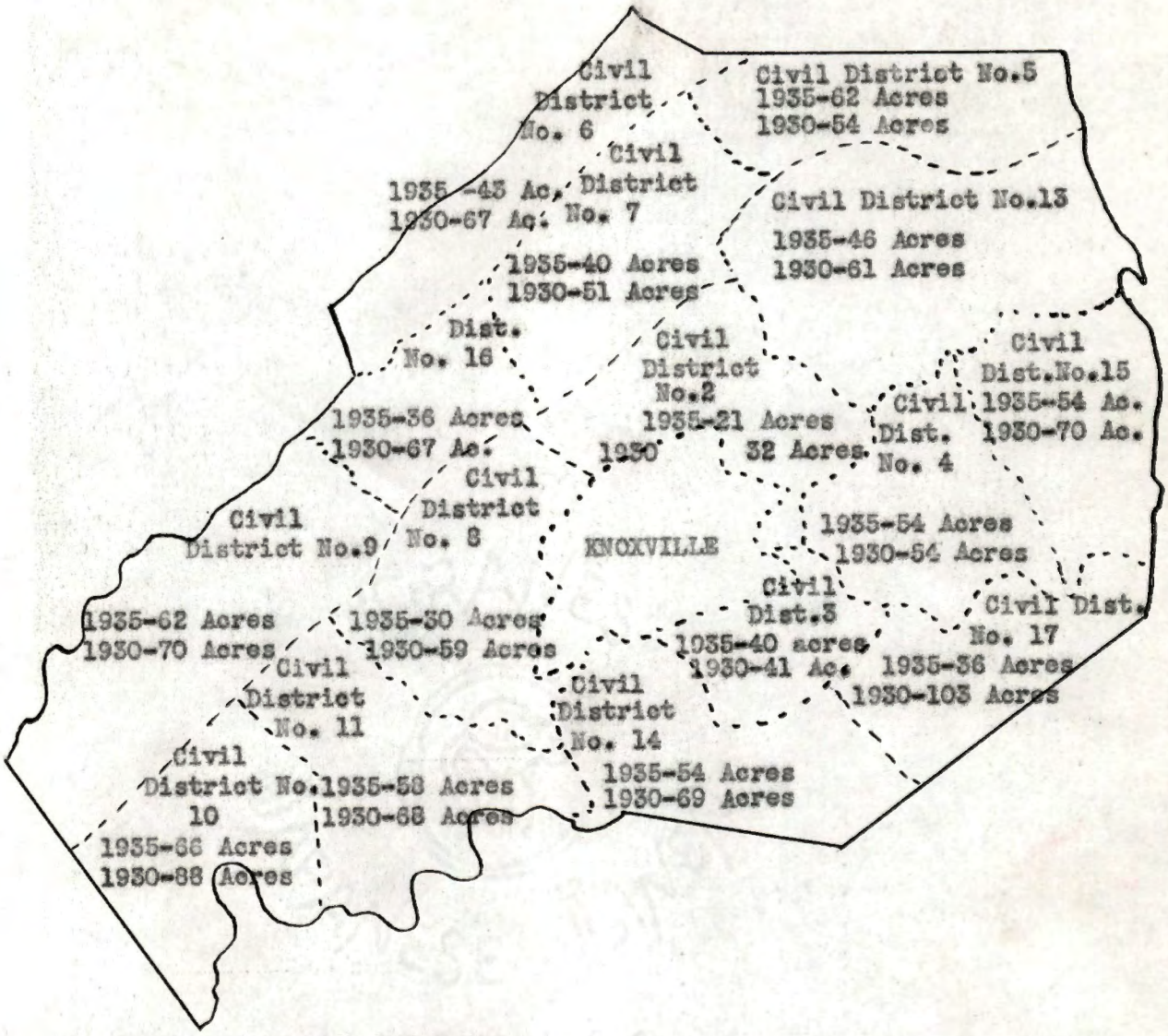
While data as to the size of farms in the civil districts of Knox County is limited, being available only for 1930 and 1935, still certain trends are observable. Rather striking is the reduction in the size of holdings in civil district No. 17, where in only five years the average size of farms has decreased from 103 to 36 acres.

Also considerable reductions in the size of farms are noted in civil districts Nos. 16, 10, 8, 6 and 2. Only in civil district No. 5 was there an increase in the average size of farms and that only from 54 to 62 acres. Little, if any, change over the five-year period was noted in districts Nos. 3, 4 and 9. Details of these relationships are indicated in the following table:

TABLE XXII. TREND IN SIZE OF FARMS IN CIVIL DISTRICTS OF KNOX COUNTY, TENNESSEE, 1930 TO 1935.

CIVIL DISTRICTS	AVERAGE SIZE OF FARMS	
	1930 (Acres)	1935 (Acres)
2	32	21
3	41	40
4	54	54
5	54	62
6	67	43
7	51	40
8	59	30
9	70	62
10	88	66
11	68	58
13	61	46
14	69	54
15	70	54
16	67	36
17	103	36
AVERAGE:	62.8	47.0

Source: U.S. Census of Agriculture, 1930-1935.



Source: See Table XXII

Figure 13.- Comparison of average size of farms by civil districts in Knox County, Tennessee, 1930 and 1935

Normally, as the size of farms decreased the number of farms increased in an inverse relationship. As an illustration, in civil district No. 17 the number of farms increased by 391 per cent from 1930 to 1935, while the average size of farms decreased by 350 per cent over the same period.

A fairly close relationship is exhibited between the reduction over the period from 1930 to 1935, in both the average size of farms and in the average acreage of crop land harvested. While the average size of farms for the county was reduced to 74.8 per cent of the 1930 figures, the average number of acres of crop land harvested was reduced to 79.2 per cent. Therefore, within the five-year period there resulted a decrease in the average size of farms of 25 per cent while the number of farms increased by approximately 36 per cent.

Data on the number of farms, the average size of farms, and the average number of acres of crop land harvested, from the census reports of 1930 and 1935, are given in the following tabulation:

TABLE XXIII. COMPARISON OF AVERAGE SIZE OF FARMS WITH NUMBER OF FARMS AND WITH ACRES OF CROP LAND HARVESTED, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS.	AVERAGE SIZE OF FARMS				CROP LAND HARVESTED AVERAGE OF ALL FARMS	
	1930		1935		1930	1935
	Number	Acres	Number	Acres	Acres	Acres
2	216	32	402	21	10.21	7.45
3	125	41	120	40	12.03	14.45
4	285	54	288	54	17.54	20.52
5	419	54	374	62	17.19	21.24
6	290	67	449	43	15.14	10.26
7	255	51	359	40	20.50	13.50
8	194	59	390	30	22.44	11.86
9	442	70	470	62	24.26	23.15
10	273	88	366	66	30.23	22.00
11	301	68	418	58	22.96	20.30
13	451	61	515	46	16.76	13.40
14	226	69	351	54	17.01	14.92
15	270	70	271	54	20.88	18.39
16	201	67	361	36	21.14	13.85
17	91	103	356	36	31.17	10.71
TOTAL:	4,039		5,490		7,989.00	8,602.00
AVERAGE:		62.8		47.00	19.78	15.67
PER CENT OF 1930:	100	100.0	135.9	74.8	100.0	79.2

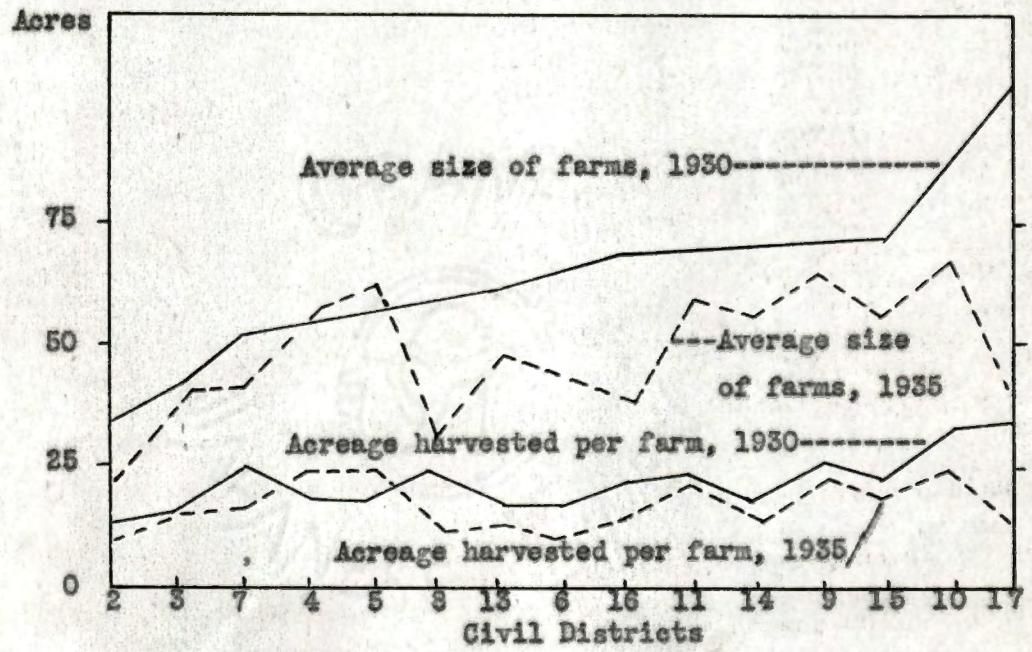
Source: U. S. Census of Agriculture, 1930 and 1935.

In comparing the relationships between the trend toward smaller size farms and the acreage harvested from 1930 to 1935, different rates of change are observed. In practically all civil districts the size of farms was considerably reduced in the five-year period. The harvested area also was reduced per farm except in civil districts Nos. 4 and 5, but in all cases the total acreage was increased.

Details of the relationships are illustrated in the following chart:

If a line is drawn from the extremes in the array, it will appear that civil districts Nos. 16 and 4 represent the proportion as set up by the extremes of the two factors being considered.

The greatest deviations from this base occur in districts Nos. 6, 9, 13, 14 and 15.



Source: See Table XXIII.

Figure 14.- Relation of average size farms and average acreage harvested per farm, by civil districts, Knox County, Tennessee, 1930 and 1935.

CHAPTER XIV

TYPE OF FARMING

Nearly a third, constituting the largest single class of the farms in Knox County, are classified by type as self-sufficing. The census publications define a self-sufficing farm as one where the value of the farm products used by the operator's family was 50 per cent or more of the total value of all products of the farm and does not exceed $400.

Part-time farming, general farming, and dairy farming constitute the remaining major classes of farms by type. The following tabulation indicates the distribution of farms by type in Knox County:

TABLE XXIV. DISTRIBUTION OF TYPES OF FARMS, KNOX COUNTY, TENNESSEE, 1930.

TYPES OF FARMS	NUMBER	PER CENT OF TOTAL
Self-sufficing	1,268	31.35
Part-time Farming	802	19.87
General Farming	790	19.56
Dairy Farming	394	9.76
Truck Farming	117	2.89
Crop Specialty	108	2.67
Animal Specialty	93	2.30
Poultry Farming	39	.96
Cash Grain Farms	37	.91
Forest Products	31	.76
All Other Farms	362	8.96
TOTAL	4,039	100.00

Source: Data from 1930 Type of Farming studies by the Bureau of Agricultural Economics, U.S.D.A., prepared Nov. 18, 1935, and in the files of the Department of Agricultural Economics, University of Tennessee.

In a study of the distribution of abnormal farms in the various districts of Knox County, two classes will be considered. They are self-sufficing farms and part-time farms. The census defines a

part-time farm as one on which the operator spent 150 days or more off of the farm in other than farm work, or one on which the operator was reported with an occupation other than farming, provided the value of the products of the farm did not exceed $750 per annum.

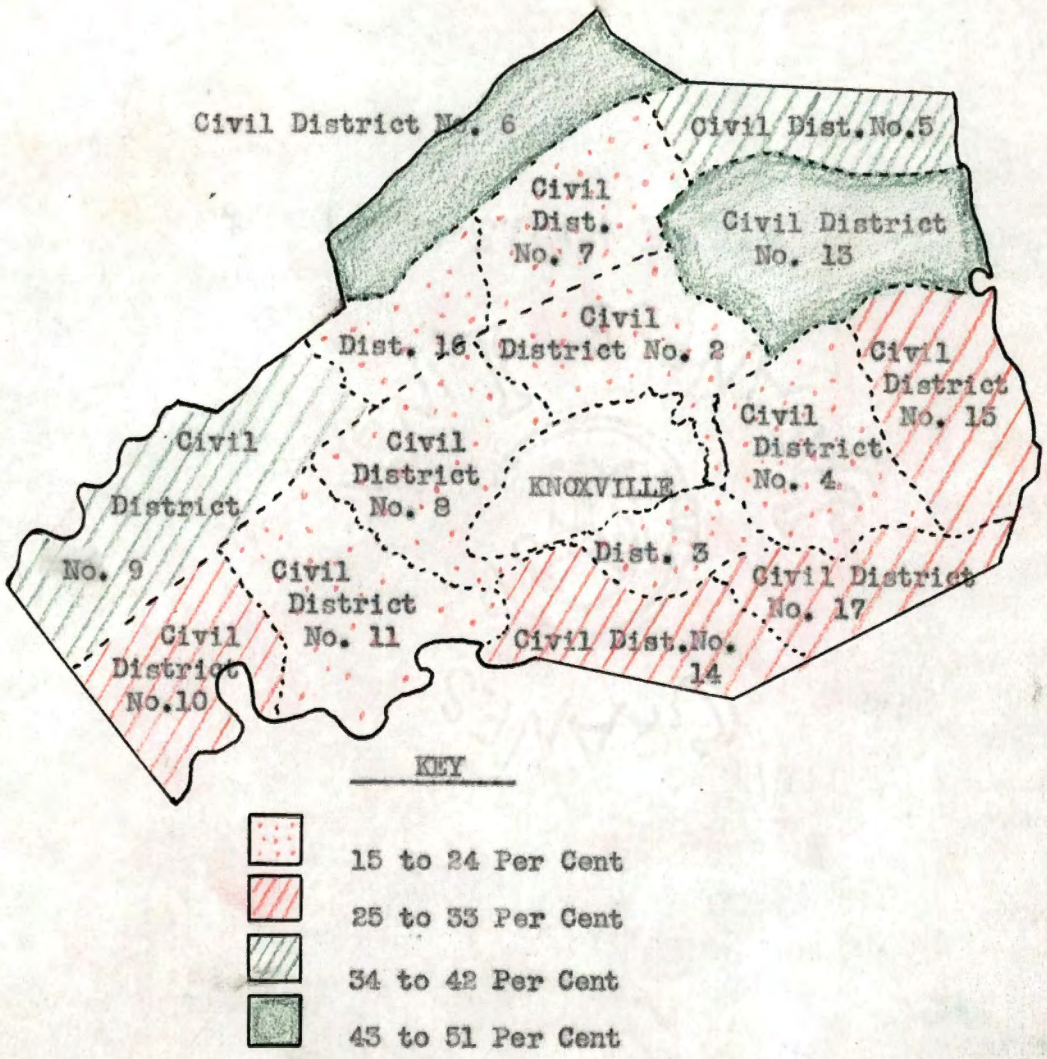
It will be noted in the following tabulation comparatively high percentages of self-sufficing farms prevail in districts Nos. 13, 6, 9, 5, 10, 15 and 14, and that a rather low per cent of self-sufficing farms obtain in districts Nos. 8, 3 and 4.

As to part-time farming, it will be noted that the highest per cent of farms of this class obtain in districts Nos. 2, 3, 16 and 8, while a rather low per cent exists in districts Nos. 5, 10, 6, 15, 9 and 14.

