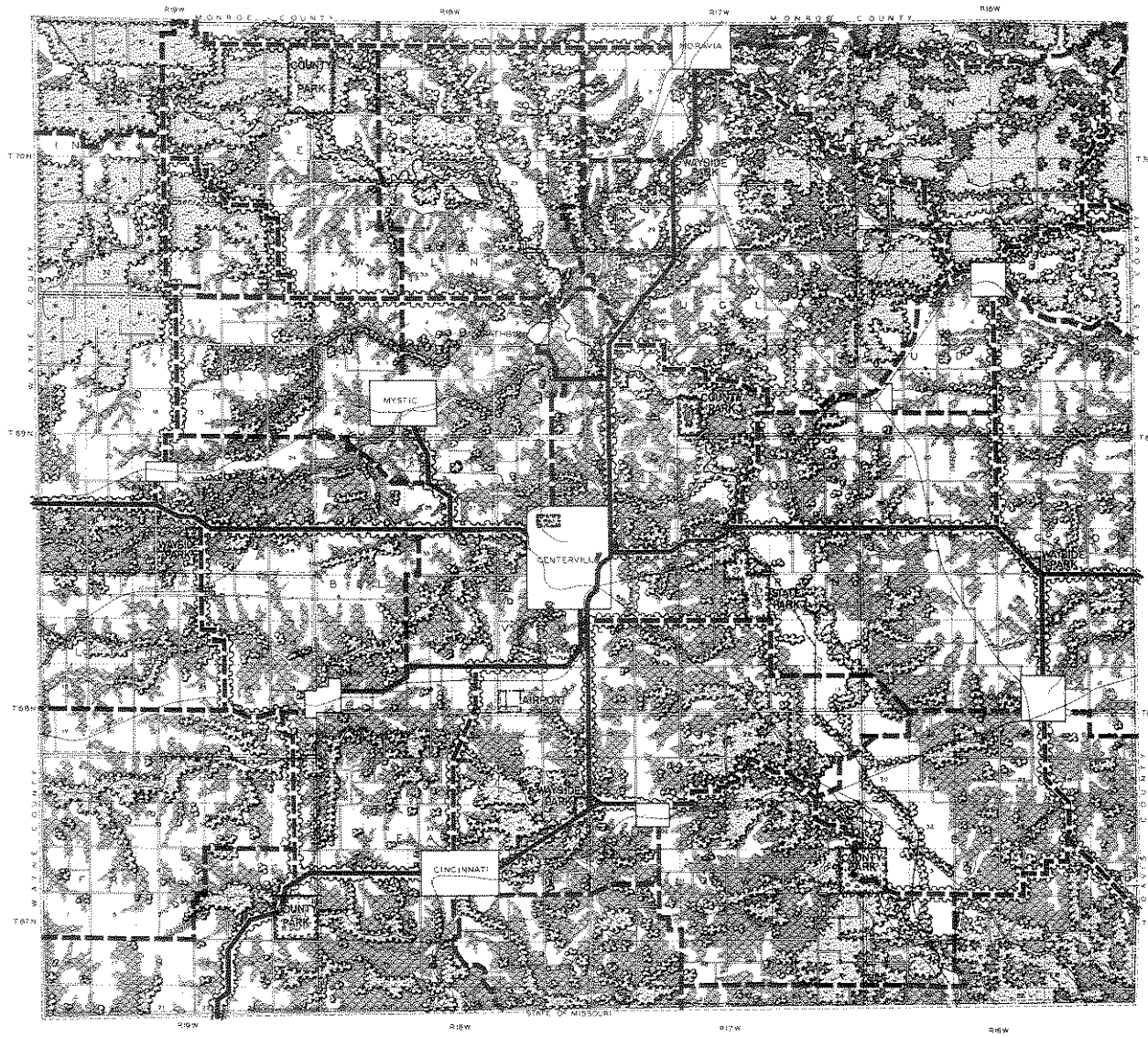

A GENERAL
COUNTY PLAN

LEGEND

- Land suitable for forests.
- Land suitable for general extensive use.
- Land suitable for intensive use.
- Suggested primary road system.
- Suggested county trunk road system.
- Local county road.
- Suggested Parkway.

NOTE

Land use recommendations incorporated in this map are based only on soil types, as shown in Soil Survey Report № 53 of the Iowa Agricultural Experiment Station. A more detailed county plan would take into consideration other factors, such as slope, present extent of erosion, individual conditions, etc.

Highway recommendations are based on a report by the research division of the Iowa Highway Commission.

SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

AN APPROACH TO COUNTY PLANNING

APPANOOSE COUNTY

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IOWA STATE PLANNING BOARD
APRIL --- 1936

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F O R E W O R D

In any public or private enterprise the first task is to find the facts about existing conditions and trends. This applies especially to the early work of a planning agency. Successive tasks involve analyzing these facts and establishing objectives, making plans to obtain the objectives, and, finally, organizing civic forces to carry out the plans.

Encouraged by a group of civic minded persons in Appanoose County, the Iowa State Planning Board has proceeded to assemble in the present report a considerable amount of information pertaining to that county. Although much of the material was collected by Planning Board field workers, we have had to rely to a great extent upon the assistance of individuals outside the staff.

To the citizens of Appanoose County we owe a debt of gratitude for their generous cooperation and advice in procuring pertinent data. We are especially indebted to Mr. John K. Valentine for continuous encouragement and aid; to Mr. M. G. Hall, consulting engineer and city engineer of Centerville, for the use of material from his files; to Mr. Leo W. Bowdish, county agent, for aid in locating photographs; to local abstractors for the use of base maps, land layout information, etc.; to the county engineer and staff for information on roads; and to Mayor Cyrus M.Newbold, and the Centerville city administration for office space.

Reference was made to various works of the Agricultural Experiment Station and the Land Use Committee of Iowa State College for check and guidance in the preparation of certain sections, particularly those on land use. Messrs. Gwynn Garnett, Charles Elkinton and A. J. Englehorn made valuable contributions to the section on soil conservation. John R. Fitzsimmons, by his suggestions and criticism, contributed a valuable service.

The section on population was taken from a report by Dr. Howard Bowen; that on education, from a report by Dr. I. H. Hart. Dr. A. C. Tester, assistant State Geologist, furnished the report on which were based sections on geology and water supply. Mr. Mark Morris, research engineer for the Iowa Highway Commission, made a significant contribution in preparing the section on transportation.

On the part of the Iowa State Planning Board staff, much of the information was gathered and coordinated by field engineer, L. W. Murray. Editors H. Dale Bossert and Alvin E. Coons and chief draftsman Malcolm Allen directed the work of organizing and illustrating the report; the picture maps were largely designed and drafted by Weaver Connelly.

The field work, most of the drafting and editing, and the printing and binding of this report were financed by the Iowa Emergency Relief Administration. The final preparation of plates and organization of all material were completed under Federal Project No. 3 of the Works Progress Administration.

To any civic planning group that may organize or be appointed in Appanoose County, this report should prove extremely useful in performing the first task of fact finding. The next steps -- determining objectives, making plans and carrying them out -- are up to the people of the county. Such plans as are included in the report are merely suggestions which, after further consideration, may be adapted or changed according to local needs.

To the laymen of Appanoose County who have an interest in planning, and to the officials whose experience in public service qualifies them for important participation, this report is respectfully submitted. To them we say: Many of the facts you need for a county planning program are here. From your own interest and effort must come any benefits other than the initial, educational advantages of such a report as this.

You are free to ask us for any further advisory service that we may be able to supply, but your greatest freedom is in your right to determine your goals, plan your course, and follow your plans.

P. H. Elwood, Consultant
National Resources Committee.

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

The virtues of planning have long been recognized. Indeed, the whole story of the growth of civilization might be told in terms of the growth of man's ability to look ahead, to decide upon a goal and work toward it. As an individual trait it has been extolled as fundamental in building a successful career.

Municipal planning, as a civic virtue, also dates from an ancient beginning. Most of the cities that grew up during the period of industrial development of the nineteenth century, however, were ugly, unplanned, squalid places in which workers were crowded together in factory districts with no consideration for recreational opportunity, no thought of beauty, no attempt to preserve certain space for parks. And these districts were not alone in their suffering. When a factory or wholesale trading establishment moved into a residence area, a blighted district resulted. No matter what that district had been before, it speedily became a slum.

Some efforts to improve this situation were started after the middle of the nineteenth century, but city planning and zoning did not become definitely established as an essential element of wise municipal policy until the beginning of the present century.

More recently, with the disappearance of the frontier, the severe draining of the nation's resources and the approach of a stable, less mobile popu-

lation the necessity for planning in other governmental units -- nation, state, and county -- has been recognized. Up to and including the early years of the twentieth century, the United States was a frontier nation, with vast territory still unexploited. Land values, after a territory was settled and population increased, rose rapidly, and it was the intention of many who settled in Iowa and other western states to remain here only until they had accumulated a fortune through the exploitation of the natural resources.

Today, however, the situation is changed. The flood of imigration which was responsible for the country's rapid growth following the Civil War has subsided. Our national population is approaching stability, with a falling birth rate generally, and an urban population that cannot maintain itself. New lands, unexploited resources, are no longer available. From now on the problem of conserving and using intelligently those resources that we have will become more and more important.

It was in the light of these facts that the National Resources Board made its survey in 1934 of the existing resources of the country. It was in response to needs arising from these facts that 46 states have appointed planning boards. These boards, within their respective states, have undertaken to encourage the application of planning methods to state and local affairs.

A plan usually implies the existence of a goal or something to be achieved. There was little incentive for people to plan permanent homes so long as most of them were looking forward to the time when the money they made in Iowa would enable them to move to California and retire; neither was there much incentive for a farmer to plan for the conservation of soil so long as he believed that once his present farm was exhausted he could move on to virgin territory. However, now that the prospect of rising land values and sudden unearned wealth is considerably less than it was once, and the opportunity for pioneering

is definitely past, people are more and more concerned with planning permanent homes and permanent farm and other operations.

The goal of all planning, both individual and collective, is to achieve the best use of the physical environment for human use. A planning program should be guided, necessarily, by the present needs and future welfare of the people.

There is just one essential difference between individual planning and group planning. As individuals we plan for ourselves. Collectively, we must work for the good of all.

The approach to planning in a democracy, whether it be local, state, or national, must be through discussion, analysis and finally an agreement upon the goal to be achieved.

The first step in this approach to planning should be an appraisal and analysis of existing conditions, problems and resources. From this analysis it may then be possible to decide on the disposition of these resources to achieve the desired end, which should be the greatest happiness of the greatest number. The plan, which will then be seen as the last step in an approach to planning, should be the out growth of the analysis and appraisal of resources, natural and human. Such a plan should be sufficiently broad and elastic to allow for its adaption to circumstances which may not be clearly recognized at the time of its inauguration.

In its final form this plan must be the plan of the people most concerned. They must decide what disposition is to be made of the resources they possess. However, in the appraisal and analysis of resources, not all of us have the necessary qualifications for such analysis. Parts of this work must be done by trained technicians. The soils program should be based upon the recommendations of the soils expert -- flood control, water supply, etc., upon the anal-

ysis of the hydraulic and sanitary engineer -- housing by architects and parks by landscape architects.

This study of Appanoose County represents an attempted appraisal of the physical and social resources of an Iowa county in the light of present maladjustments or problems. It has been compiled from various sources, and much of it is the result of original investigations and compilations by members of the Iowa State Planning Board staff. A great deal of the material herein set forth is of a sort basic to planning in any Iowa county.

The county is, in many ways, a desirable unit upon which to base plan studies and recommendations. It is a political division with certain governing powers and responsibilities of its own. It is integrated in a geographic way. And while its borders may not separate it distinctly from contiguous counties, they do enclose an area of practical size and sovereignty for certain kinds of planning.

There are, of course, limitations upon county planning. Many problems have several aspects; an example is the agricultural problem. There is the purely physical aspect which concerns itself with soil erosion and depletion, and the types of farming best suited to the area. This phase quite logically falls within the province of county planning. On the other hand, the economic aspect of the agricultural program is of state and even national concern, and cannot be solved by one county acting independently of the rest. Population and social trends are likewise interwoven in the larger regional or national pattern and can be understood only in that light.

These limitations, however, should not discourage any county from attempting to plan its future, for any county that has tried to arrive at a correct solution of its own problems will be, thereby, better qualified to cooperate with other counties in the solution of common problems.

Appanoose County was chosen for this demonstration study because in many ways it seemed, when the study was undertaken, to be a county in great need of readjustment. This county had one of the heaviest relief loads in the state. It has suffered from a steady and more serious decline in population than most counties. Even so, a study of the employment figures would seem to indicate that there are still in the county a considerable number of persons, especially miners, who cannot reasonably expect reemployment in their regular occupation, even if the county were to return to prosperity.

The idea of planning is not new to Appanoose County. Soon after the treaty of 1842, by which the Sac and Fox Indian tribes sold the last of their Iowa lands to the government, a survey of the newly acquired territory was undertaken. Appanoose County was created the following year and the first election was held. Pending the completion of the necessary land survey and the opportunity for purchasing their claims, the settlers in 1845 organized a claim protection society. The first agricultural society was formed ten years later, since which time various orders have arisen to act as educational and planning forces in the county, including the more recently organized Appanoose County Soil Conservation Association.

These early efforts might quite appropriately be called attempts at planning. The settlers, realizing the value of cooperative enterprise, took steps to protect their rights not only as individuals but also as a group. However, since the attempts of these early planners, the nature and extent of land use have changed with the increase in population; and after a century of exploitation of mineral, soil, and forest resources, land value and productivity are in danger of continuous and accelerated decline unless measures to correct the present trend are adopted and followed.

While looking to earlier organizations in its own history for the inspi-

ration, Appanoose County must look, for methods in modern planning, to counties that have preceded it in taking action to correct abuses, and to the larger state and national planning movements. The success of the county planning movement in Wisconsin, where lands are designated or zoned by the county zoning authority for agricultural, forest or recreational uses, is outstanding. The experience of Wisconsin has led Michigan and Minnesota into similar county land use planning. Tompkins County, New York, has a broad planning program under way, the progress of which should be followed with interest. Nearly all the other county planning in this country either has been the outgrowth of an expanding city and its suburbs into a more efficient organism as in Los Angeles, California, in Milwaukee, Wisconsin, and elsewhere, or has been confined to the narrower limits of a county park system such as in Essex, Union and Hudson Counties in New Jersey, and in Westchester County, New York.

In an approach to planning one thing needs to be made clear at the outset. Planning methods and procedure are not necessarily synonymous with a large emergency construction and employment program. Planning in the past, especially city planning, has too frequently been associated with "booster" and so called "city beautiful" movements. Small cities and towns, ambitious to become great urban centers, have sometimes allowed their wishful thinking to over-ride their better judgment in drawing up elaborate plans for expansion and development with little thought of the basic facts involved in their execution or the cost of operation and maintenance. Population curves have been projected indefinitely into the future at a constant rate of growth on the assumption that an increased population would be able to pay off bonded indebtedness, fill vacant areas, and utilize extravagant public service.