TABLE XXV. DISTRIBUTION OF CERTAIN TYPES OF FARMS BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1930.

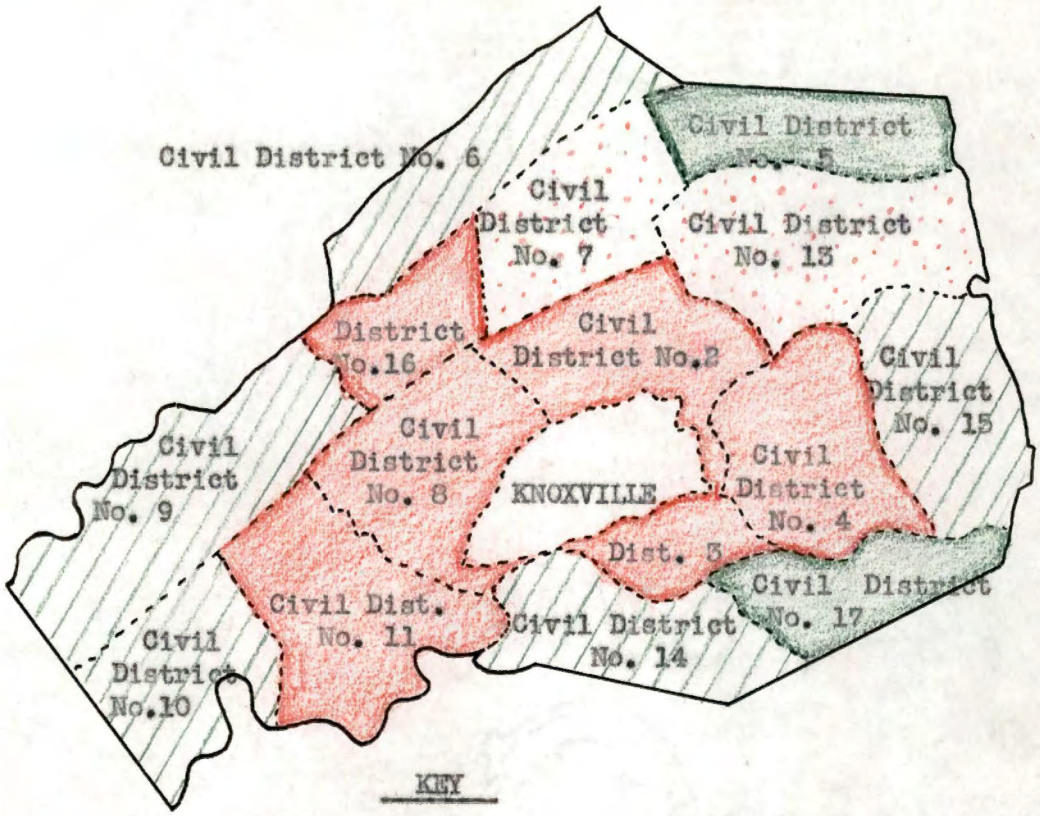
CIVIL DISTS.	TOTAL NUMBER FARMS	SELF-SUFFICING FARMS		PART-TIME FARMS	
		Number Farms	Per Cent of District	Number Farms	Per Cent of District
2	216	51	23.61	72	33.33
3	125	22	17.60	39	31.20
4	285	55	19.30	78	27.37
5	419	141	33.65	19	4.53
6	290	134	46.20	42	14.48
7	255	54	21.17	64	25.10
8	194	30	15.46	57	29.38
9	442	160	36.19	74	16.74
10	273	91	33.33	38	13.91
11	301	69	22.92	85	28.23
13	451	232	51.44	92	20.39
14	226	68	30.53	40	17.69
15	270	84	31.11	41	15.28
16	201	44	23.38	61	30.34
17	91	27	29.67	-	-
TOTAL	4,039	1,266		802	

Source: See Table XXIV.



Source: Data from 1930 Type of Farming studies, B.A.E., U.S.D.A.

Figure 15.- Percentage distribution of self-sufficing farms by civil districts, Knox County, Tennessee, 1930.



Source: Data from 1930 Type of Farming studies, B.A.E., U.S.D.A.

Figure 16.- Percentage distribution of part-time farms by civil districts, Knox County, Tennessee, 1930.

A distribution of the so-called normal farming set-ups in Knox County include classes of general farms, dairy farms, truck farms and crop specialty, in order of magnitude. General farms are defined by the census publications as having several sources of income, the value of the products from any one of which is less than 40 per cent of all products from the farm.

Dairy farms and truck farms are virtually self-explanatory, in that 40 per cent of the total revenue is derived from the sale of dairy products in the first case, and from the sale of truck crops in the second case. Crop specialty farms are those having 40 per cent of the income derived from crops not generally regarded as usual, for example, sorghum for syrup, velvet beans for seed sales, etc.

In a study of general farms, it will be seen by the following tabulation that civil districts Nos. 7, 15 and 17 have a greater proportion of farmers following this type, while districts Nos. 2, 11 and 13 have a low per cent of general farms.

As to the per cent of dairy farmers, a higher proportionate number is engaged in dairying in districts Nos. 4, 5 and 7, while a relatively low per cent is engaged in dairying in districts Nos. 3, 6, 13, 15 and 17.

In the truck farm business, a larger percentage of the farmers in districts Nos. 3, 8, 11 and 14 were engaged in this type farming, while there were no farmers engaged in truck farming in districts Nos. 7 and 16, and a rather low per cent in districts Nos. 5, 6 and 15.

Crop specialty farming in Knox County was not particularly significant. A little more than 10 per cent of the farmers in district No. 5, a little less than 5 per cent in district No. 10, and nearly 3 per cent of the farmers in district No. 9, represent the general situation in which this type of farming was followed. There were no crop specialty farms in districts Nos. 15 and 17, and less than one per cent in each of districts Nos. 3, 6 and 16.

The following tabulation gives a general idea of the types of so-called normal farms that prevailed in 1930:

TABLE XXVI. DISTRIBUTION OF CERTAIN TYPES OF FARMS BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1930.

CIVIL DISTS.	TOTAL NUMBER FARMS	GENERAL FARMS		DAIRY FARMS		TRUCK FARMS		CROP SPECIALTY	
		Number	Per Ct. of Total	Number	Per Ct. of Total	Number	Per Ct. of Total	Number	Per Ct. of Total
2	216	17	7.87	19	8.80	4	1.85	4	1.85
3	125	27	21.60	3	2.40	11	8.80	1	.80
4	285	61	21.40	46	16.14	3	1.05	5	1.75
5	419	74	17.66	87	20.76	1	.23	43	10.26
6	290	51	17.58	3	1.03	1	.34	2	.68
7	255	63	25.00	51	20.00	-	-	5	1.96
8	194	34	17.53	20	10.30	16	8.24	2	1.03
9	442	89	20.14	39	8.82	15	3.39	13	2.94
10	273	57	20.87	28	10.25	5	1.83	13	4.76
11	301	39	12.95	21	6.97	41	13.12	4	1.32
13	451	50	11.09	15	3.33	5	1.11	10	2.22
14	226	43	19.02	20	8.84	12	5.30	5	2.19
15	270	97	35.92	13	4.81	1	.37	-	-
16	201	46	22.88	25	12.43	-	-	1	.49
17	91	42	46.15	4	4.39	2	2.19	-	-
TOTAL:	4039	790		394		117		108	

Source: See Table XXIV.

Four additional types of farms which, while representing the minority in number, are presented for study. Because of the scattered nature of these farms no attempt was made to give the per cent of each by districts.

These classes are animal specialty, poultry, cash grain and forest products in each of which the farmer derives 40 per cent of his income, except as to forest products from which he derives 50 per cent or more of his income. The analysis indicates that several poultry farms are located in each of the following districts: Nos. 2, 3, 8, 9, 10, 14, 13 and 16. There were no poultry farms in districts Nos. 4, 11 and 17.

There were several cash grain farms in districts Nos. 4, 5, 10, 15 and 17, but no cash grain farms in districts Nos. 3, 7, 8 and 9. Several forest products types of farms were noted in districts Nos. 4, 6, 7, 9 and 15, but none in districts Nos. 2, 16 and 17.

The following tabulation lists specialty types of farms, representing the minor group by districts.

TABLE XXVII. DISTRIBUTION OF CERTAIN TYPES OF FARMS, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1930.

CIVIL DISTRICT	ANIMAL SPECIALTY (Number)	POULTRY (Number)	CASH GRAIN (Number)	FOREST PRODUCTS (Number)
2	4	5	2	-
3	4	3	-	1
4	9	-	8	4
5	7	1	8	1
6	3	1	1	4
7	5	2	-	4
8	6	3	-	1
9	10	3	-	5
10	7	8	4	1
11	13	-	1	2
13	2	5	2	2
14	2	4	1	2
15	11	1	4	4
16	1	3	2	-
17	9	-	4	-
TOTAL:	93	39	37	31

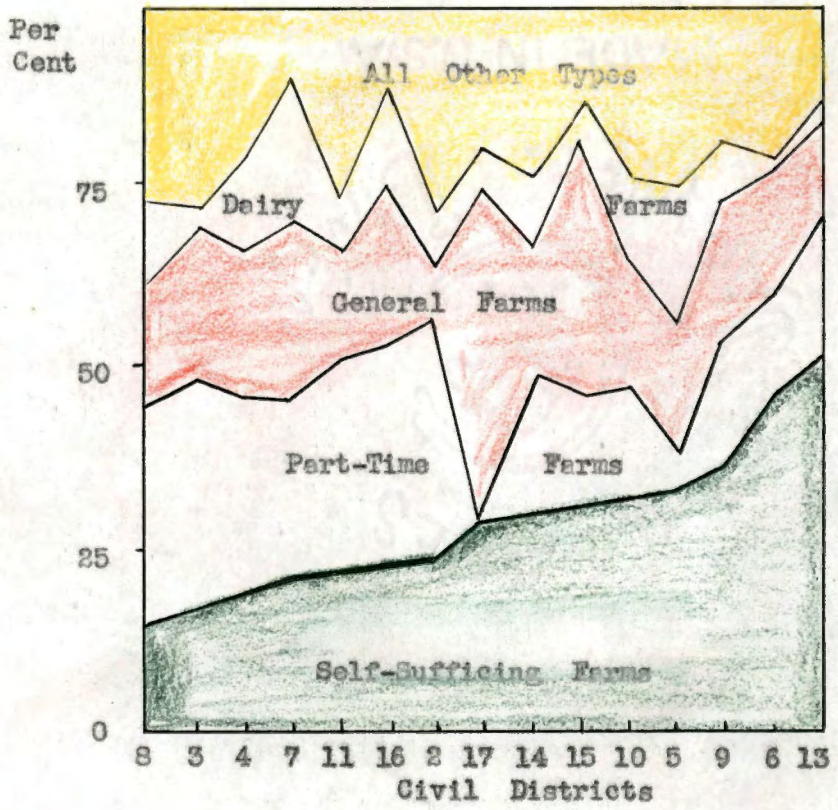
Source: See Table XXIV.

The chart on page 77,based on a percentage distribution of the principal types of farms in Knox County, arranged according to an array of the largest class, self-sufficing farms, indicates detailed relationships.

Most striking are the relationships shown in civil districts Nos. 5 and 17 in which very little or no part-time farming is undertaken. This situation in district No. 17 is associated with a high proportion of general farms and a relatively low percentage of dairy farms. In district No. 5 this factor is associated with a fairly low percentage of general farms, but a high percentage of dairy farms.

A high proportion of self-sufficing farms obtain in civil districts Nos. 6, 9 and 13, while a low per cent is found in districts Nos. 3, 4 and 8. A high percentage of part-time farms is found in districts Nos. 2, 3, 8 and 16, while a low percentage of such farms prevails in district No. 5, with none in district No. 17.

A high proportion of general farms is found in districts Nos. 15 and 17, while a low per cent prevails in districts Nos. 2, 11 and 13. A proportionately high percentage of dairy farms is found in districts Nos. 5 and 7, while a low percentage prevails in districts Nos. 3, 6, 13, 15 and 17.



Source: See Table XXIV

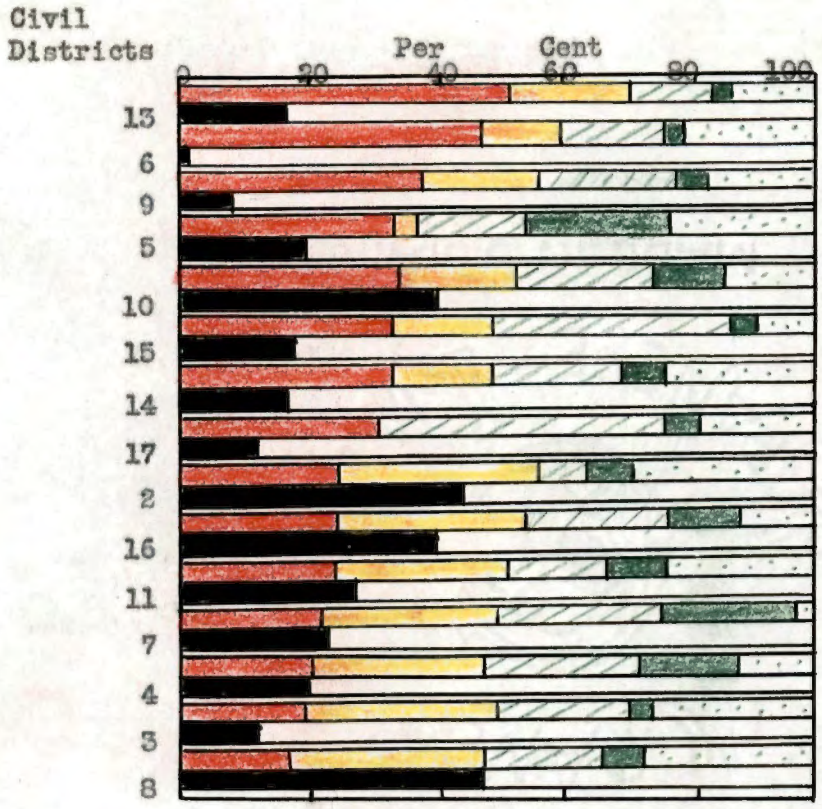
Figure 17.- Percentage distribution of principal types of farms by civil districts, Knox County, Tennessee, 1930.

In the following chart an attempt has been made to determine the relationship between the types of farms and the per cent of good farm land, by districts, in Knox County. The four principal types of farms are arranged according to an array of self-sufficing farms, which type constitutes nearly a third of all farms in the county. A component-part bar chart thus displays the percentage distribution of the principal types. Against this bar is compared the per cent of the various districts in class I and class II land, recognized as the best farm land in the county.

Very little definite relationship is recognized. It appears, however, that a high percentage of self-sufficing farms is rather closely associated with a low percentage of good farm land.

A proportionately large percentage of part-time farms (except in district No. 3 which is strongly influenced by urban factors) seems to be generally associated with a fairly high percentage of good land.

General farming appears to be associated with a fairly low proportion of good land. A high proportion of dairying appears to be associated with a fairly high per cent of self-sufficing or part-time farms.



Source: See Table XXIV and Tennessee Valley Authority land classification.