The prejudice against planning in general, that has resulted from past over-emphasis on expansion and expensive building program, and from certain

economic planning, is not justified in the case of sound planning procedure. Many small cities, towns and counties have been discouraged from attempting to plan their futures purely from the fear that it would mean exorbitant costs. Thus, those most in need of planning have not had it, and good civic procedure has been confined mainly to the largest, most wealthy cities.

Even without the prospect of large growth much remains to be done to correct shortcomings of the past. Change is always in process. Improvements can be made as a part of reconstruction, and can be carried out on a long time basis at little or no greater cost than the ordinary expense of replacement.

The advantage to be derived from building according to plan, rather than allowing succeeding officials to carry on municipal and county programs merely according to their own likes and dislikes, is that under a well thought out program, the unified plan will outlast the careers of individual office holders, men who may have ideas diametrically opposed to their predecessors. As an example of the need for such a program: a county system of roads should conform to traffic requirements, which are established by trading and recreation habits of the population rather than by the desires of local politicians and their friends, as has sometimes been the case in Iowa counties.

With a general decline in the birth rate in this country, and the approach of a stable population, planning should concern itself more with the permanent aspects of development, relying less and less upon phenomenal population growth or sudden discovery of new resources to erase errors in judgment.

The exploitation of existing resources has already proceeded to the point where conservation and more intelligent use have become of primary importance in planning. Small cities and towns, realizing at last that they are not destined to become metropolitan centers, can devote their attention to the inauguration of a long time program for their improvement as desirable places

in which to live.

This report endeavors to present pertinent facts about the situation and present trends in Appanoose County's physical, social and economic structure, and suggests measures for future guidance. It is hoped that the material contained herein will stimulate discussion, criticism and eventual action, and that an interest in planning will be aroused -- not for the sake of planning itself, but for the sake of greater economic stability and human satisfaction to be derived from adopting a "long view" in the proper use and conservation of natural and social resources.

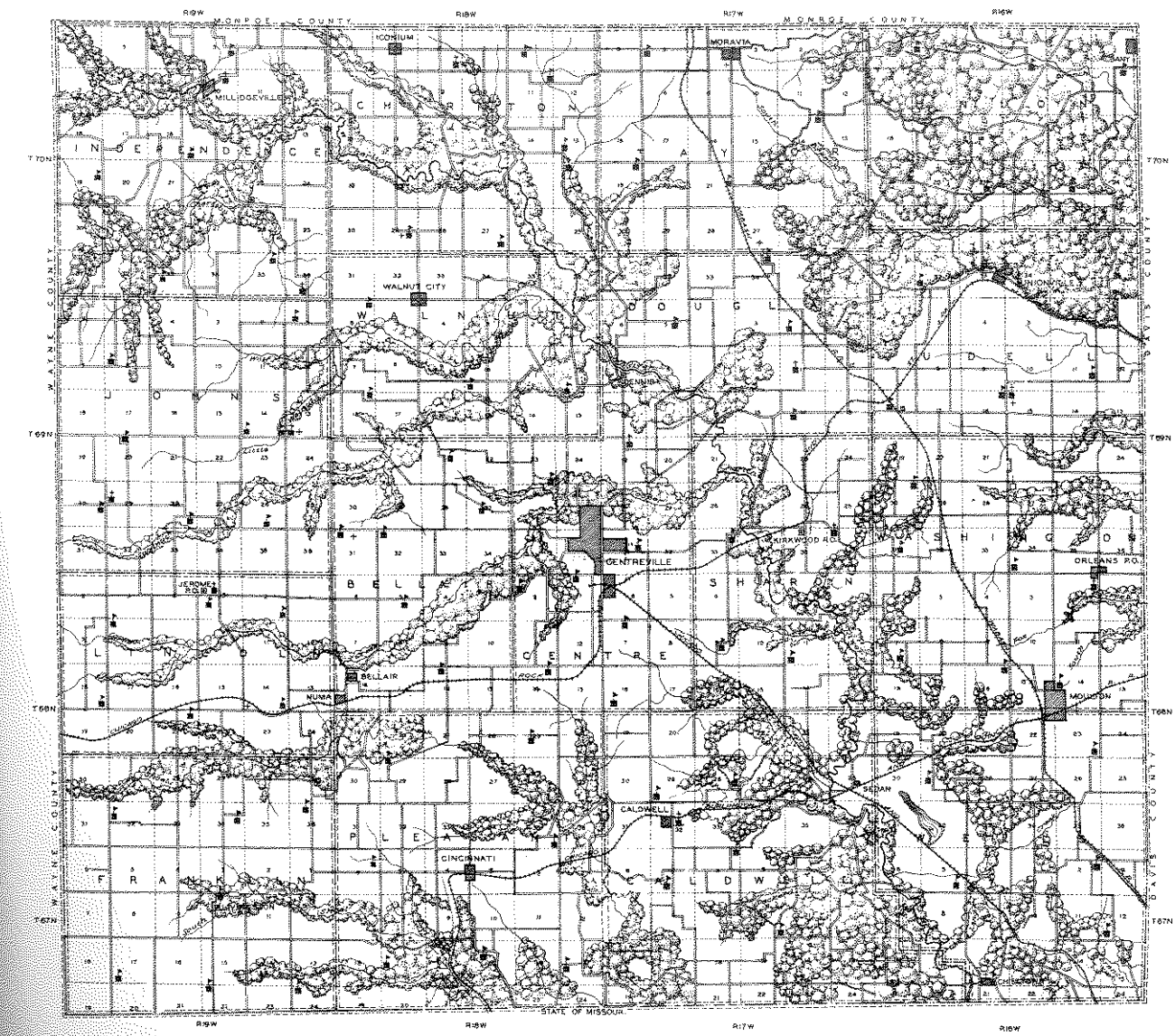
Some of the problems of Appanoose County will require the cooperation of other counties for solution, as has already been pointed out. State cooperation will be needed, and since the county is bordered on the south by Missouri, interstate collaboration may eventually be necessary. Other problems may be treated solely in their relation to the county involved. The research data upon which this report is based are believed representative and adequate for the present introductory analysis, although the problem of planning is continuous and the book of planning should never close.

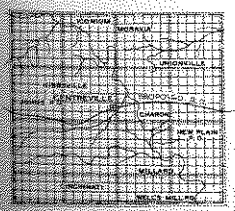
Attention is called to the title of this document. It is not to be considered a master plan, a comprehensive plan, or a final plan for any particular phase of county development. Rather it is, as its title notes, simply an approach to county planning. Its purpose is to stimulate interest, not only in Appanoose County but in many other counties in Iowa and elsewhere, in thoughtful, thorough and comprehensive planning for the good of all on a permanent, though flexible, long-time basis of development.

As will be noted this report is presented in two parts. In the first part is to be found an analysis of county resources and a primary consideration of rural problems. The second part deals with the cities and towns of

the county.

For the sake of brevity and clarity many of the data have been presented graphically by use of maps and charts.





MAP OF 1856
TAKEN FROM
PARKER'S MAP OF IOWA

MAP OF 1875

TAKEN FROM
A.T. ANDREAS' HISTORICAL ATLAS

EARLY DEVELOPMENT

LEGEND

TOWNS	CEMETERIES
POST OFFICES	COAL MINES
SCHOOLS	ROADS
CHURCHES	RAILROADS
	TIMBER

SCALE
6 MILES

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 1

PART I -- THE COUNTY

PHYSICAL CHARACTERISTICS

Location

Appanoose County, Iowa, is located in the southern tier of counties of the state, about one third of the distance from the Mississippi to the Missouri river. It is bordered on the south by the state of Missouri.

Centerville, the county seat city, is about 85 miles distant from Des Moines, the state capital, and 280 miles from Sioux City.

Geology

The total area of the county is 531 square miles or 328,320 acres. Loess and glacial drift occur as the surface formations throughout practically all of the county. In the broad, flat valley of the Chariton River considerable sand and silt of alluvial origin occur. The tabular divides or upland surfaces are characteristically covered by 10 to 20 feet of loess, which is underlain by from 50 to 150 feet of glacial drift containing material from Kansan and Nebraskan ages. The glacial drift is usually well exposed along the slopes made by stream erosion and in gully washes and road cuts. In the eastern and and northeastern parts of the county beyond the limits of the Chariton River valley, erosion has cut deeply into the glacial drift and the topography is quite rugged. In the south central and west central portions of the county

the tabular divides are broad and erosion has been insufficient to expose a great thickness of glacial drift. In the western half of the county beyond the limits of the very deep, preglacial channel, as shown by contours on Fig. 2, there are numerous places in which the bedrock is exposed or is very close to the ground surface.

Underlying the drift is the Pennsylvania system of rocks which is composed of carbonaceous and sulphurous shales, fire clays, limestones, irregular sandstone beds and commercial coal beds. The Pennsylvania rocks lie upon the Mississippian limestone and sandstone formations with a marked discordance of depth.

Appanoose County is noted for its mining of coal from formations of Pennsylvanian or Coal Measures age. The Mystic vein lies at a depth of between 85 and 100 feet below the surface at Centerville, and at Garfield it is approximately 200 feet below the upland. In the southeast corner of the county along the Chariton River the coal is exposed in the bluff about 30 feet above the river level. The Coal Measures rock contains, in addition to the Mystic and other thin seams of coal, considerable plastic fire clay, black sheety shale, siltstone and sandstone, and numerous beds of good dense limestone.

Considerable useful limestone for road surfacing and agricultural purposes may be had in the county. The two beds known as the "Floating Rock" and "Fifty-Foot Limestone" contain thicknesses to justify quarry development, and both beds are being worked in several locations. In certain favorable locations the rock has sufficient strength for road surfacing material, and in practically all locations it is suitable for crushing to prepare agricultural lime fertilizer.

Rainfall

A rainfall gauging station was established at Centerville in 1897 by the

U. S. Weather Bureau and has been maintained intermittently since that time. Similar stations have been established in adjoining counties and more or less continous precipitation records, with related hydrologic data, are available in the reports of that agency.

An extensive and comprehensive study* of precipitation records of Iowa indicates that an annual precipitation of 32.5 inches or more may be expected 50 per cent of the time in south central Iowa, the district in which Appanoose County is located. This is materially less than the mean annual rainfall of 34.27 inches but is of much more significant value than the mean which is generally used in analyzing water supply and similar problems.

Drainage

Approximately 80 per cent of the area of the county is drained by the Chariton River, which flows through a broad, flat valley in a generally northwest to southeast direction and at a time of flood stage attains considerable size, doing considerable damage to the territory adjacent to its banks. The remaining 20 per cent of the county is drained by Soap Creek and Fox River.

The drainage system for the county is largely adequate.

The Soil

Appanoose County soils are grouped into five classes according to their origin and location - drift soils, loess soils, terrace soils, swamp and bottomland soils and residual soils. Drift soils consist of deposits left by the glaciers and they contain materials varying widely in composition, including some sand and occasional boulders. Loess soils are fine dust-like deposits which were made by the wind at a time when climatic conditions were different from those of the present. Terrace soils are old bottomlands that have been

* Iowa Precipation Studies, Iowa State Planning Board and Iowa Institute of Hydraulic Research.

raised above overflow by a decrease in the volume of the streams that deposited them, or by a deepening of the river channel. Swamp and bottomland soils occur in low-lying, poorly drained areas along streams which overflow. Residual soils are derived from the native bedrock material which underlies them.

Over 50 per cent of the total area of the county is covered by the drift soils. Loess soils are second in extent and cover 35.7 per cent of the total area. There is a small area of terrace soils, amounting to 1.1 per cent of the total area of the county. Bottomland soils are developed extensively in the county, covering 12.2 per cent of the total area. There is a limited area of residual soil in the county, covering 0.1 per cent of the total area.* (See Fig. 4).

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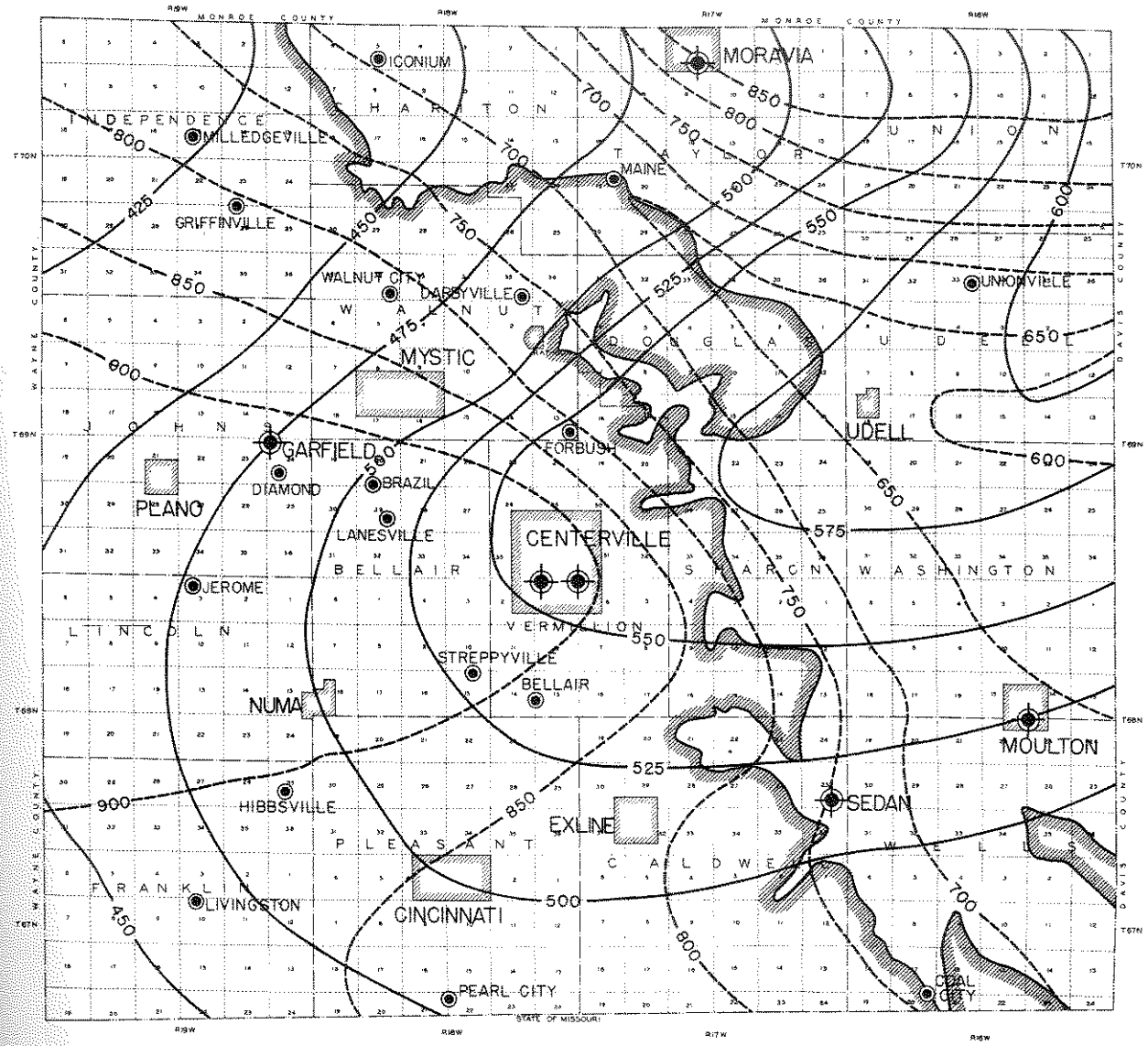
* Soils Survey of Iowa: Appanoose County; Agricultural Experiment Station, Iowa State College, Ames, Iowa