KEY

Self-sufficing Farms

Part-time Farms

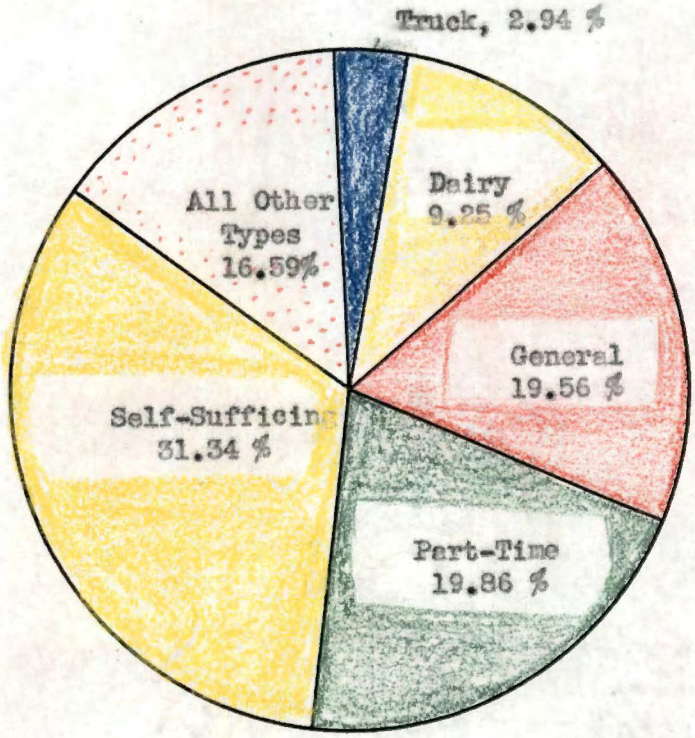
General Farms

Dairy Farms

Other Types

Good Farm Land

Figure 18.- Comparison of percentage distribution of principal types of farms with per cent of good farm land by civil districts, Knox County, Tennessee, 1930.



Source: See Table XXIV.

Figure 19.- Percentage distribution of principal types of farms, Knox County, Tennessee, 1930.

CHAPTER XV

PRODUCTIVITY RATING

Production figures on six of the major crops grown in Knox County were analyzed to obtain a productivity rating factor which could be compared with the per cent of good land, for the purpose of determining these relationships. Harvested yields and acreages of the following crops were used: corn, wheat, tobacco, tame and wild hay, Irish potatoes and apples.

A statistical device was employed to compute this productivity rating for each civil district for all six crops. First, an index factor was obtained for each commodity in each of the districts. The index value represented the per cent the average per acre yield of the crop in the district was to the average per acre crop yield in the county.

The index figure was then multiplied by the number of acres in the crop and that sum multiplied by the number of man work units required to produce one acre of the crop. This aggregate constituted the numerator while the sum of the latter two numbers, that is, acres times man work units, was the denominator of the fraction. Having, thus, arrived at the numerators and denominators for each commodity, the summation of the individual crop figures, respectively, constituted the aggregate fraction the solution of which yielded the index of productivity rating.

As an example of the method, corn production in district No. 9 had an index of 100, purely from the fact that the average production

in terms of bushels per acre in the district coincided with the county average. There were 3,602 acres planted to corn and harvested, in district No. 9. A total of 3.5 man work units were required to produce one acre of corn.[1] Therefore, the numerator is derived from the equation 100 (index of yield) X 3,602 (acres of corn) X 3.5 (man work units) which equals the sum of 1,260,700. The denominator is determined by using the multiplicand of the two latter units, acres and man work units, which yields the quotient, 12,607.

The numerators, then, for all six crops, are added, and likewise, the denominators. The aggregate summations, respectively, give the fraction. The index values so derived are given in the following tabulation:

TABLE XXVIII. PRODUCTIVITY RATING FOR CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.
(County average equals 100)

CIVIL DISTRICTS	PRODUCTIVITY RATING
2	94.6
3	89.0
4	115.0
5	99.0
6	94.5
7	103.6
8	105.9
9	92.4
10	94.2
11	105.5
13	94.7
14	86.0
15	103.8
16	112.4
17	97.8

Source: U. S. Census of Agriculture, 1935.

The following chart fails to show a close relationship when the productivity rating factor is arrayed and compared with the factor of

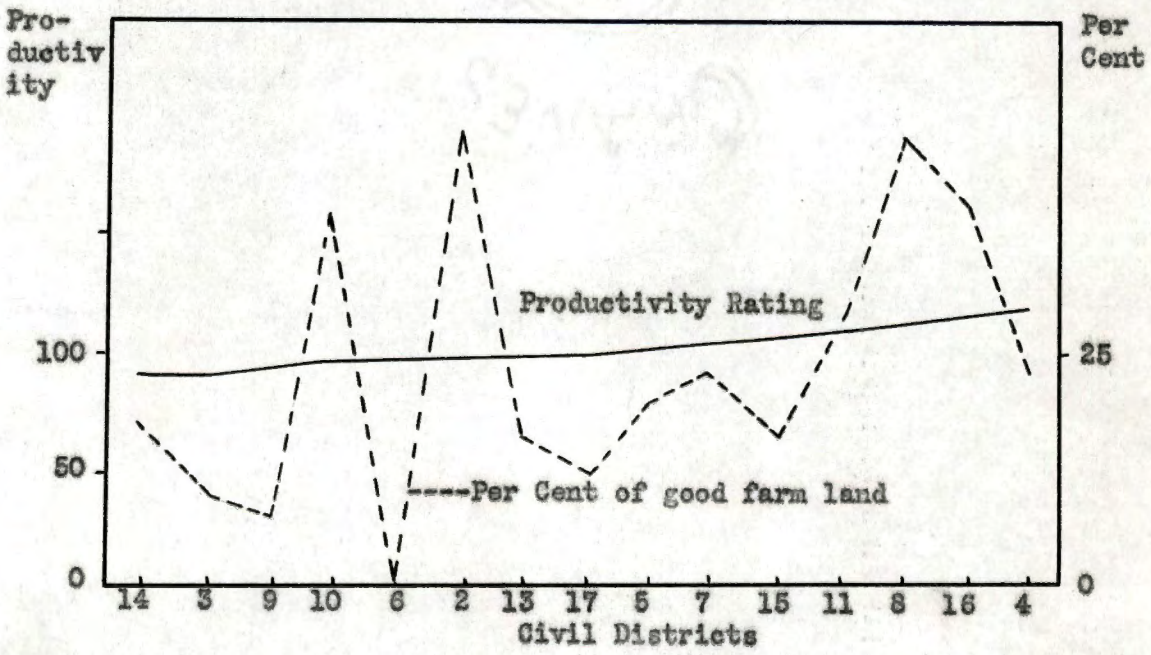
(1) Data from Farm Management Division, Agricultural Experiment Station, University of Tennessee.

per cent of good farm land by districts. The general trend of the curves, however, are definitely in the same direction.

Deviations, however, are particularly emphasized in districts Nos. 2, 6, 8, 10 and 16. High proportions of good farm land in districts Nos. 2, 8, 10 and 16 appear to have little or no effect on the productivity rating curve.

Conversely, the absence of good farm land in district No. 6, with less than one per cent classed as high quality, appears to have no special effect on the productivity rating of that district.

Detailed relationships are indicated as follows:



Source: U. S. Census of Agriculture, 1935, and T.V.A. land classification.

Figure 20.- Comparison of productivity rating with per cent of good farm land, by districts, Knox County, Tennessee.

CHAPTER XVI

LIVESTOCK ON FARMS

Less than half of the farms in Knox County reported horses and mules on farms, according to the 1935 agricultural census. A total of 78.3 per cent of the farms reported cattle and calves while 39.1 per cent reported swine. Only 86.8 per cent reported chickens, 29.9 per cent had sheep and lambs and 20.8 per cent turkeys. A comparison of the number of the principal farm animals with the number of farms reporting and with the per cent of the total number of farms, is given in the following tabulation:

TABLE XXIX. COMPARISON OF PRINCIPAL LIVESTOCK ON FARMS IN 1935, WITH NUMBER OF FARMS REPORTING AND WITH TOTAL NUMBER OF FARMS BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS.	NO. Farms 1935	HORSES AND MULES			CATTLE			SWINE		
		Farms Rept.	Per Cent	Total No.	Farms Reptd.	Per Cent	Total No	Farms Reptd.	Per Cent	Total No.
2	402	124	30.8	237	236	58.7	1201	106	26.3	464
3	120	48	40.0	102	82	68.3	438	37	30.8	245
4	288	172	60.0	392	251	87.1	1810	95	32.9	562
5	374	241	64.4	570	333	89.0	2602	188	50.2	579
6	449	205	45.6	350	354	78.8	1348	169	37.6	430
7	359	184	51.2	351	282	78.5	1645	143	39.9	412
8	390	140	35.8	314	263	67.4	1555	131	33.6	483
9	470	279	59.3	638	419	93.4	2713	244	51.9	814
10	366	184	50.2	481	288	78.1	2374	176	48.0	793
11	418	216	51.6	539	323	77.2	2719	147	35.1	884
13	515	216	41.9	459	397	77.1	1912	221	42.9	804
14	351	183	52.1	367	275	78.3	1293	119	33.9	498
15	271	170	62.1	391	241	88.9	1067	123	45.3	464
16	361	149	41.2	315	266	73.6	1604	139	38.5	468
17	356	133	37.3	237	291	81.7	849	110	30.9	393
TOTAL:	5490	2644	48.1	5743	4301	78.3	25130	2148	39.1	8263

Source: U. S. Census of Agriculture, 1935.

It will be noted that the majority of farms in civil districts Nos. 4, 5, 7, 9, 10, 11, 14 and 15 reported horses and mules. On the other extreme, districts Nos. 2 and 17 were found to have the lowest per cent of farms with horses and mules. Cattle were on 93.4 per cent of the farms in district No. 9. Only 58.7 per cent of the farms in district No. 2 had cattle. The range in the proportion of farms with swine was from 51.9 per cent in district No. 9 to 26.3 per cent in district No. 2.

A comparison of the number of farms by civil districts, having sheep and lambs, chickens and turkeys, with the total number of farms in Knox County, is given in the following tabulation:

TABLE XXX. COMPARISON OF SHEEP AND LAMBS, CHICKENS AND TURKEYS ON FARMS WITH NUMBER OF FARMS REPORTING AND WITH TOTAL NUMBER OF FARMS, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1935.

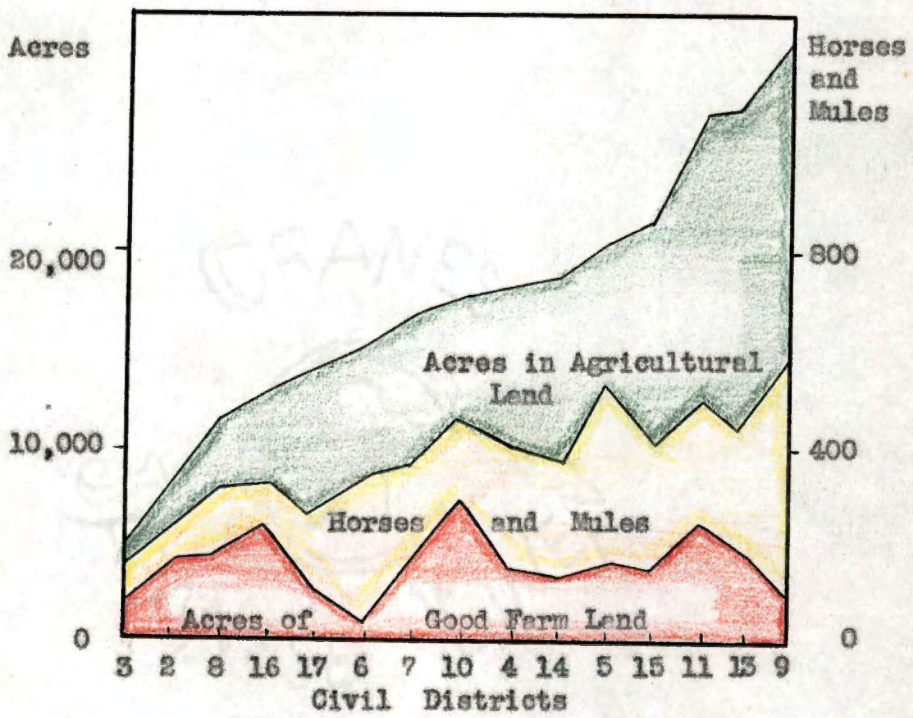
CIVIL DISTS.	NUMBER FARMS 1935	SHEEP AND LAMBS		CHICKENS		TURKEYS	
		Farms Reptd.	Number Animals	Farms Reptd.	Number Chickens	Farms Reptd.	Number Turkeys
2,	402	4	110	284	8,992	5	29
3	120	3	213	93	2,655	1	4
4	288	6	31	264	10,602	15	50
5	374	11	189	351	16,245	39	141
6	449	5	38	403	12,727	5	13
7	359	1	20	300	11,371	7	19
8	390	2	79	338	10,808	6	17
9	470	7	79	436	-	4	15
10	366	13	217	306	17,062	12	56
11	418	10	460	364	12,495	5	17
13	515	4	120	431	11,646	24	101
14	351	1	6	304	14,465	8	29
15	271	4	49	260	11,178	14	45
16	361	1	23	308	11,579	5	16
17	356	-	-	326	10,144	5	21
TOTAL:	5490	72	1634	4768	171,481	155	573

Source: U. S. Census of Agriculture, 1935.

District No. 11 leads in sheep while district No. 9 leads in the number of chickens. District No. 5 leads in the number of turkeys.

A rather close correlation exists between the number of horses and mules on farms of Knox County and the areal extent of good land classified by the Tennessee Valley Authority. Except for slight deviations in districts Nos. 6, 5 and 9, these factors exhibit a high degree of correlation.

Details of the relationships are given in the following chart:

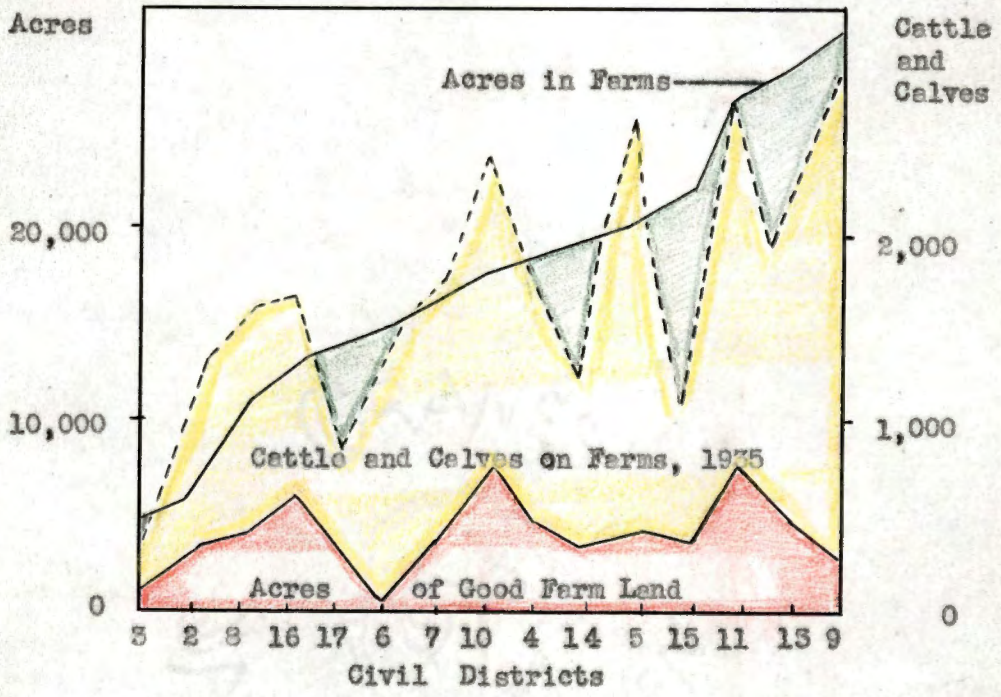


Source: U.S. Census of Agriculture, 1935, and Tennessee Valley Authority land classification data.

Figure 21.- Comparison of the number of horses and mules with the areal extent of agricultural and of good farm land by districts, Knox County, Tennessee, 1935.

In making a comparison of the number of cattle and calves on farms in Knox County, with the factors of areal extent of land in farms and with the acreage of good farm land, it is observed that a definite relationship exists between the number of animals and the extent of good land.

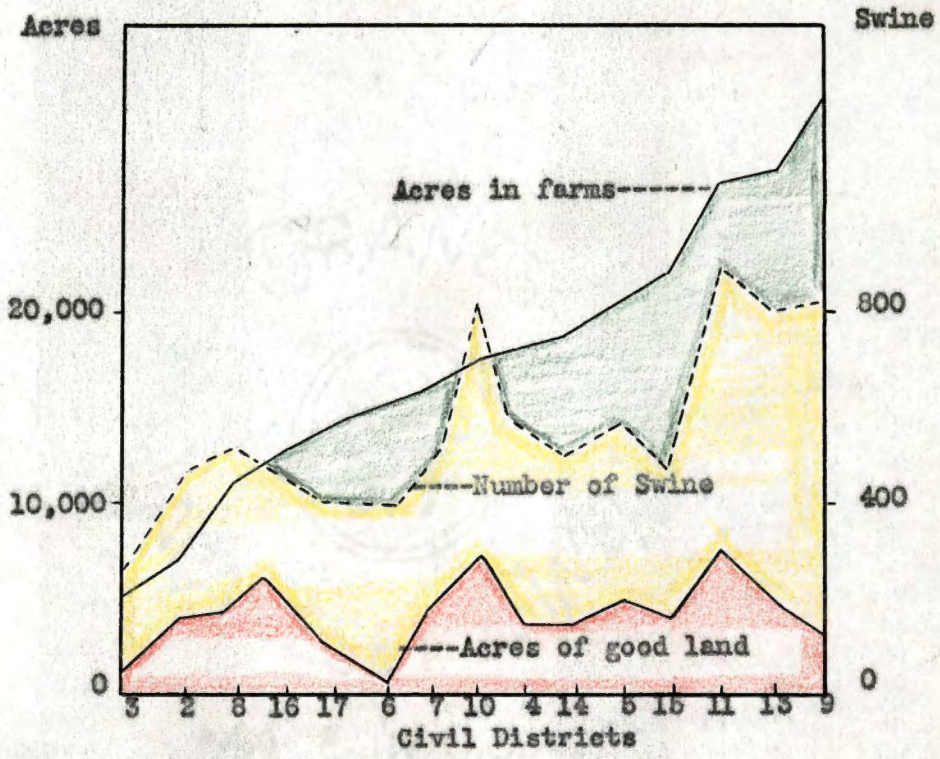
The curves of these two factors show a fairly high degree of correlation in all districts except Nos. 8, 6, 14, 5, 15 and 9 as illustrated in the following chart:



Source: U.S. Census of Agriculture, 1935, and Tennessee Valley Authority land classification.

Figure 22.- Comparison of number of cattle and calves with extent of farm land and with acreage of good farm land by civil districts, Knox County, 1935.

A fairly high degree of correlation is noted between the number of swine on farms in Knox County and the acreage of good farm land as classified by the Tennessee Valley Authority. As a further comparison with the area in farm land use it is noted that, in general, the larger the area the greater the number of swine. However, the correlation is definitely set up in a measure of the two factors, number of swine and the acreage of good land.



Source: U. S. Census of Agriculture, 1935, and Tennessee Valley Authority land classification.

Figure 23.-Comparison of number of swine on farms in Knox County, in 1935, with areal extent of land in farms and with acreage of good farm land.

CHAPTER XVII

DAIRYING

Eleven dairies and one pasteurization plant producing approximately two hundred thirty gallons of milk daily, sell milk to people in Knox County outside of the city limits of Knoxville. These dairies, as well as several large herds kept by institutions, are inspected at regular intervals by P. R. York, sanitation officer of the Knox County Health Department. The following table gives the location, number of cows, and approximate number of gallons of milk produced daily:

TABLE XXXI. KNOX COUNTY DAIRIES SERVING CUSTOMERS IN THE COUNTY, BUT OUTSIDE THE CITY LIMITS OF KNOXVILLE, TENNESSEE.

CIVIL DISTS.	NUMBER DAIRIES	PASTEURIZATION PLANTS	INSTITUTION DAIRIES	NUMBER COWS	ESTIMATED PRODUCTION, DAILY (Gals.)	PASTEURIZATION PLANTS (Gals)
2	3	1	1	73	75	65
7	7			56	125	
8			2	72		
13			2	82		
16	1			11	30	
TOTAL:	11	1	5	294	230	65

Source: Dairy inspection records of Knox County Health Department.

No estimate was given as to the production of milk by institution dairies which included the following: in civil district No. 2, Beverley Hills Sanitarium dairy of 30 cows; district No. 13, American Zinc Company herd of 32 cows at Mascot, and Maloneyville Institute dairy of 50 cows; district No. 8, Central State Hospital herd of 60 cows, and the John Tarleton Institute herd of 12 cows. While inspection service is provided for all dairies, those selling milk for public consumption are required to meet specifications not imposed upon dairies which are not selling milk to the public.

Approximately 12,000 gallons of milk are required daily to supply the Knoxville city milk market, according to figures privately collected in 1939 by A. M. Glover, general manager of the Knoxville Milk Producers' Association. Mr. Glover stated that the average milk cow produces approximately 1.6 gallons per day, and on that basis 7,575 cows are required to produce the 12,000 gallons of milk needed.

This insures the average Knoxvillian of about one-tenth gallon of milk daily. The City of Knoxville utilizes 507 dairies in Knox and adjacent counties, and 25 processing plants.

TABLE XXXII. CLASSIFICATION OF DAILY MILK COMSUMPTION ON THE KNOXVILLE MILK MARKET.

KIND OF MILK PRODUCTS USED	GALLONS
Pasteurized milk	5,661
Raw milk	2,098
Pasteurized cream	159
Raw cream	24
Pasteurized buttermilk	1,385
Raw buttermilk	1,686
Ice cream	532
Other kinds of milk products	594
TOTAL:	12,139

Source: Data compiled June 1939, by Knoxville Milk Producers Association.

Knox County dairies produce 79 per cent of the total daily consumption of milk on the Knoxville market, according to a canvas of the complete 1938 dairy inspection records of the City Health Department which has charge of inspection of all dairies distributing milk in Knoxville.

District No. 4 leads all districts in volume of milk produced and sold on the Knoxville market. Two broad classes were recognized in the reports. They were 164 individual shippers in the wholesale coopera-

tive association, known as the Knoxville Milk Producers' Association, and 164 dairies representing private producers and shippers.

Leading in the organized wholesale shippers was district No. 5 with an annual production averaging 321,528 gallons. It will be noted that the wholesale cooperative shippers were located principally in the districts farthest removed from Knoxville while the private producers were largely located in the districts near the city.

Details of the relationship between private and associated producers as to volume of milk shipped to the Knoxville market, is given in the following table:

TABLE XXXIII. DISTRIBUTION OF PRIVATE AND ASSOCIATED MILK PRODUCERS AND ANNUAL VOLUME OF MILK SHIPPED TO KNOXVILLE, TENNESSEE, MARKET.

CIVIL DISTRICTS	PRIVATE MILK PRODUCERS		COOPERATIVE MILK SHIPPERS	
	Number of Dairies	Gallons	Number of Shippers	Gallons
1	2	49,650	-	-
2	21	309,875	-	-
3	1	23,725	-	-
4	29	608,090	-	-
5	29	255,690	60	321,528
6	1	25,550	-	-
7	-	-	48	253,935
8	12	197,465	6	40,035
9	7	48,910	16	101,421
10	18	333,245	8	52,893
11	-	-	14	89,809
13	6	74,825	-	-
14	10	218,270	4	25,560
15	18	356,165	8	107,563
16	10	35,770	-	-
17	-	-	-	-
TOTALS:	164	2,517,220	164	992,774

Source: Data from Sanitation Department, Knoxville Health Department, and from Knoxville Milk Producers' Association compiled June, 1939.

In a comparison of the per cent of the total volume of dairy products with the percentage distribution of good land in the various civil districts of Knox County, very little relationship is seen, according to the following tabulations:

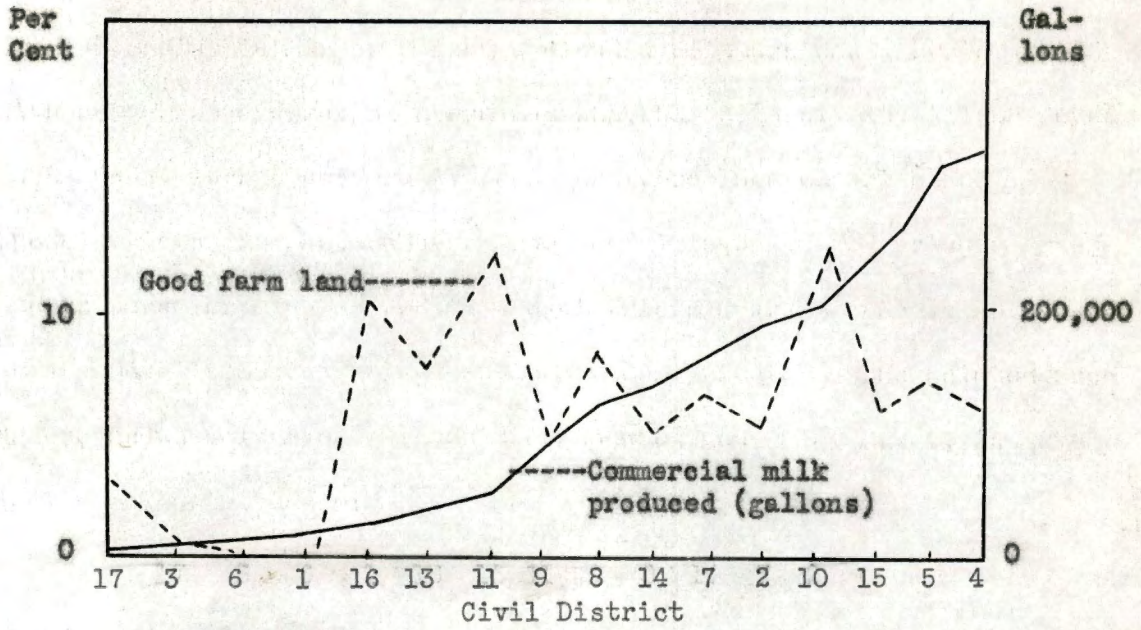
TABLE XXXIV. COMPARISON OF PERCENTAGE DISTRIBUTION OF VOLUME OF COMMERCIAL MILK PRODUCED AND AMOUNT OF GOOD LAND IN CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1938.

CIVIL DISTRICTS	PER CENT OF TOTAL VOLUME OF MILK	PER CENT OF TOTAL AMOUNT OF GOOD LAND
1	1.38	-
2	9.37	5.92
3	.66	.86
4	16.89	6.44
5	16.03	7.14
6	.71	.05
7	8.32	6.70
8	6.59	8.85
9	4.17	4.41
10	10.72	13.07
11	2.49	12.92
13	2.08	8.68
14	6.77	5.52
15	12.32	6.06
16	1.50	10.41
17	-	2.97

Source: See Table XXXIII and land classification from Tennessee Valley Authority maps.

The following chart indicates that but little relationship exists between the factors of quality of land and the volume of commercial milk produced, the districts being arrayed on the basis of the volume of milk produced and shipped to the Knoxville market. The reason for this is probably the variable character of the land in the various civil districts. A dot map of the location of dairies in Knox County shows them to be located in groups on land well adapted to the production of bluegrass pasture.

1. Data from Type of Farming studies of the Agricultural Experiment station of the University of Tennessee.



Source: See Table XXXIII, and land classification from Tennessee Valley Authority maps.

Figure 24.- Comparison of amounts of good farm land and volume of commercial milk produced in Knox County, by civil districts, 1938.

CHAPTER XVIII

FORESTRY

In the absence of complete data on the extent of the various forest types in Knox County, the writer had the opportunity of reviewing the quadrangle planimetric field maps of the Tennessee Valley Authority on which the forest cover types were delineated and coded. An ocular examination of 142,600 acres representing approximately 43 per cent of the land area of the county, showed that the types ran somewhat after the figures given in the following table. The field work in Knox County was completed in 1939, but tabulations were incomplete at the time of procuring this information. The field maps reviewed were in the offices of the Forestry Relations Department headquarters of the Tennessee Valley Authority, at Norris, Tennessee.

TABLE XXXV. FOREST COVER TYPES IN KNOX COUNTY, TENNESSEE.

TYPES		PER CENT
Hardwood	(Upland hardwoods)	40.0
Conifers	(Pine 1.2)	8.1
	(Cedar 6.9)	
Mixed	(Yellow Pine and hardwoods)	51.9
		100

Source: Ocular estimate from Tennessee Valley Authority's Forest Cover Types Field Maps.

On the basis of the ocular examination of samples, it is further estimated that there should be approximately 6,400,000 board feet of standing timber as of the time of the field survey. The ocular estimate indicated that on the basis of reviewing 142,600 acres of the Tennessee Valley Authority's valleywide classification of Knox County, there was an estimated stand of 2,755,000 board feet on approximately 2,455 acres. By interpolation, the yield of 6,400,000 board feet of timber is suggested.

The forest cover valleywide mapping included, in addition to classifying the type, the procurement of data on the average per acre volume of saw timber, average number of standard cords of wood per acre, number of standard cords of extract wood, number of standard cords of pulp wood, ownership data of large tracts of woodland and some supplementary information as experimental and research areas, drainage boundaries, areas of severe erosion, recreational, wild life and watershed protection areas.

Mimeographed material procured by the Tennessee Valley Authority for the Norris Regional Planning Seminar, December 2, 1937, gives the following information for Knox County on the employment and production by portable sawmills:

TABLE XXXVI. EMPLOYMENT AND PRODUCTION, PORTABLE SAWMILLS, KNOXVILLE REGION, 1937.

COUNTY	NUMBER OF MILLS	ANNUAL PRODUCTION M.B.F.	MAN DAYS LABOR	ANNUAL EMPLOYMENT (No. Full Time)
Knox	12	3,600	10,800	43

Source: Norris Regional Planning Seminar, December 2, 1937, leaflet.

Under the topic " How can forestry contribute to the general welfare of the Knoxville region," mimeographed material for the Norris Regional Planning Seminar, December 2, 1937, described in general the conditions found in Knox County, as well as composite figures for the Knoxville region consisting of sixteen counties designated as the Knoxville trade area. In this area of sixteen counties containing 4,666,000 acres, slightly more than 62 per cent is classified as forest land. About 30 per cent of the forest land is in farm woodland, fifty-five per cent in larger private industrial holdings, and 15 per cent in public ownership.

Quoting the report: "Forest planning.....concerns itself with a present population estimated at 492,000, of which about 35 per cent reside in cities, 27 per cent reside in the smaller communities, and the remaining 38 per cent live on farms which have, on the average, about 36 acres available for cultivation, plus 22 acres in woodland....

" Benefits from timber utilization include fuelwood, fence posts, and tobacco sticks, valued at $4,000,000, and a labor return or saving valued at more than $1,500,000. The production of rough lumber and other raw products for consumption mostly by other wood-using plants, give full time work to 1,550 men, and mill work in 57 wood using plants furnishes employment to another 2,430 people. Wood-using industries, excluding portable mills and other work in the woods, comprise 29 per cent of all industries in the region and employ about 10 per cent of all wage earners. Portable mills of the region number about 257, and employ the equivalent of 916 men full time.