GENERALIZED GEOLOGICAL CONTOUR MAP 1935

LEGEND

BEDROCK SURFACE CONTOURS (50 FT. INTERVALS)

PENNSYLVANIAN-MISSISSIPPIAN CONTACT CONTOURS (25 FT. INTERVALS)

ELEVATIONS AS SHOWN BY CONTOURS ON SEA LEVEL DATUM.

MARGIN OF AREA UNDERLAIN BY MYSTIC COAL SEAM

LOCATION OF DESCRIBED WELLS

GEOLOGY BY A.C. TESTER. ASSISTANT STATE GEOLOGIST

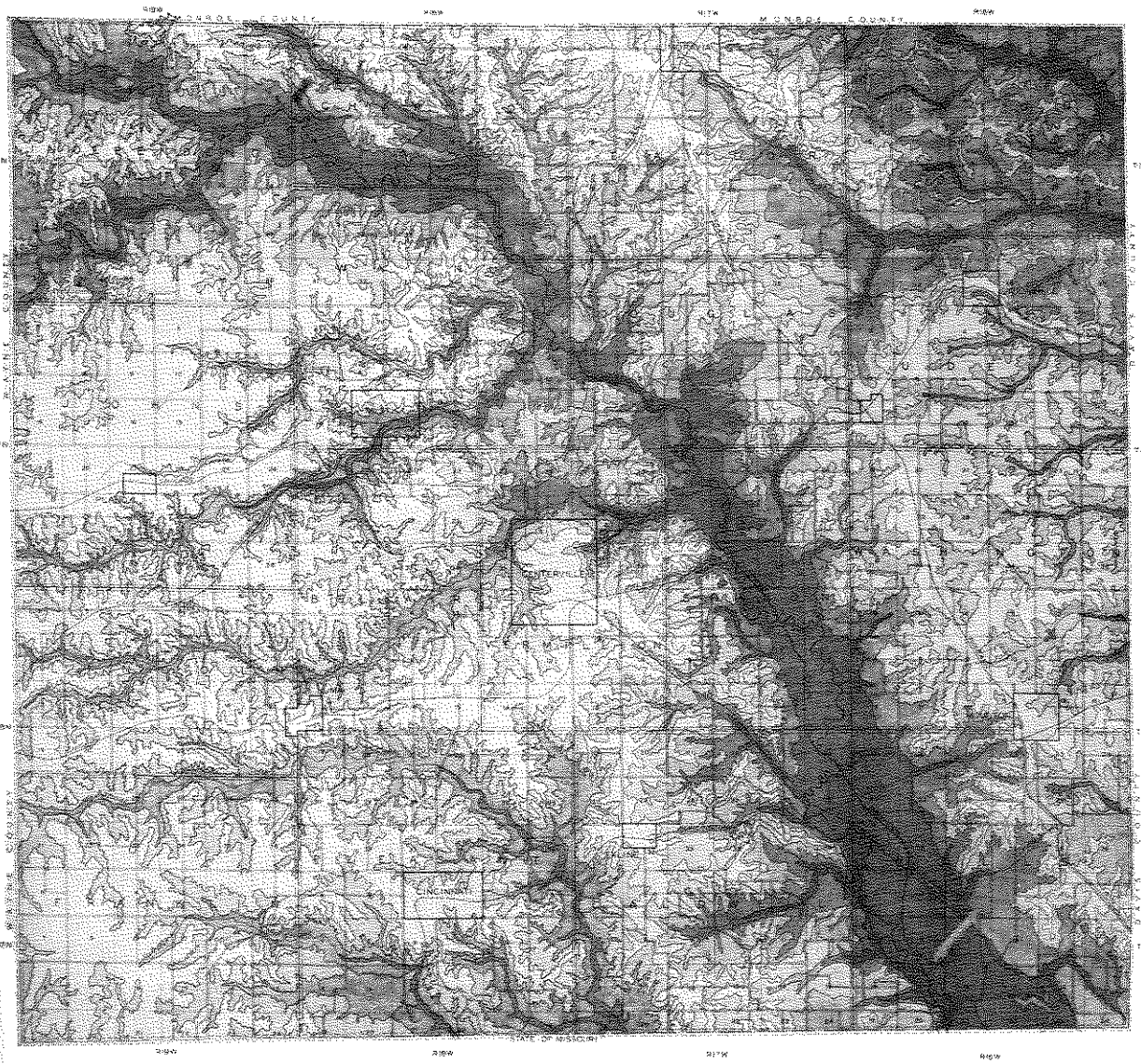
SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 2



RECONNAISSANCE TOPOGRAPHY

DATA FROM DR. LEE'S "ELEVATIONS IN IOWA": U.S.D.A. SOIL MAP: U.S.G.S. BENCH MARKS: & SUPPLEMENTED BY PARTIAL FIELD SURVEY 1935.

LEGEND

- OVER 1000 FT.
- 950 – 1000 FT.
- 900 – 950 FT.
- 850 – 900 FT.
- 800 – 850 FT.