" Unfortunately, the benefits from timber utilization.....are, to a considerable extent, based on the destructive exploitation of the saw-timber resources..... Less than 25 per cent of the forest area has an average volume exceeding 1,000 board feet per acre in larger trees. Most of the remaining area can no longer support logging for lumber because saw-timber trees are too scattered to permit an economical operation..... Oaks make up 38 per cent of the total; soft-textured pulping hardwoods another 15 per cent; pines, 18 per cent; hickory 9 per cent; and all other species 20 per cent.

" To say that the Knoxville region has a standing sound timber volume of two and one-half billion board feet in saw-timber, plus four-

teen million cords of smaller trees, sounds impressive - but it actually is not. The average forested acre has a total volume of only 950 board feet, plus 5.35 cords. Nine hundred fifty board feet is equivalent to one thirty-inch oak which has about fifty feet of clear stem. In like manner the estimated annual growth of 87,000,000 board feet plus 828,000 cords, merely indicates that the region can support a number of industries.

" Total annual consumption, then, is estimated as: (1) 96,600 M. board feet of lumber, crossties, cooperage and veneer logs, (2) 936,400 cords for fuelwood, extract wood, handle stock, etc., and (3) 4,561,000 cubic feet for fence posts, tobacco sticks, and minetimbers. Estimated annual drain consists of 119,100,000 board feet (largely in lumber and fuelwood), and 313,750 cords (of which two-thirds is in fuelwood and the remainder in a number of different products such as fence posts, pulpwood and minetimbers).

" Comparing growth and drain in the sawtimber class indicates that these high-quality sawlog resources are being depleted gradually. It is estimated that the annual yields of sawtimber could be nearly eight times as much as at present. The intelligent utilization of these yields would require about half as many wage earners as the total number now employed by all industries in the Knoxville region.

" The approach to the solution of the conservation problem of the Tennessee Valley may be divided into three broad phases: (1) measures necessary to achieve maximum water control - forestry phase; (2) measures necessary to make proper use of lands no longer fit for agri-

culture; (3) measures needed to fully utilize and develop the forest and its associated resources in the interest of the community and the public at large.

" Corrective measures are: (A) Adequate fire control; (B) Land use and ownership change (Public acquisition.....); (C) Rural land zoning; (D) Private forestry promotion (sustained-yield and multiple-use management); (E) Wood utilization (organized and integrated for maximum economy).

" How can these measures best be accomplished ?

A. By carefully designed and persistent program of education.

B. By establishment of a Forestry Council.....

C. Through legislation, such as acts to:

1. Facilitate Federal acquisition of forest lands.
2. Facilitate erosion control and reforestation work.
3. Regulate grazing.
4. Change and standardize the method of taxing forest land.
5. Establish zoning ordinances.
6. Increase responsibility of private owners in forest fire control.

D. By means of more detailed studies.....such as utilization of low-grade or small-sized materials, cooperative marketing of woodland products, and the use of electric wood-processing equipment.

E. By joint cooperative agreements covering such measures as <u>fire control</u>, <u>fish and game protection</u>, and <u>aid to private landowners</u>.

CHAPTER XIX

FISCAL CAPACITY

When it is considered that only approximately one-half of the total revenue from taxes in Knox County are derived from sources that are tangible, such as real estate, personal property and public utilities, some idea of the tax structure is evident. Privilege and ad valorem taxes, fines, forfeitures and fees, together with funds derived from the sale of bonds, special sales or so-called tax on intangibles, aggregate roughly one-half of the net annual revenue received by the county government to bear the general expense.

If total receipts for 1930 are considered an index of 100%, the collections from all tax sources in 1934 fell off about 18 per cent, while the 1939 receipts showed a gain of 7.71 per cent over 1930 collections. The comparison is indicated in the following tabulations:

TABLE XXXVII. COMPARISON OF TOTAL TAX RECEIPTS IN KNOX COUNTY FOR PERIODS INDICATED.

YEAR	TOTAL TAXES COLLECTED	PER CENT OF 1930
1939	$3,362,850	107.71
1934	2,556,219	81.87
1930	3,121,956	100.00

Source: Financial reports of Knox County for fiscal years ending June 30th of the years indicated.

The tax rate on real estate, personal property and public utilities was $1.25 per $100.00 assessed valuation in 1930; $1.23 in 1934, and $1.53 in 1939. The greatest change during this period occurred in the rate of taxes collected by the state, the rate being 20 cents per $100.00 valuation in 1930 and eight cents in 1934 and 1939. The rate

for county purposes and high schools nearly doubled over the nine-year period, while the rate on interest was doubled.

The tax rate per $100 valuation for the periods under study are indicated by purposes in the following tabulation:

TABLE XXXVIII. COMPARISON OF TAX RATES ON REALTY, PERSONAL AND PUBLIC UTILITIES, KNOX COUNTY, FOR SPECIFIED PERIODS.

PURPOSE	1939	1934	1930
State Tax	.08	.08	.20
High Schools	.13	.10	.075
Grammar Schools	.54	.42	.56
Special to Rural Schools	.04	.03	.0325
Industrial School	.05	.04	.035
County Highway	.20	.15	.26
Interest	.13	.12	.0625
Sinking Fund	.03	.02	.045
County Purposes	.33	.27	.18
TOTAL:	$1.53	$1.23	$1.25

Source: See Table XXXVII.

Some idea of the trends in the rate of tax collections by sources for the three years under study, is given in the following tabulations:

TABLE XXXIX. COMPARISON OF TAX COLLECTIONS FROM REALTY, PERSONAL, PUBLIC UTILITIES AND OTHER SOURCES, FOR SPECIFIED PERIODS, KNOX COUNTY, TENNESSEE.

YEARS	TOTAL TAXES COLLECTED	TAXES COLLECTED FROM ALL SOURCES IN KNOX COUNTY			
		Collected from Realty, Personal and Public Utilities	Per Ct of Total	Collected from privilege, Ad valorem, and Other Special Taxes	Per Ct of Total
1939	$3,362,850	$1,924,789	57.2	$1,438,060	42.8
1934	2,556,219	1,025,681	40.1	1,530,537	59.9
1930	3,121,956	1,408,065	45.0	1,713,890	55.0

Source: See Table XXXVII.

A comparison of the equalized tax valuation on realty, personalty, and public utilities with the tax aggregate, the amount to be expected after rate is applied to the total assessed valuation, is given in the following table:

TABLE XL. COMPARISON OF EQUALIZED TAX ASSESSMENT VALUATION OF REALTY, PERSONALTY AND PUBLIC UTILITIES, AND AMOUNT OF REVENUE EXPECTED, KNOX COUNTY.

TAX SOURCE	TOTAL EQUALIZED VALUE 1939	EXPECTED REVENUE	TOTAL EQUALIZED VALUE 1934	EXPECTED REVENUE	TOTAL EQUALIZED VALUE 1930	EXPECTED REVENUE
Real Estate	$103,016,520	$1,576,153	$100,450,615	$1,236,291	$125,761,262	$1,572,018
Personal	7,721,300	118,136	7,063,650	86,882	14,036,884	175,461
Public Utilities	17,422,322	266,562	17,174,285	211,244	18,083,394	226,042
TOTAL:	$128,160,142	$1,960,085	$124,688,550	$1,534,417	$157,881,540	$1,973,521

Source: See Table XXXVII.

The percentage distribution of the equalized tax assessed valuation of realty, personalty and public utilities show a slight trend in the nine-year period toward higher valuations on real estate and public utilities, while personal property shows a decrease. The following tabulation points out these percentages:

TABLE XLI. PERCENTAGE DISTRIBUTION OF TAX ASSESSED VALUATION ON REALTY, PERSONALTY AND PUBLIC UTILITIES IN KNOX COUNTY FOR SPECIFIED PERIODS.

	PER CENT OF TAX ASSESSED VALUE 1939	PER CENT OF TAX ASSESSED VALUE 1934	PER CENT OF TAX ASSESSED VALUE 1930
Real Estate	80.4	80.6	79.7
Personal Property	6.0	5.7	8.9
Public Utilities	13.6	13.7	11.4
	100	100	100

Source: See Table XXXVII.

While the taxes on real estate, for example, are not segregated in the county annual financial reports, it is possible to determine the approximate amount of taxes paid on real estate.

If taxes are paid on real estate, personal property and public utilities in the same proportion as these taxes are assessed, an analysis is available which indicates that real estate, over the nine-year period of this study, has produced an increased rate and amount of taxes varying from 35.9 per cent of the total collected taxes in 1930, to 46.0 per cent of the total taxes collected in 1939.

Personal property taxes in the same period have decreased from four per cent to 3.4 per cent, while public utilities taxes have increased from 5.1 per cent to 7.8 per cent of the total tax receipts.

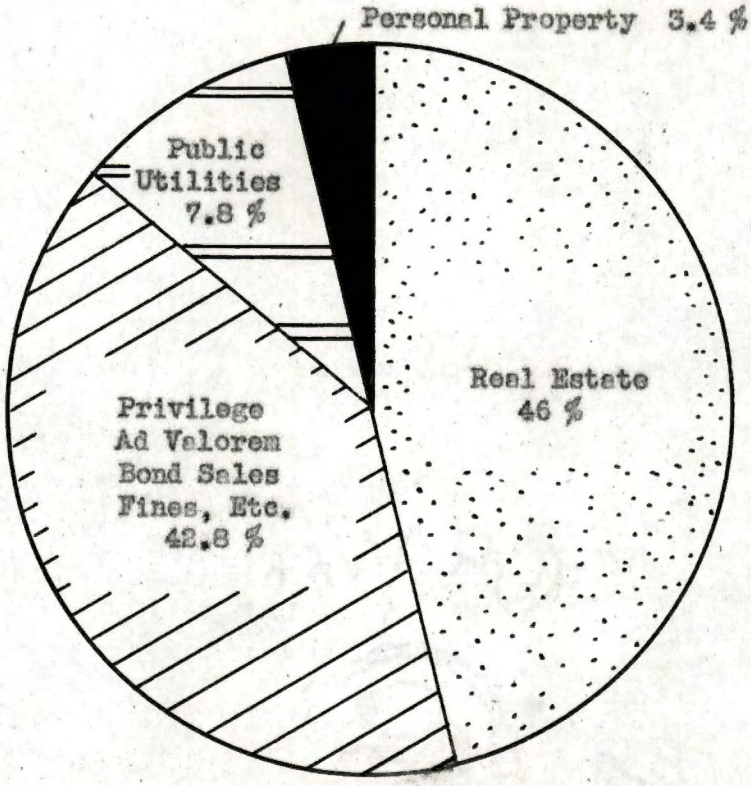
Other sources which include privilege and ad valorem taxes, fines, bond sales and other special taxes, show a decrease over the period of from 55 to 42.8 per cent of the total collections.

The following tabulation indicates the trends in the broad classification of tax sources:

TABLE XLII. TRENDS IN BROAD CLASSIFICATION OF TAX SOURCES AND COLLECTIONS, KNOX COUNTY, 1930 TO 1935.

	TAXES COLLECTED BY SOURCES 1939	PER CENT OF TOTAL	TAXES COLLECTED BY SOURCES 1934	PER CENT OF TOTAL	TAXES COLLECTED BY SOURCES 1930	PER CENT OF TOTAL
Real Estate	$1,547,530	46.0	$ 826,699	32.3	$1,122,228	35.9
Personal	115,487	3.4	58,464	2.3	125,318	4.0
Public U Utilities	261,771	7.8	140,518	5.5	160,520	5.1
Other Sources	1,438,060	42.8	1,530,538	59.9	1,713,890	55.0
Grand Total:	$3,362,850	100.	$2,556,219	100.	$3,121,956	100.

Source: See Table XXXVII.



Source: See Table XLII

Figure 25.- Distribution of sources from which Knox County derived its total tax revenue, fiscal year ending June 30, 1939.

The distribution between rural and urban tax assessment valuations on realty, personalty and utilities, according to the financial reports for 1930 and 1939, indicates three to four times more wealth is located in urban than in rural areas of the county.

A greater proportionate tax assessment obtains against urban real estate than rural real estate. A higher proportionate tax is levied against public utilities in rural areas than obtains in urban areas. Personal property carries a relatively higher proportionate valuation in rural than in urban levies.

Details of these relationships together with certain recognized trends over the nine-year period which indicate slight increases in the rate on realty and public utilities, but decreases in the rate on personal property, are given in the following table:

TABLE XLIII. COMPARISON OF URBAN AND RURAL TAX ASSESSMENT ON REALTY, PERSONALTY AND PUBLIC UTILITIES, KNOX COUNTY, TENNESSEE, 1930 AND 1939.

TAX SOURCE	URBAN EQUALIZED TAX ASSESSMENT VALUATION		RURAL EQUALIZED TAX ASSESSMENT VALUATION	
	1939	1930	1939	1930
Real Estate	$81,371,830	$103,125,470	$21,644,690	$22,635,792
Personalty	6,503,400	11,909,594	1,217,900	2,127,290
Utilities	10,868,917	11,845,801	6,553,404	6,237,592
TOTAL:	$98,744,147	$126,880,865	$29,415,994	$31,000,674

Source: See Table XXXVII.

Approximately one-fifth of the assessed valuation of realty, personalty and public utilities is levied against the rural areas of Knox County. In a percentage distribution of these sources, urban areas carry from 70 to 82 per cent of the tax valuation on real estate; from 83.7 per cent to 84.8 per cent of the valuation on personal property; and from 53.2 to 65.5 per cent of the valuation of public utilities.

The highest tax valuation on rural property is levied on public utilities which ranges from 34.5 to 46.8 per cent of the total amount levied from that source by the county.

Some trends are indicated in the study covering nine years. Real estate valuations in rural areas show a 3 per cent increase, some slight increase on personal property, and 3.1 per cent increase on public utilities.

Urban trends indicate slight decreases in tax valuations on all three sources under consideration.

TABLE XLIV. PERCENTAGE DISTRIBUTION OF PROPERTY TAX ASSESSMENTS, 1930 AND 1939, KNOX COUNTY, TENNESSEE.

	PERCENTAGE DISTRIBUTION OF TAX ASSESSED VALUATIONS 1939		PERCENTAGE DISTRIBUTION OF TAX ASSESSED VALUATIONS 1934		PERCENTAGE DISTRIBUTION OF TAX ASSESSED VALUATIONS 1930	
	Urban	Rural	Urban	Rural	Urban	Rural
Real Estate	79.0	21.0	79.9	20.1	82.0	18.0
Personal Property	84.2	15.8	83.7	16.3	84.8	15.2
Public Utilities	62.4	37.6	53.2	46.8	65.5	34.5
TOTAL:	77.0	23.0	76.5	23.5	80.4	19.6

Source: See Table XXXVII.

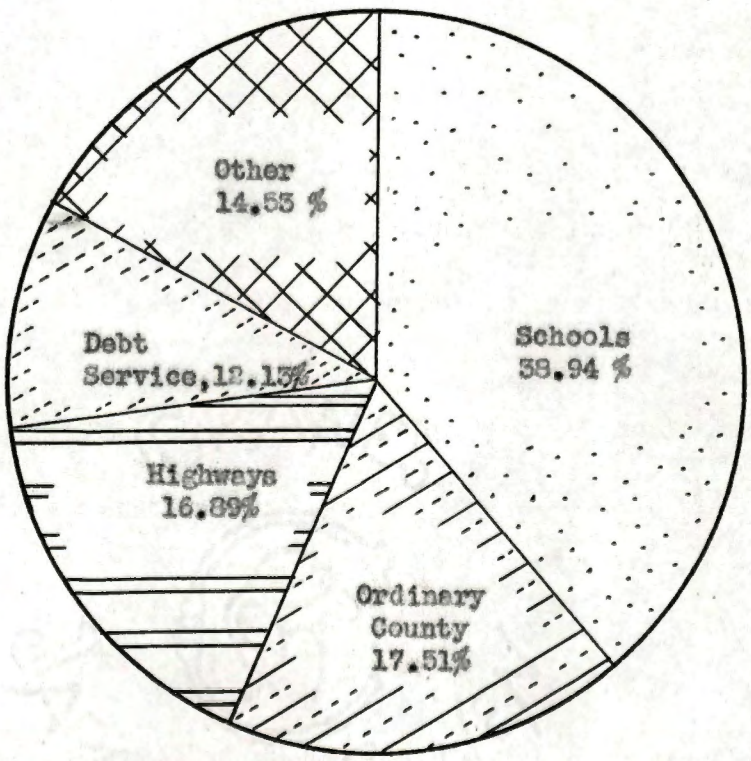
Schools constitute the largest single expense of the Knox County governmental functions, according to an analysis of the annual financial report for the fiscal year ending June 30, 1939.

Ordinary county purposes required 17.51 per cent of the 1938-1939 annual collected revenue. Highways and debt service came next in order. Detailed data relating to this is contained in the following table:

TABLE XLV. PRINCIPAL KNOX COUNTY GOVERNMENTAL FUNCTIONS AND COSTS, FISCAL YEAR ENDING JUNE 30, 1939.

FUNCTIONS	COST OF FUNCTIONS 1938-1939 FISCAL YEAR	PER CENT OF TOTAL
Schools	$1,309,727	38.94
Ordinary County Exp.	588,925	17.51
All Highways	568,057	16,89
Debt Service	408,169	12.13
All other functions	1,487,972	14.53
TOTAL:	$3,363,850	100

Source: See Table XXXVII.



Source: See Table XLV.

Figure 26.- How the tax dollar was spent in Knox County, fiscal year ending June 30, 1939.

CHAPTER XX

TAX ASSESSMENTS

Knox County property tax assessment valuations which include realty and personalty, have increased 3.5 per cent between 1934 and 1938, according to the annual financial reports of the county tax assessor. This official does not assess realty of public utilities.

Valuations were increased over a five-year period, in eleven civil districts, while decreases were noted in five civil districts. The largest increase, 29.9 per cent, was in district No. 3, while the smallest,increase, 0.2 per cent, was in district No. 6. The greatest decrease, 19.2 per cent, was in district No. 16, while the smallest decrease, 2.3 per cent, was in district No. 10.

TABLE XLVI. COMPARISON OF TAX ASSESSMENT VALUATIONS ON PROPERTY IN KNOX COUNTY,BY CIVIL DISTRICTS, 1934 AND 1938.

CIVIL DISTRICTS	PROPERTY TAX ASSESSMENT VALUATIONS BY TAX ASSESSOR		
	1934	1938	Per Cent of 1934
1	$ 85,803,120	$ 87,790,451	102.3
2	5,890,320	6,764,725	114.8
3	666,170	865,220	129.9
4	1,145,575	1,168,375	101.9
5	758,625	740,080	97.5
6	454,460	455,400	100.2
7	697,085	724,460	103.9
8	2,521,900	2,743,240	108.8
9	900,300	871,125	96.7
10	1,005,460	1,031,740	97.7
11	1,490,550	1,638,710	109.9
13	2,780,195	2,912,560	104.7
14	1,041,900	1,138,965	109.3
15	557,675	517,490	92.8
16,	833,990	923,870	80.0
17	372,680	386,425	103.7
TOTAL:	$106,970,005	$110,672,836	103.5

Source: Data from annual reports of the Knox County tax assessor for 1934 and 1938.

An analysis of the 1938 tax assessments on real estate in Knox County indicates that urban realty is assessed at $82,046,331 while rural land is assessed at $21,074,305. A further division of the rural land is reported in the following tabulation and includes land normally reported in acres, such as farm land, and also land normally reported in lots, such as closer settlement sub-divisions usually on the principal highways adjacent to urban developments.

In a study of the valuations by districts, it is noted that the highest valuation is assessed against district No. 1, which has been entirely absorbed by the City of Knoxville. The lowest valuation is assessed against district No. 17. The range in assessment valuations by districts is from $384,525 in district No. 17, to $43,147,025 in district No. 1. These figures include both rural and urban land valuations.

TABLE XLVII. COMPARISON OF TAX ASSESSMENT VALUATIONS OF RURAL AND URBAN HOLDINGS BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL	RURAL LAND VALUATION				URBAN LAND VALUATION	
DISTS.	Acres	Valuation	Lots	Valuation	Lots	Valuation
1	-	-	-	-	5,427	$43,147,025
2	12,292	$ 2,799,870	5496	$3,910,755	26,246	23,322,590
3	6,337	531,175	447	313,545	5,696	2,359,570
4	18,091	1,075,075	-	-	84	19,400
5	23,703	729,785	-	-	24	7,795
6	23,568	443,550	-	-	39	10,350
7	14,768	691,360	-	-	53	10,750
8	13,991	1,847,225	2267	847,715	16,773	11,001,566
9	33,368	857,825	-	-	49	6,650
10	26,737	980,865	-	-	59	29,775
11	24,190	1,317,375	-	-	509	297,935
13	31,990	1,894,550	-	-	1,376	135,210
14	23,022	894,555	626	212,910	4,390	1,625,400
15	22,069	506,890	-	-	58	5,500
16	15,430	837,155	-	-	410	64,415
17	14,433	382,125	-	-	19	2,400
TOTAL:	303,990	$15,789,380	8836	$5,244,925	61,212	$82,046,331

Source: Data from annual report of Knox County tax assessor, 1938.

The Knox County tax assessor reported two classes of rural land: first, land normally reported in terms of acres, representing for the most part that portion of the land which would normally be in farm, forest and mining use; and second, sub-divisions adjacent to cities and and towns which were normally reported in lots. The assessor did not have the acreage figures represented by the lots, but estimated that on the average five lots would approximate an acre. In this study where reductions were made from acres to lots, or vice versa, the basis of five lots to the acre was used.

The 1938 tax assessment valuations against real estate indicated that the range in values was from $227 per acre in district No. 2, immediately northeast of the City of Knoxville in which is located Fountain City, to $19.00 per acre in round numbers, in district No. 6, located in the extreme northern part of the county with considerable forest cover and irregular topography.

It will be noted that rural lots adjacent to the city limits of Knoxville, are assessed in districts Nos. 2, 3, 8 and 14. These lots are valued at an average from $340 each in district No. 14, to $711 each in district No. 2.

Urban lots range in value from $95.00 in district No. 15, to $7,950 in district No. 1, the latter district being in the incorporated limits of the City of Knoxville. A rather wide variation in the average value of urban lots absorbed by the extension of the Knoxville city limits from districts Nos. 2, 3, 8 and 14, is also apparent. The range is from $370 per lot in district No. 14, to $888 per lot in district No. 2.

TABLE XLVIII. COMPARISON OF UNIT ASSESSED VALUATIONS FOR RURAL AND URBAN LAND BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, FOR 1938.

CIVIL DISTRICTS	RURAL LAND VALUATION		URBAN LAND VALUATION
	Average Value Per Acre	Average Value Per Lot	Average Value Per Lot
1	-	-	$7,950
2	$227	$711	889
3	84	701	414
4	59	-	230
5	31	-	325
6	19	-	265
7	47	-	203
8	132	873	656
9	26	-	136
10	37	-	505
11	54	-	585
13	59	-	98
14	39	340	370
15	23	-	95
16	54	-	157
17	26	-	126

Source: See Table XLVII.

Approximately 80 per cent of the real estate tax assessment is placed against urban property and around 20 per cent on rural lands, according to the 1938 annual report of the Knox County tax assessor.

TABLE XLIX. COMPARISON OF TAX ASSESSED VALUATIONS ON RURAL AND URBAN REAL ESTATE IN KNOX COUNTY, TENNESSEE.

PROPERTY	VALUATION BY TAX ASSESSOR		TOTAL LEVY EXPECTED
	Amount	Per Cent of Total	
Urban	$ 82,046,331	79.56	$1,263,514
Rural	21,074,305	20.44	324,544
TOTAL:	$103,120,636	100	$1,588,058

Source: See Table XLVII.

Some idea of the general influence on the valuation assessed against rural real estate can be derived from a study of the location of the land. In the following tabulation it is shown that rural land sub-divided into lots adjacent to urban centers, is valued at approximately one-fourth as much as the total value of all other rural land in the county.

The tabulation shows that while 303,990 acres of rural land considered largely in farms, are valued by the tax assessor at $15,789,380, a total of 8,836 rural lots representing approximately 1,767 acres, are valued at $5,284,925. This serves to emphasize the variation in values between rural and urban or near-urban land.

TABLE L. VARIATION IN VALUATION OF RURAL LAND BY TAX ASSESSOR, KNOX COUNTY, TENNESSEE.

RURAL LAND	VALUATION BY TAX ASSESSOR			TOTAL TAX LEVY
	Number	Valuation	Per Cent of Total	
Reported in Acres	303,990	$15,789,380	74.92	$ 243,156
Reported in Lots	8,836	5,284,925	25.08	81,388
TOTAL:		$21,074,305		$ 324,544

Source: See Table XLVII.

While there is a relationship between the quality of the land and the valuation placed upon it by the tax assessor, considerable variations occur, according to the following tabulations in which an attempt has been made to relate the percentage of good land in the civil districts to the tax value assessed against it.

In preparing the tabulation, urban influences were deleted where possible, so that the Tennessee Valley Authority's land classification would be comparable with the valuation as assessed by the taxing agency.

The relationship is best expressed in civil district No. 6, which has the smallest percentage of good farm land and the lowest assessed valuation. However, in district No. 2, which was valued at $227.00 per acre, only 21 per cent of the land was classified as good farm land.

District No. 8 with the highest percentage of good land within its borders, was valued at a figure second highest of all civil districts, indicating that the relationship exists even if not coincidental. Urban influences which yield greater land values are associated with deviations from the regular trend which is observed, if one deletes the districts near urban centers, and makes his comparison with those districts of a predominatingly rural nature.

TABLE LI. COMPARISON OF TAX ASSESSMENT VALUATION AND OF PER CENT OF GOOD FARM LAND, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

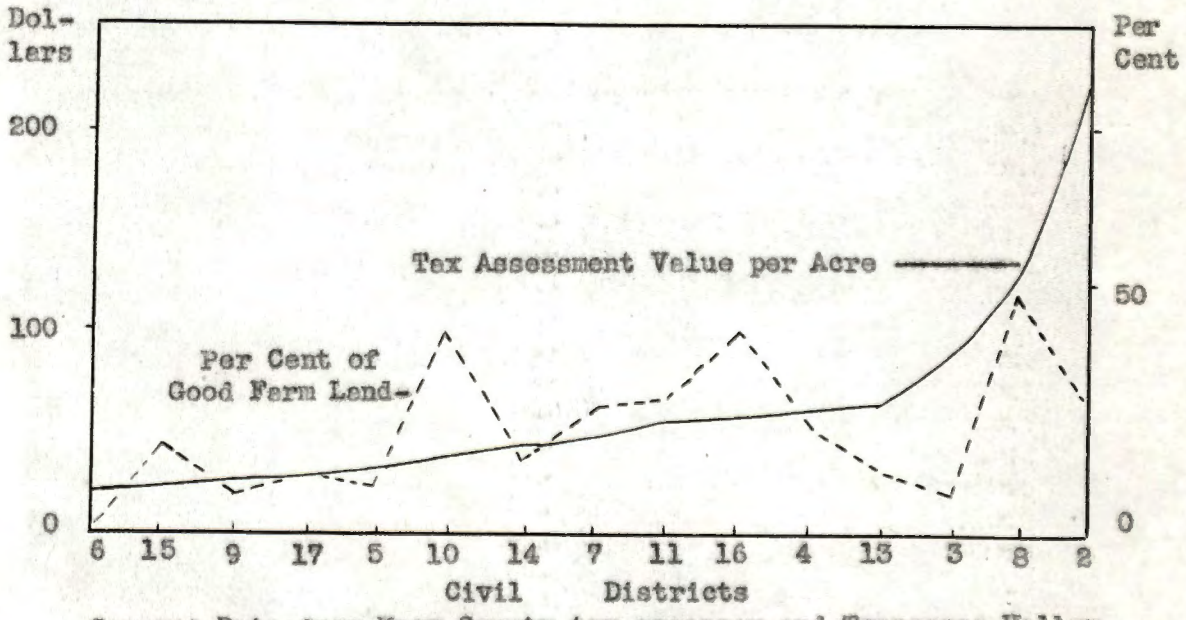
CIVIL DISTRICTS	TAX ASSESSMENT VALUE PER ACRE	PER CENT OF GOOD LAND
2	$227.00	21.1
3	84.00	9.6
4	59.00	20.2
5	31.00	19.8
6	19.00	.1
7	47.00	22.2
8	132.00	46.3
9	26.00	7.5
10	37.00	39.1
11	54.00	26.7
13	59.00	15.6
14	39.00	15.9
15	23.00	16.0
16	54.00	40.0
17	26.00	11.5

Source: See Table XLVII, and Tennessee Valley Authority's land classification maps.

Very little homogeneity is apparent in a comparison of the factor of per cent of good farm land by civil districts with the tax assessor's valuation. However, a definite relationship is revealed. If civil districts Nos. 2 and 3 were excepted, for this comparison, on the basis of high urban influences in each, the relationship between the two factors would have a higher degree of correlation.

Greatest deviations between the two factors, arrayed on the basis of the tax assessment valuation, appear in civil districts Nos. 10, 16, 13, 3 and 2. It is seen that a high per cent of good land is not associated with a resultant increase in tax value in districts Nos. 10, 15 and 16. Conversely a low per cent of good land is associated with high valuations in districts Nos. 13, 3 and 2.

The following chart illustrates the relationships:



Source: Data from Knox County tax assessor and Tennessee Valley Authority.

Figure 27.- Comparison of tax assessed value per acre and per cent of good farm land by civil districts, Knox County, Tennessee.

CHAPTER XXI

TAX DELINQUENCY

Farm tax delinquency data for 1928 and 1932 by civil districts, in Knox County, indicated that the greatest amount of delinquency obtained in districts Nos. 2, 8, 10 and 11 in 1928, and in districts Nos. 2, 8, 10 and 13 in 1932. In 1928 and in 1932 the acreage delinquent was greatest in districts Nos. 6, 9, 10 and 13. The number of farm properties delinquent in 1928 was greatest in districts Nos. 6, 9, 10 and 13, while in 1932 the number was greatest in districts Nos. 2, 6, 9 and 13.

Increases in the acreage of tax delinquent farm land was noted from 1928 to 1932 in all civil districts, as illustrated in the following table. Likewise, in all districts except No. 17, the amount of taxes delinquent was higher in 1932 than in 1928.