SCALE IN MILES

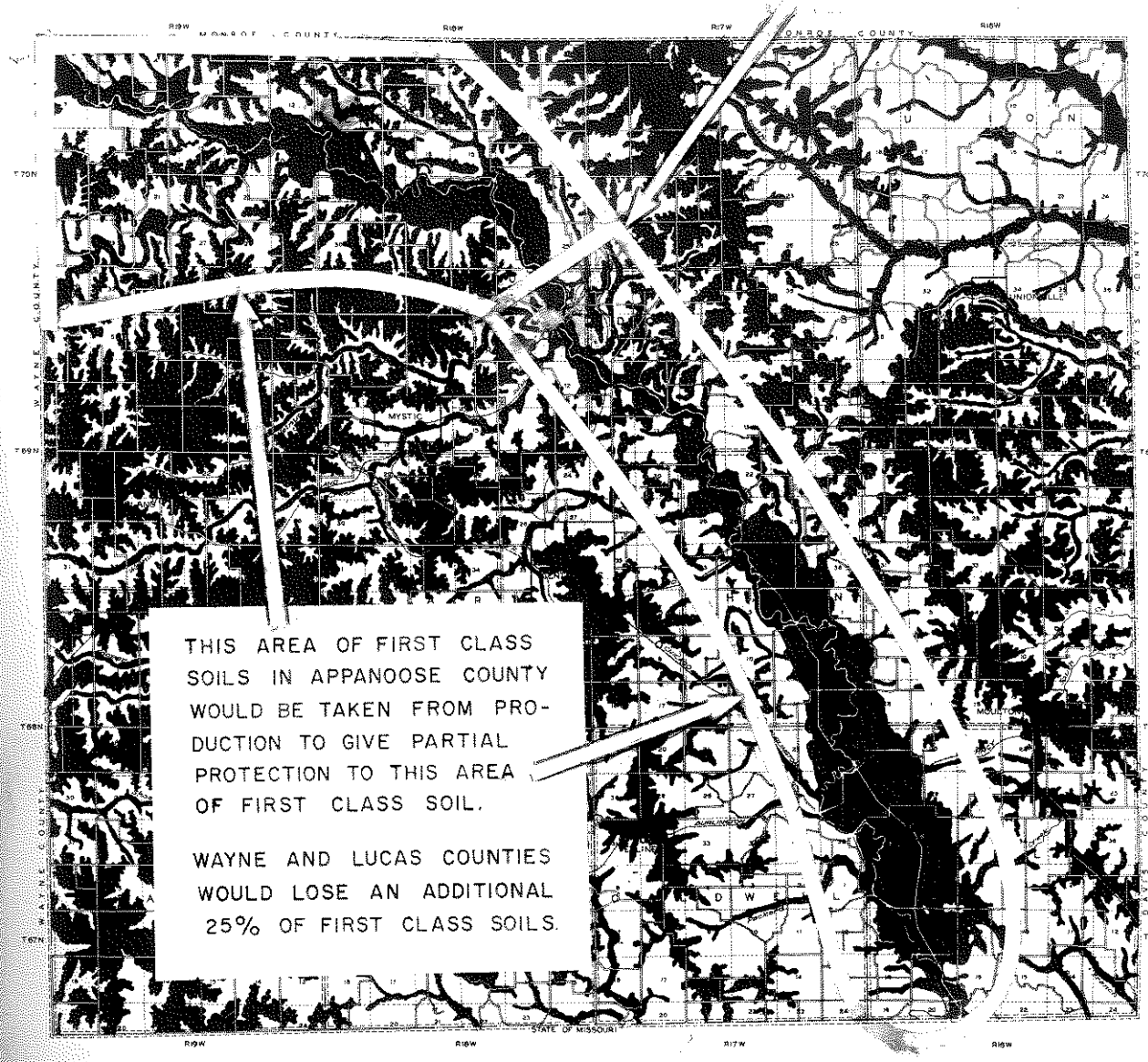
BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 3

SITE OF PROPOSED
RATHBUN DAM



GENERALIZED SOIL CLASSIFICATION
1935

LEGEND

FIRST CLASS SOILS, GENERALLY NOT EROSIVE AND SUITABLE FOR INTENSIVE CULTIVATION.
TYPES INCLUDED: GRUNDY, PUTNAM, EDINA, WABASH, WAUKESHA, BREMER, CALHOUN, & CRAWFORD.

SECOND CLASS SOILS, GENERALLY VERY EROSIVE AND SUITABLE FOR PASTURE, FOREST, & GENERAL FARM CROPS.
TYPES INCLUDED: SHELBY, LINDLEY, CLINTON & MARION.

SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 4

POPULATION AND EMPLOYMENT

People

The first entry of land for settlement by the whites was made in Appanoose County about the year 1845. By 1920 the county had attained a population of approximately 30,500 which by 1930 had declined to 24,835.

These 24,835 persons in 1930 composed 6,657 families. About one-third of these families lived on farms. About three-fifths were home owners.

Foreign born families comprised 8.06 per cent of the total 1930 population, Jugoslavs and Italians predominating among the foreign born, with smaller numbers of English, Swedish, Scotch and other nationalities. The median size of the families among foreign born was 3.54 as compared to 3.2 for the native born white families.

Most of the decline in population occured among the rural non-farm people, i. e., those living in towns and villages of less than 2500. In Appanoose County most of these communities are more or less dependent upon mining; the decline in population can therefore probably be traced largely to the reduction in the output of coal.

An accelerating decrease in the number of young people and increase in the number of people over 45 years in Appanoose County is shown in Fig. 6. The trend of the total population is shown in Fig. 7.

Income

Approximately one-fourth of the people in Appanoose County received public unemployment relief during 1934-35; the per capita income has for

years been about one fourth less than the state average. The leading industry, agriculture, has been fighting against soil depletion, drought and flood, while another important industry, coal mining, has been generally declining in output and employment for a period of more than 10 years.

The average annual per capita income in Appanoose County decreased from $485.00 during the period 1927-29 to $327.00 during the period 1931-33. The corresponding change for the entire state was from $662.00 to $430.00. The distribution of total income in the county by industrial groups is shown in Table 1, for 1927-29. Table 2 shows how Appanoose County shared in the total income for the state, in the two periods mentioned above.

Employment Trends

In Appanoose County agriculture produces approximately twice as much income and is therefore considerably more important than the mining industry. However, the unique and pressing problems of the area center about coal mining. The coal production of the county has been dwindling almost steadily since 1912 except for occasional temporary spurts, notably in 1917, 1918, 1920 and 1932. Since 1925, however, the annual production has been maintained at about a half-million tons, and the rate of decrease has become less.

The amount of employment in Appanoose County coal mines generally has corresponded to the volume of production. However, it is significant that the trend of employment continued noticeably downward even after 1925 when production had become partially stabilized. The average number of man-days employment per year from 1920 to 1923 was about 556,000 and from 1927 to 1933 about 213,000. See Fig. 11. This represents a decline of more than 60 per cent in amount of employment offered. The average number of workers employed, on the other hand, decreased from 3,518 in 1920-23 to 1,876 in 1927-33, a decline of

Table 1 -- Average Annual Income by Industrial Groups
Appanoose County

1927-29	Amount	Per Cent of Total	Iowa Per Cent of Total
Agriculture	$2,067,000	17.2	27.5
Mining	1,052,000	8.8	.8
Manufacturing	427,000	3.6	10.9
Transportation	1,797,000	15.0	8.4
Electrical Industries	304,000	2.5	2.9
Building	245,000	2.0	2.2
Finance	165,000	1.4	2.2
Trade	1,303,000	10.9	12.3
Gov. Service Unclassified	4,627,000	38.6	32.9
Total	$11,987,000	100.0	100.0

Table 2 -- Per Cent of the Total Income of Iowa Originating In
Appanoose County

	Annual Average 1927-29	Annual Average 1931-33
Agriculture	.46	.53
Mining	7.85	7.85
Manufacturing	.24	.22
Transportation	1.31	1.29
Electrical Industries	.65	.65
Building	.69	.69
Finance	.46	.43
Trade	.65	.64
Government	1.01	1.01
Service & Unclassified	.81	.81
Total	.73	.76

54 per cent. Thus the number of employees diminished less than the man days of employment offered; hence, the amount of work available to each employee also diminished somewhat during this period.

The United States Census of Occupations indicates that in 1920 there were about 2,890 miners in the county, and that in 1930, there were about 1,588, about a 45 per cent decline. The census lists fewer individuals as miners than were employed in the mines, because a large number of those employed find their principal livelihood in other pursuits such as agriculture. It is probable that many of the 321 agricultural workers of the county find partial employment in mining. The distribution of gainful workers in broad occupational groups is shown in Fig. 12.

The percentage of miners lost to the county was smaller than the decline in number of workers employed, and, as pointed out, this decline in turn was smaller than the decrease in man-days of employment. In other words, the amount of mining employment diminished more rapidly from 1920 to 1930 than the number of individuals seeking such employment, despite the fact that the county lost 1,302 miners during the same period.

Clearly, the total loss in Appanoose County population may be explained almost entirely by the decline in mining employment, although the actual miners involved may not necessarily have been the particular individuals who have emigrated. The total loss was 5,635 persons. The median sized family of the county is 3.23 persons; hence about 1,744 families emigrated. The loss of 1,302 miners leaves about 400 families to be accounted for. These perhaps emigrated because of the decline in employment or business which was attendant with the loss of the 1,302 miners, or from the abandonment of exhausted farms.

Apparently the process of economic adjustment in Appanoose County has been a somewhat tardy emigration following the decline of employment opportunities so that the number of workers has been generally in excess of the available employment.

The highly seasonal nature of mining adds to the complexity of attempting to strike a balance between the number of workers and the amount of employment. During the past 10 years, the average employed Appanoose County miner has worked 114 days per year, the equivalent of about 23 five-day weeks or about five months. The total annual coal output of the county could, with steady employment, have been produced by fewer than half the present number of employed miners.

This number may be partially verified by the fact that in 1930, according to the United States Census of unemployment, there were 1,075 unemployed persons in Appanoose County. This number comprised 13 per cent of all the gainful workers in the county, and may be compared with a corresponding percentage of 3.4 for the entire state of Iowa. However, 543 of the 1,075 had jobs but were temporarily idle without pay, leaving 532 who were out of jobs, able to work, and looking for employment.

Further substantiation that the excess number of miners is about four or five hundred may be found in a tentative, random sample analysis of the present relief population in Appanoose County. About 1200 families are on relief. In over 40 per cent of the surveyed cases, the head of the family is a miner, which indicates that there are about 480 miners on relief. In view of the fact that mining production has continued during the depression at nearly the same rate as during the years 1926 to 1929, it would appear that these 480 miners may not reasonably expect employment in the mines even under prosperity.

CONTRAST IN FARM HOUSING

These two pictures of farm homes -- the one reflecting efficient management, the other abandoned -- indicate the extremes to be found in Appanoose County.

It should be further noted that about 40 per cent of all relief cases were irregular or casual workers prior to 1930.

With any degree of recovery, some of the members of this group of unemployed may find opportunities for employment outside the county, and should be encouraged to do so. Development of one or two local industries, suited to the territory, might provide employment for these people. Agriculture, which is already too intensive for the resources available, cannot be expected to carry more of the burden of the population than it is doing at present, especially in view of the present extent of erosion and soil depletion in the county.

Housing*

The status of rural housing in Appanoose County is considerably lower than that of the state as a whole. Whereas the average value of farm dwellings in Iowa was over $2,200 in 1930, it was less than $1,000 in five townships in Appanoose County, less than $1,500 in nine others, and not over $2,000 in any township.

Construction of farm housing has been practically at a standstill. In part this has been due to the decreasing population --- the fact that the pressure of population was not sufficient to demand new housing. In part it has been due to the comparatively low income of the average resident and his inability to afford better housing.

The existing farm houses are much in need of repair. In many cases the dwellings are in need of replacement; in others, improvements and repair are necessary if further deterioration is to be prevented.

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*See also Part II - Cities and Towns, Section on housing.

MINING TOWN HOUSING

These views are more or less typical of housing in mining towns. Exterior drabness and insufficient window area are shown. Of more serious nature, however, is the lack of sanitary facilities.

Education

In 1933-34, the district organization for public education in Appanoose County was comprised of 11 independent city, town and village districts, 1 consolidated district, 13 school townships (including 86 one-room schools and 2 two-room schools), and 23 rural independent districts -- a total of 48 school districts.

In addition to 109 one- and 2 two-room elementary rural schools there were 1 kindergarten, 13 non-rural elementary schools, 1 separately organized junior high school, 2 regular high schools of less than four years, 10 regular four-year high schools, and 1 junior college.

The distribution of school population as to rural and non-rural in Appanoose County is about the same as for the state as a whole; approximately one-third of the persons between 5 and 21 years of age are in township and rural independent school districts.

A recent study by Dr. Barton Morgan of the Vocational Education Department at Iowa State College, revealed that a number of the rural schools in Appanoose County might be eliminated and the pupils transported to existing schools in nearby communities at a net saving. All major cost items were considered in the comparison, including extra transportation costs.

Several additional rural schools might be eliminated, the study showed, with but slight net increase in cost. These conclusions, of course, consider chiefly the economic aspects of the situation, in opposition to which certain social advantages of maintaining the rural schools may be advanced. It is possible, however, that greater educational opportunities might result from consolidating some of the schools in Appanoose County.

In 1933-34 a slightly higher percentage of persons of school age (5-21 years) in Appanoose County were actually enrolled in school than in Iowa as

a whole; this was true for both rural and non-rural districts. Attendance in rural schools was slightly lower, in non-rural schools slightly higher, than over the entire state.

Exactly one-third of the pupils in Appanoose County high schools were tuition pupils. This is 6.3 per cent higher than for the state as a whole, and signifies that a larger proportion of rural pupils in Appanoose County in 1933-34 were taking advantage of the free high school tuition law.

Only slightly more than two-thirds of the 8th grade pupils in the rural schools of Appanoose County completed the 8th grade, whereas over the state as a whole about three-fourths of the 8th grade pupils in rural schools received their certificates of graduation in 1933-34.

The proportion of men teachers was higher in Appanoose County in the year 1933-34 than in Iowa as a whole. Salaries were uniformly lower in Appanoose County than for the entire state, and the teaching load in terms of pupils per teacher was slightly higher than the state average.

So far as the educational load is concerned, Appanoose County does not differ essentially from other counties in Iowa. So far as the rural school districts are concerned, this load is slightly heavier, but the difference is not sufficient to be considered of great significance. Striking differences, however, appear when ability to support public education is measured in terms of the property valuation upon which school support depends.

The taxable valuation (including property and moneys and credits) back of each person of school age in Appanoose County was only a little more than half that of the state as a whole. The difference is most striking in the city, town and consolidated districts where the taxable valuation per child is only 39.6 per cent of the state average. In rural districts the per cent is 63.8. In other words, the people of Appanoose County would