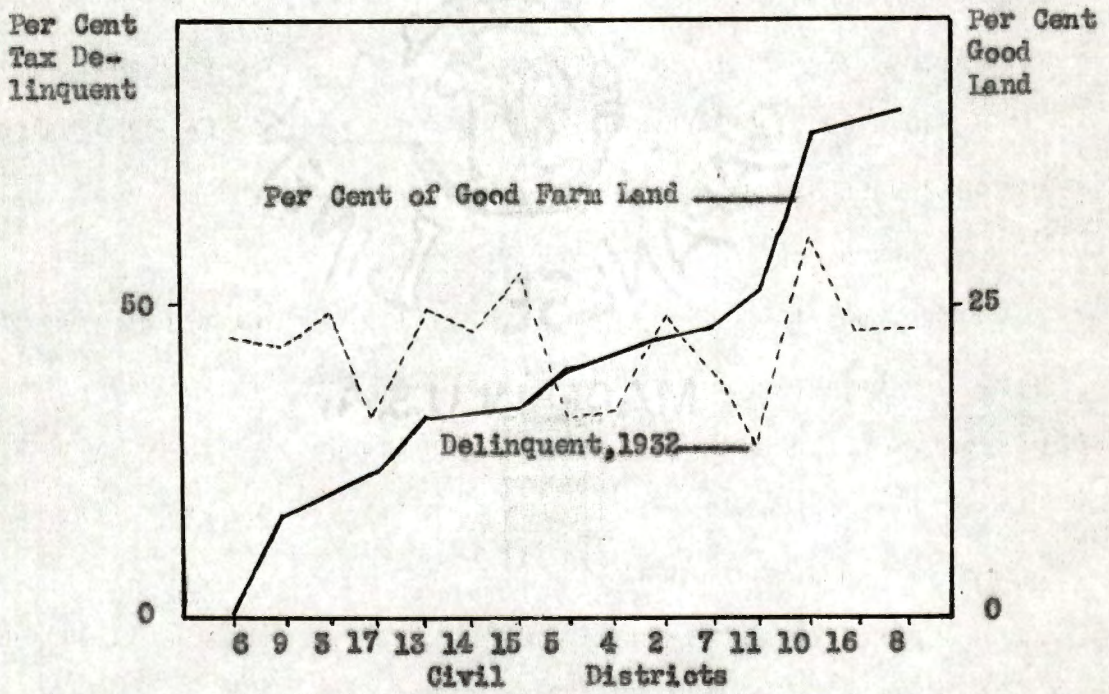
TABLE LII. COMPARISON OF HOLDINGS, ACREAGE AND AMOUNT OF TAX DELINQUENCY ON FARMS, 1928 AND 1932, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS.	NUMBER FARMS DELINQUENT		ACRES DELINQUENT			AMOUNT DELINQUENT	
			1932		1928	1932	1928
	1932	1928	Total	Per Ct Farm Lands			
2	218	124	3,945	46	2,311	$ 9,054	$ 4,706
3	98	57	2,355	49	1,883	3,492	1,637
4	172	73	4,913	31	3,446	5,003	1,048
5	162	85	7,179	30	4,622	2,573	1,906
6	229	149	8,521	44	5,607	1,997	1,323
7	183	103	5,643	39	2,574	3,877	1,526
8	203	114	4,989	44	2,791	5,861	3,470
9	246	140	12,863	43	7,007	4,333	2,637
10	217	174	14,920	61	5,304	6,119	3,623
11	191	117	6,330	26	4,287	3,784	3,129
13	296	145	11,603	49	7,122	5,387	2,562
14	213	120	8,269	43	3,761	3,969	2,071
15	180	99	8,009	55	4,766	2,853	2,428
16	164	82	5,614	43	3,996	3,610	1,956
17	137	89	3,875	30	2,906	1,203	1,807
TOTAL:	2798	1671	108,028		62,383	$63,115	$35,819

Source: Farm Real Estate Tax Delinquency Summary for Knox Co., Agricultural Experiment Station, University of Tennessee, and U. S. Census of Agriculture, 1935.

In order to help the farmers maintain their holdings, the Tennessee legislature legalized a moratorium for tax delinquent arrearages of 1929, 1930 and 1931. This served to delete the interest and penalty normally collected on delinquent properties. In analyzing the 1932 tax delinquency, however, it is necessary to consider abnormal accumulations during the depression of that period.

The following chart indicates the relationship between the per cent of all farm land that was delinquent in 1932 and the per cent of good land within each of the civil districts. The curves formed by the two factors, arrayed on the basis of proportion of good farm land, fails to show a definite correlation.



Source: Tennessee Agricultural Experiment Station and Tennessee Valley Authority.

Figure 28.- Comparison of per cent of farm land that was tax delinquent in 1932 with per cent of good farm land by civil districts, Knox County, Tennessee.

CHAPTER XXII

FARM SECURITY ADMINISTRATION

A convas of the record of loans to farmers of Knox County by the Farm Security Administration, indicates that the principal activity of this governmental agency is confined largely to those districts with the smallest urban influence. Between 1935 and 1939 no loans were made in civil districts Nos. 2, 3, 8 and 11, all of which touch or include a portion of the Knoxville suburban development.

The purpose for which the loans were made, in order of magnitude, was: first, livestock purchases; second, lime and fertilizer; third, seed; fourth, equipment; and fifth, miscellaneous, such as loans for debt payment and the purchase of a fireless cooker for canning usage. The largest loan, $1,080, was made in district No. 9 to a group of cooperating farmers for the purchase of a breeding Jack. The smallest loan was for about $35.00.

Until the summer of 1939 loans were made only for ordinary farm production purposes, but under a change of policy, funds were made available to Knox County farmers for the purpose of buying farms, known as the tenant-purchase plan.

Five production loans aggregating approximately $2,000, were made in 1935 to two farmers in district No. 13, and one each in districts Nos. 7, 9 and 10. Twelve loans were made in 1936 totaling approximately $3600, divided as follows: three loans in district No. 10, two in district No. 7, and one each in districts Nos. 4, 5, 6, 9, 11, 13 and 14.

Only six loans, totaling approximately $1,000, were made in 1937, and were divided as follows: two in district No. 6, and one each in districts Nos. 4, 5, 7 and 10.

Nine loans totaling approximately $2,600, were made in 1938 and apportioned as follows: two each in districts Nos. 6, 9 and 10, and one each in districts Nos. 14, 15 and 16.

A total of $4,196 in unpaid loans had accumulated as of January 1, 1939, according to the records. These unpaid loans were greatest in districts Nos. 9, 10 and 13.

The extent of new and renewal loans made in 1939, the ownership classification of borrowers and the accumulated amount of unpaid loans from 1935 to January 1, 1939, by civil districts, are indicated in the following tabulations:

TABLE LIII. CLASSIFICATION OF BORROWERS AND STATUS OF FARM SECURITY LOANS FOR 1939 AS OF JULY 1, WITH OUTSTANDING LOANS FROM PREVIOUS YEARS, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

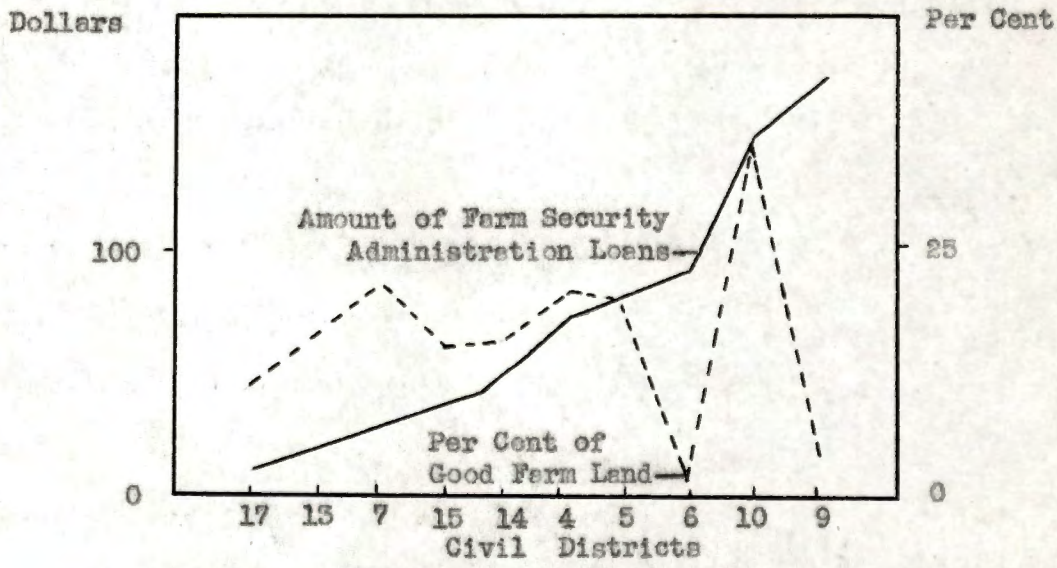
CIVIL DISTS.	BORROWER CLASSIFICATION			STATUS OF 1939 LOANS TO FARMERS			LOANS UNPAID FROM PREVIOUS YEARS
	Total Number	Tenants	Owners	Amount Loaned	Amt. Paid on Loans	Total Balance	
4	4	2	2	$ 715.00	$ 80.50	$ 634.50	$ 76.00
5	3	2	1	824.16	101.98	722.18	263.00
6	5	4	1	900.00	35.00	865.00	269.00
7	1	-	1	280.54	-	280.54	362.00
9	7	4	3	1,708.66	50.00	1,658.66	1,013.00
10	4	2	2	1,420.00	36.84	1,383.16	943.00
11	-	-	-	-	-	-	178.00
13	2	2	-	200.00	33.00	167.00	757.00
14	2	1	1	458.05	42.50	415.55	191.00
15	3	1	2	385.00	101.43	283.57	92.00
16	-	-	-	-	-	-	52.00
17	1	1	-	71.54	-	71.54	-
TOTAL:	32	19	13	$6,962.95	$481.25	$6,481.70	$4,196.00

Source: Data from files of Farm Security Administration as of July 1, 1939. (The information from the Farm Security Administration files was collected as of July 1, 1939, before the farmers' crops were matured and ready for sale, and not the season when normal loans were due and collectible.)

Two interpretations appear possible in the following chart. On the one hand, if civil district No. 10 was eliminated, the two curves would have the effect of showing inverse relationships. However, if districts Nos. 6 and 9 were eliminated, the trend would be generally in the same ratio.

Inasmuch as loans have been placed largely in the more rural districts, and since district No. 10 is located on the boundary of the Tennessee river and is bisected by the main throughfare from Knoxville to Nashville and Chattanooga, it seems reasonable to concede location advantages not given to civil districts Nos. 6 and 9.

The amount of Farm Security Administration loans and per cent of good farm land by civil districts are illustrated in the following chart:



Source: Data from Farm Security Administration and Tennessee Valley Authority.

Figure 29.- Comparison of per cent of good farm land with total amount of Farm Security Administration loans by civil districts, Knox County, Tennessee, 1939.

CHAPTER XXIII

AGRICULTURAL ADJUSTMENT ADMINISTRATION

The Agricultural Adjustment Administration originating in May, 1933, was organized in the United States Department of Agriculture to promote economic recovery by restoring the purchasing power of the American farmer to the level it occupied during the five-year period preceding the World War.[1] Since the passage of the Soil Conservation and Domestic Allotment Act , approved February, 1936, the attack has centered on crop control and conservation of the soil resources.

The Secretary of Agriculture, who has charge of administering the Act, may determine what proportion of the total acreage of a given crop the government will lease,[2] otherwise the tendency would be for the farmer to lease and withdraw from production only the poorer or sub-marginal lands. It is also within the discretion of the Secretary to offer compensation in the form of benefit payments for reducing the amount of a commodity that is sent to market instead of leasing land and withdrawing it from production.

The 1938 Act of the Agricultural Adjustment Administration[3] seeks to amplify the original program by the following steps: 1. to prevent waste of soil fertility; 2. to provide for an orderly, adequate and balanced flow of farm products in interstate and foreign

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1. Digest of the Purposes of Current Federal Agencies, page 1, revised Sept. 15, 1936, prepared by U. S. Information Service, Washington, D.C.

2. American Farm Policy, pages 52-53, by Wilson Gee, published by W. W. Norton, Inc., New York.

3. The A.A.A. Notebook, by U.S.D.A., page 1, March, 1939, Washington, D. C.

commerce; 3. to help farmers obtain their fair share of national income; and 4. to help consumers obtain an adequate and steady supply of foods and fiber at fair prices.

The Agricultural Adjustment Administration set-up in Knox County for 1938 is shown in the following table. While 3,866 farmers signed up to follow out the benefit plan, only 3,399 completed some phase of the contract, with only 2,492 qualifying for checks which totaled $53,885.10.

TABLE LIV. FARMERS SIGNING AGRICULTURAL ADJUSTMENT ADMINISTRATION CONTRACTS AND DISTRIBUTION OF BENEFIT PAYMENTS, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE, 1938.

CIVIL DISTS.	SIGNING A.A.A. CONTRACTS			DISTRIBUTION OF BENEFIT PAYMENTS		
	Total Number	Non-cooperators	Cooperators Without Payment	Number	Per Cent	Amount
2	84	2	17	65	77.4	$ 923.49
3	45	0	7	38	84.4	593.17
4	178	6	32	140	78.7	3,123.73
5	344	29	29	286	83.1	7,355.39
6	278	29	96	153	55.0	1,873.05
7	386	37	119	230	59.6	3,738.49
8	126	11	29	86	68.3	1,699.53
9	461	58	112	291	63.1	7,667.62
10	336	76	58	202	60.4	4,767.39
11	429	113	122	194	45.2	3,806.34
13	410	73	98	239	58.3	5,032.26
14	215	19	59	137	63.7	3,156.89
15	309	8	76	225	72.8	4,243.42
16	142	0	32	110	77.4	3,699.36
17	123	6	21	96	78.0	2,204.97
TOTALS:	3866	467	907	2492	64.5	$53,885.10

Source: Unpublished data from 1938 A.A.A. schedules in office of R.M. Murphy, county agricultural agent, Knox County, Tennessee.

While 95 per cent of the area of land in farms was signed by Knox County farmers in 1938 in the Agricultural Adjustment Administration program, the number of farmers represented only 70 per cent of the number of farms, according to the 1935 census.

This indicates that a farmer may own other farms classified by the census as separate units, in addition to the one on which he resides. The surplus area in certain districts, as shown in the following tabulation, over the 1935 census figures, indicates a defect in the system of reporting location of farms.

TABLE LV. COMPARISON OF NUMBER OF FARMS AND AREA REPRESENTED BY A.A.A. COOPERATORS, 1938, WITH ALL FARMS AND AREA IN CENSUS DATA, 1935, BY CIVIL DISTRICTS, KNOX COUNTY, TENNESSEE.

CIVIL DISTS.	NO. OF FARMS 1935 CENSUS	NO. FARMERS SIGNING 1938 A.A.A. CONTRACTS	PER CT. A.A.A. FARMERS ARE TO NO. FARMS	TOTAL AREA IN FARMS		
				Total 1935 Census (Acres)	Total 1938 A.A.A. (Acres)	Per Cent 1938 is of 1935
2	402	84	21	8,582	4,145	48
3	120	45	37	4,803	2,651	55
4	288	178	61	15,551	12,447	80
5	374	344	92	23,205	23,322	100
6	449	278	61	19,365	17,549	90
7	359	386	107	14,192	16,256	114
8	390	126	32	11,590	19,292	166
9	470	461	98	29,336	32,577	111
10	366	336	91	24,279	25,478	104
11	418	429	102	24,173	25,345	104
13	515	410	79	23,583	24,664	104
14	351	215	61	18,960	15,583	82
15	271	309	114	14,599	19,483	133
16	361	142	39	12,829	9,912	78
17	356	123	34	12,906	7,936	61
TOTAL:	5,490	3,866	70	257,953	246,629	95

Source: Unpublished data from 1938 A.A.A. schedules in office of R. M. Murphy, County Agricultural Agent, Knox County, Tennessee.

CHAPTER XXIV

CREDIT UNION

Organized for the purpose of providing a readily available source of credit for small loans to farmers, the First Farm Bureau Credit Union began operations in Knox County in 1934, and has shown a consistent growth. The credit union was sponsored by the Knox County Farm Bureau and was chartered under the authority of Chapter 68 of the Tennessee Enabling act of 1923.

The organization charges one per cent interest per month, requires the borrower to pay twenty-five cents entrance fee, and subscribe for $5.00 worth of stock which can be transferred, sold or redeemed on short notice. Security is required for loans of $50.00 or more. An investigation is made of each applicant at a nominal fee. Twenty per cent is set aside out of the net earnings and is accumulated. Losses are charged to the reserve fund.

Charter members of the credit union were: J. H. Schroeder, Powell Station; A. M. Russell, Concord; G. C. McBee, Straw Plains, Knox County; George T. Peters, Knoxville; J. R. Stafford, Knoxville; Route No. 12; J. J. Jones, Concord, Route No. 3; and R. M. Murphy, county agricultural agent, Knoxville.

The officers are: J. J. Jones, president, and Mrs. Ann H. Helmer, treasurer and manager.

The following table gives the history of this credit union.

TABLE LVI. MEMBERSHIP, ASSETS AND NET EARNINGS OF FIRST FARM BUREAU CREDIT UNION, 1934-1938 INCLUSIVE

YEARS	MEMBERS	ASSETS	NET EARNINGS
1934	10	$ 60.00	-
1935	-	2,825.00	$114.97
1936	71	4,141.13	256.69
1937	96	5,960.20	317.07
1938	166	9,129.32	511.99

Source: Statements to State Bank Examiner in files of First Farm Bureau Credit Union, Knoxville, Tennessee.

CHAPTER XXV

PRODUCTION CREDIT

Another form of farmer cooperation in financing the agricultural economy of Knox County is the Knoxville Production Credit Association which has been taking shape since 1934. Efforts were made to procure the extent of loans made by this association, by civil districts in the county, but data, so organized, was not available.

The capital structure consists of "A" and "B" stock. The "B" stock has voting power and is owned by members, whereas "A" stock is owned by the Production Credit Corporation of Louisville, Kentucky. The interest rate was reduced February 24, 1939, to four and one-half per cent on loans, according to Circular No. 3, "Loans by Production Credit Association", of the Farm Credit Administration. By law the interest rate can only be three per cent higher than the discount rate charged by the Federal Intermediate Credit Bank. The Intermediate Credit Bank in turn cannot charge more than one per cent above the interest rate it paid on the last issue of debentures sold to investors.

These associations are formed by farmers who voluntarily organize cooperative credit agencies for the benefit of themselves and their neighbors. They supply a need for short-time credit by which the various functions of farming are conducted. A farmer subscribes $5.00 in stock with each multiple of $100 in loans. Loans from Production Credit Associations are made available through the cooperation of three organizations, namely, the local Production Credit Association, the District Association and the Federal Intermediate Credit Bank.

The history of the use which farmers of Knox County have made of the Knoxville Production Credit Association since its organization, is contained in the following tabulation, as procured from C. J. Bradley, special field representative of the fourth farm credit district of the Production Credit Corporation of Louisville,(Ky.) in a letter bearing date of August 3, 1939. The data are outlined as follows:

TABLE LVII. STATUS OF LOANS OF KNOXVILLE PRODUCTION CREDIT ASSOCIATION TO FARMERS OF KNOX COUNTY, TENNESSEE.

YEAR	KNOX COUNTY		LOANS	MEMBER-OWNED
	Number	Amount	Losses	"B" STOCK
1935	-	$ 66,793	-	$ 3,495
1936	-	78,544	$14.84	4,080
1937	80	125,588	19.38	5,960
1938	75	123,067	68.82	5,940

Source: Data from correspondence with officials of Production Credit Corporation, Louisville, Ky. (Losses and member-owned "B" stock prorated figures.

While the data in the foregoing table does not give the extent to which farming in Knox County is financed, yet it does provide a sample of cases to indicate within what limitations funds of this kind are utilized.

The table indicates that for the two years, 1937 and 1938, the average loan required was in round numbers, $1,600, and that the average annual loss for those two years totaled 52 cents per member. The average amount of "B" stock, member-voting, was approximately $72.00 per year. Of course, those who already had sufficient stock to cover the amount required for the loan, were not required to purchase additional stock the year following that in which they had made the original stock investment.

The governmental approach in the economies of the Production Credit Association set-up is that of making it possible for farmers to supply gradually sufficient capital with which to put the business on a sound basis as their own enterprise. However, until this can be done the corporation is used to purchase the necessary stock to form a basis for operations.

CHAPTER XXVI

RESETTLEMENT ADMINISTRATION

Desirable major land use adjustment recommendations and a generalized delineation of areas needing such adjustments, were made for Knox County in 1936 by the land use planning unit of the Resettlement Administration, superceded in 1937 by the Farm Security Administration. Unpublished data in the L. U. 30 reports of the Resettlement Administration suggests that two hundred farms in the county should be replaced by forests, as listed in the following table:

TABLE LVIII. FARMS IN KNOX COUNTY RECOMMENDED FOR REPLACEMENT BY FORESTS BY THE RESETTLEMENT ADMINISTRATION.

CIVIL DISTRICTS	NUMBER OF FARMS RECOMMENDED TO BE REPLACED BY FORESTS
1 - 4	0
5	50
6	100
7	25
8 -15	0
16	25
17	0
TOTAL:	200

Source: Unpublished data from L. U. 30 reports of the Resettlement Administration, 1936.

These two hundred farms would take out of farm use ten thousand acres of land that was considered unsuited for cultivation. The type of land use in civil districts Nos. 5, 6, 7 and 16, and the area recommended for replacement by forest usage are itemized in the following table:

TABLE LIX. LAND USE AND RECOMMENDED CHANGES IN LAND USE AND LIVESTOCK IN CIVIL DISTRICTS NOS. 5, 6, 7 AND 16, KNOX COUNTY, TENNESSEE

	LAND USE AND LIVESTOCK	RECOMMENDED CHANGE	
	1935 CENSUS	ADDITION	REDUCTION
Acreage in farms	69,591	-	10,000
Number of farms	1,543	-	200
Crop land (acres)	25,442	-	2,000
Woodland (acres)	19,716	6,000	-
Open pasture (acres)	19,223		2,000
Corn (acres)	7,278		890
Wheat (acres)	1,036		100
Hay (acres)	9,939		1,000
Tobacco (acres)	154		10
Horses and mules	1,586		200
Cows and heifers	4,626		350
Other cattle	2,573		200
Hogs	1,889		175

Source: Unpublished data from L.U. 30 reports of Resettlement Administration, 1936, and U.S. Census of Agriculture, 1935.

These reports indicate that the Resettlement Administration's planning staff valued the agricultural land of the Knox County area more highly than land rated as average for the entire state. On the basis of good land quality, these specialists rated seventy acres as being sufficiently large for an economic farm unit in East Tennessee, as against a recommended minimum of seventy-four acres for the state average.

Similarly, in the case of land rated below average fertility, these specialists suggested ninety-five acres in East Tennessee as equivalent to one hundred nine acres of farm land, considered of average fertility for the state, in outlining certain minimum requirements as to size in other sections of the state.

TABLE IX. RECOMMENDED SIZE OF FARMS ACCORDING TO FERTILITY OF THE LAND AND THE NUMBER OF FARMS, IN EAST TENNESSEE AND THE STATE AS A WHOLE.

	LAND IN FARMS 1930 CENSUS	NO. OF FARMS 1930 CENSUS	RECOMMENDATIONS		
			IF LAND BELOW AVERAGE FERTILITY	IF LAND OF AVERAGE FERTILITY	IF LAND ABOVE AVERAGE FERTILITY
Recommended acreage per farm in East Tennessee, District No. 14.			95	85	70
Recommended acreage per farm in entire State of Tennessee			109	92	74
Recommended number of farms in East Tennessee, District No. 14	3,864,147	52,030	40,675	45,461	55,202
Recommended number of farms in entire State of Tennessee	18,003,241	245,567	165,312	196,294	243,897

Source: Unpublished data from L. U. 30 reports of Resettlement Administration, 1936, and U. S. Census of Agriculture, 1930.

CHAPTER XXVII

GENERAL SUMMARY AND CONCLUSIONS

By was of introducing the general summary and conclusions in this thesis, the following observations appear pertinent:

High urban influences in Knox County necessitated the inclusion of a number of factors other than soil quality, in constructing a land classification for use in understanding the physical aspects of the present agricultural economy and for future planning programs.

The original agrarian culture had but begun when mining operations and a trading center developed in the heart of the county at Knoxville. By 1939 the city had more than 100,000 inhabitants, and had absorbed one civil district entirely and portions of four others,

It, therefore, followed that location value of land is so influenced in determining the price, that agencies such as Farm Security Administration, and others, experience difficulty in lending as values do not necessarily follow normal agricultural economies.

The Tennessee Valley Authority's rural land classification maps of Knox County were utilized to determine the area of various land classes by civil districts. Two observations should be made: (a) in view of the speed with which this classification was made and of its inclusion within each class of a possible error not exceeding 200 acres, the usefulness of this classification may be limited; and (b) in view of the fact that the factors used were such as to indicate land quality, the author used the data as indicative of generalized rather than particular descriptions of conditions.

Abnormal types of farming prevail in Knox County. Civil districts with less than 50 per cent of self-sufficing and part-time farms are generally associated with locations furthest removed from the city of Knoxville.

General farming prevails only in two districts, Nos. 15 and 17, but even there does not constitute a majority of the number of farms of all types.

There is a correlation between the number of truck farms and proximity to the Knoxville market.

The greater portion of the Knox County produced milk delivered in Knoxville by individuals, comes from civil districts Nos. 4, 15, 10, 2, 5 and 14, or, those moderately close in. Most of the wholesale shipped milk comes from civil districts Nos. 5, 7, 15, 9 and 11, or, those furthest removed from Knoxville.

A positive correlation was noted between the number of horses and mules of all ages on farms and the number of acres of good farm land in the civil districts. The relationship exists despite the fact that less than 50 per cent of the farms in the county reported horses and mules.

The population of Knox County is largely native white and homogeneous.

Less than four per cent of the 1930 population was gainfully engaged in agriculture for a livelihood in Knox County.

Employment facilities are designed largely for persons in trade and industries and are not particularily for farmers.

No provisions are made for farmers in the social security program.

Direct grants in the form of emergency relief, incident to the depression of the thirties have brought Federal funds avereging more than a million dollars annually into Knox County, rendering some benefit to farmers, as well as the extension of credit facilities.

The general health condition of Knox County is considered excellent. A majority of the comparatively few contagious diseases are reported in order from the following civil districts: Nos 4, 13, 2, 8 and 15. Almost perfect health records obtain in districts Nos. 11, 7, 3, 6 and 17.

Greatest increases in the number of farms from 1930 to 1935 occurred in civil districts Nos. 17, 8, 2 and 16.

Decreases in the number of farms from 1930 to 1935 were noted in civil districts Nos. 3 and 5.

Little change in the number of farms, covering the period from 1930 to 1935 occurred in civil districts Nos. 4, 9 and 15.

There is an inverse relationship between the number of people in the county and the size of farms and something of a direct ratio with the number of farms. Farms in the civil districts nearest Knoxville, generally are smallest while those in districts furthest removed are in larger holdings.

A positive correlation was noted between the proportion of crop land harvested and the proportion of the land of good quality by the civil districts.

The highest per cent of good farm land obtains, in order, in civil districts Nos. 8, 16, 10, 11 and 7.

The lowest per cent of good farm land obtains in districts Nos. 6, 9, 3 and 17.

In civil districts Nos. 13, 14, 15, 5, 4 and 2 the proportion of good land in each approaches approximately the average conditions for the county.

Farm valuations are highest in civil districts Nos. 2, 8, 11 and 3 and are lowest in civil districts Nos. 15, 17 and 6.

A close correlation exists between the valuation placed by the Knox County tax assessor and the proportion of good land in each district.

A definite, if not complete, correlation was found in the relationship, by civil districts, between a productivity rating and the per cent of good farm land.

Highest productivity ratings were found in civil districts Nos. 2, 10, 8 and 16, while the highest per cent of good farm land was found in civil districts Nos. 8, 16, 10, 11 and 7.

Lowest productivity ratings were found in civil districts Nos. 6, 9 and 17, while the lowest proportion of good farm land was found in civil districts Nos. 6, 9, 3 and 17.

In comparing, by civil districts, the productivity of the agricultural crop land with the proportion of good farm land, little relationship was discovered. Trends generally were found to correlate but certain deviations suggest that other factors unexplored have a greater bearing in these premises in civil districts Nos. 2, 4, 10 and 14 than has the land classification data.

No correlation was found in comparing, by civil districts, the proportion of land that was tax delinquent with per cent of good land.

Increases in the tax valuation of farm land from 1934 to 1938 were found in civil districts Nos. 3, 2, 11, and 14, all of which touch the city of Knoxville, while decreases were noted in the tax valuation of farm real estate in civil districts Nos. 16, 15, 9, 5 and 10. Though lacking in close relationship, a definite correlation is observed between the per cent of good land in each civil district and the average per acre valuation by the county tax assessor.

Slightly less than 20 per cent of the general property tax assessment is levied against rural farm land. This means that approximately 90 per cent of the surface area of the county pays less than 10 per cent of the cost of local county government, the largest share of which is for the support of schools. Civil districts nearest Knoxville pay the highest share of this tax. The factor of land quality fails to correlate with the rate of the tax burden in districts near the city.

Cooperation in agriculture, except in the Knox County Wholesale Milk Shipper's Association and the First Farm Bureau Credit Union, has not gained great headway in Knox County.

Only a limited number utilize the facilities of the Production Credit Association.

Only a few cases are handled by the Farm Security Administration and these tend toward greater credit use in districts furthest removed from urban development.

General use is made of the parity and conservation benefit payments of the Agricultural Adjustment Administration.

The Resettlement Administration recommended that 200 farms in

civil districts Nos. 5, 6, 7 and 16 be abandoned and the land revert to its natural use, forestry.

Contrasts are pointed out in a study of the land classification by the Tennessee Valley Authority and an historical inventory late in the eighteenth century. After many years under the dominion of the late Indians and before that by the mound builders, the land was continued under a program of maintaining nature's balance. But within the span of a century and a half the forests have been reduced to a fringe, erosion has been induced and growing malpractices in land use are recognized.

CONCLUSIONS

The following conclusions are presented as a result of this study:

1. A land classification scheme represents a generalized inventory of the physical character of the land and of the occupance pattern.

2. A land classification scheme is a useful instrument in determining the general nature of the present economies and in projecting future planning programs.

3. In applying the Tennessee Valley Authority's rural land classification of Knox County, certain uneconomic agricultural conditions of a major issue are found to obtain in civil districts Nos. 6, 9 and 17.

4. High urban influences tend to minimize the usefulness of land classification data.

5. This study suggests the value of exploring more closely the urban-rural relationships.

6. Urban influences develop opportunities in truck growing, milk production, part-time farming, and in bringing to the country the advantages in living, inherent in suburban development.

7. High valuations incident to urban development is at variance with the value of land for agricultural use only.

8. With respect to the findings of the problem areas in civil districts Nos. 6, 9 and 17, it is suggested that interested agencies, including the Knox County agricultural agents, the University of Tennessee Extension Department and the Tennessee Valley Authority, consider plans whereby the agricultural economy of those districts may be safeguarded in the future.

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