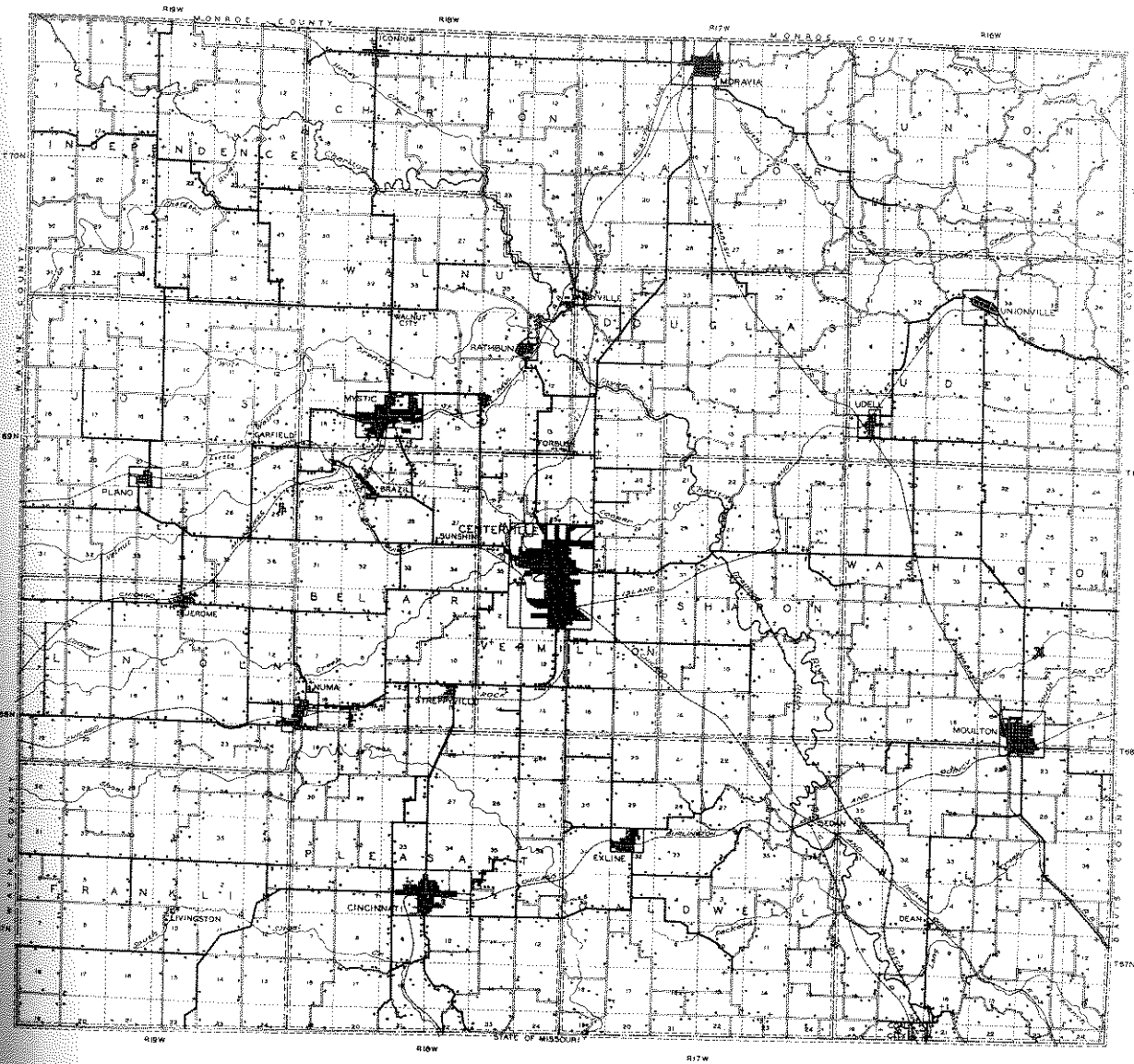
to tax themselves twice as heavily as the people in the average county of the state if they were to provide in dollars and cents the same type of educational opportunity as that which is available on the average to the school children of the state of Iowa.

The effort exerted by the people of Appanoose County in the support of public education, as measured in the number of dollars levied per census child for school support in 1933-34, ranks this county relatively low among the counties of the state (64.8 per cent of the state average). The comparison, however, of the amounts levied is not a fair measure of effort since the amounts raised by these levies are necessarily conditioned by the taxable valuation of property back of them. The ratio of tax levies to taxable valuation per census child is uniformly higher in city, town and consolidated districts, in rural districts and in the county as a whole than the average ratio over the state as a whole. (See Fig. 13.) In spite of the fact that the people in the city, town and consolidated districts of Appanoose County exert an effort almost one and one-half times as great as the average effort over the state as a whole, they are able to raise less than two-thirds as much money per census child in support of public education.

The fact that Appanoose County contains a number of mining camp schools which receive state aid accounts for the fact that the County ranks high in the proportionate amount of money received from state sources. This addition of state aid tends toward equalization of educational opportunity for the children living in districts unable adequately to support public education. For the year 1933-34, the schools of Appanoose County received from state and federal funds the total of $27,401.44. (Only four counties in Iowa received a larger sum from these sources in this year.) The amount received

from state aid, however, is far from sufficient to bring about a general equilization of educational opportunity for all the children of the county.

From an economic point of view it is obvious that Appanoose County is a problem county with reference to public education. It is equally obvious that educational advancement can not be expected so long as the average teacher's salary is significantly lower than the average over the state as a whole. It would be unreasonable to expect the taxpayers of Appanoose County by their own unaided efforts to raise as much money for the support of their schools as is raised over the state of Iowa as a whole. The conditions set forth above in connection with public education in Appanoose County present a clear and definite argument for the need of the equalization of educational opportunity in Iowa by the creation of a state equalization fund.



LEGEND

- RESIDENCE
- SCHOOL
- CEMETERY
- CHURCH

BLACK AREAS IN INCORPORATED LIMITS SHOW APPROXIMATE DEVELOPED AREAS

ALL WEATHER SURFACED ROADS

RURAL HOMESTEADS AND MINERS' HOMES 1935

NOTE

0.52% OF HOMES SHOWN ON MAP ARE MINERS' HOMES. THESE HOMES ARE GENERALLY LOCATED IN GROUPS.

SCALE 4 MILES

BASE MAP FROM GEOLOGIC MAP OF IOWA BY DEPARTMENT OF AGRICULTURE, STATE OF IOWA, IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

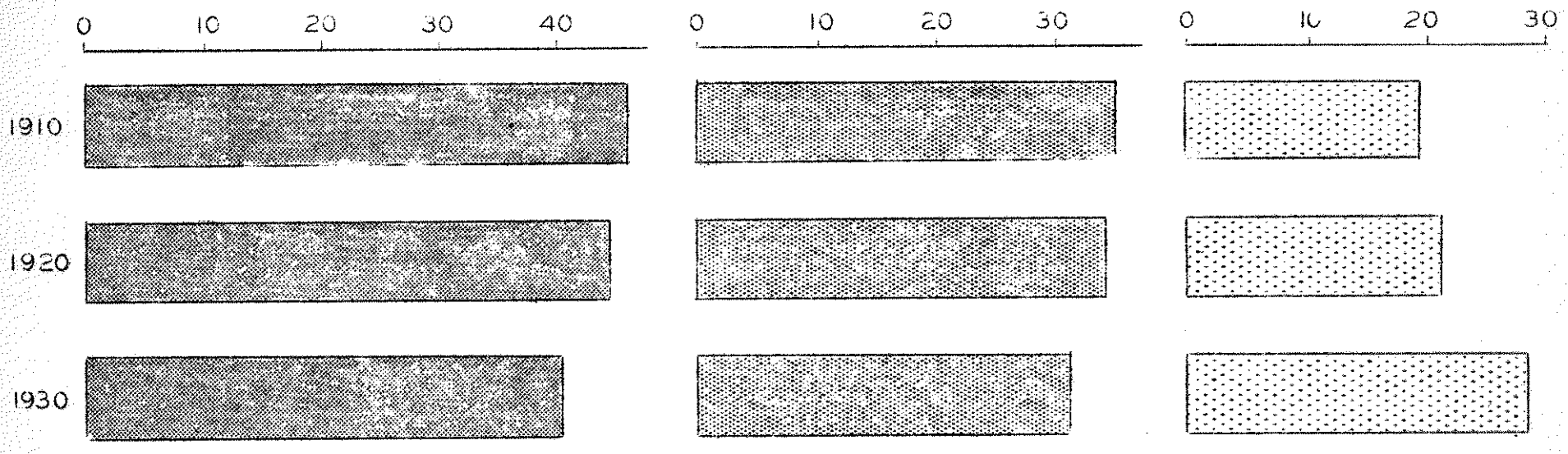
APPANOOSE COUNTY

FIG. 5

PER CENT DISTRIBUTION OF POPULATION BY BROAD AGE GROUPS

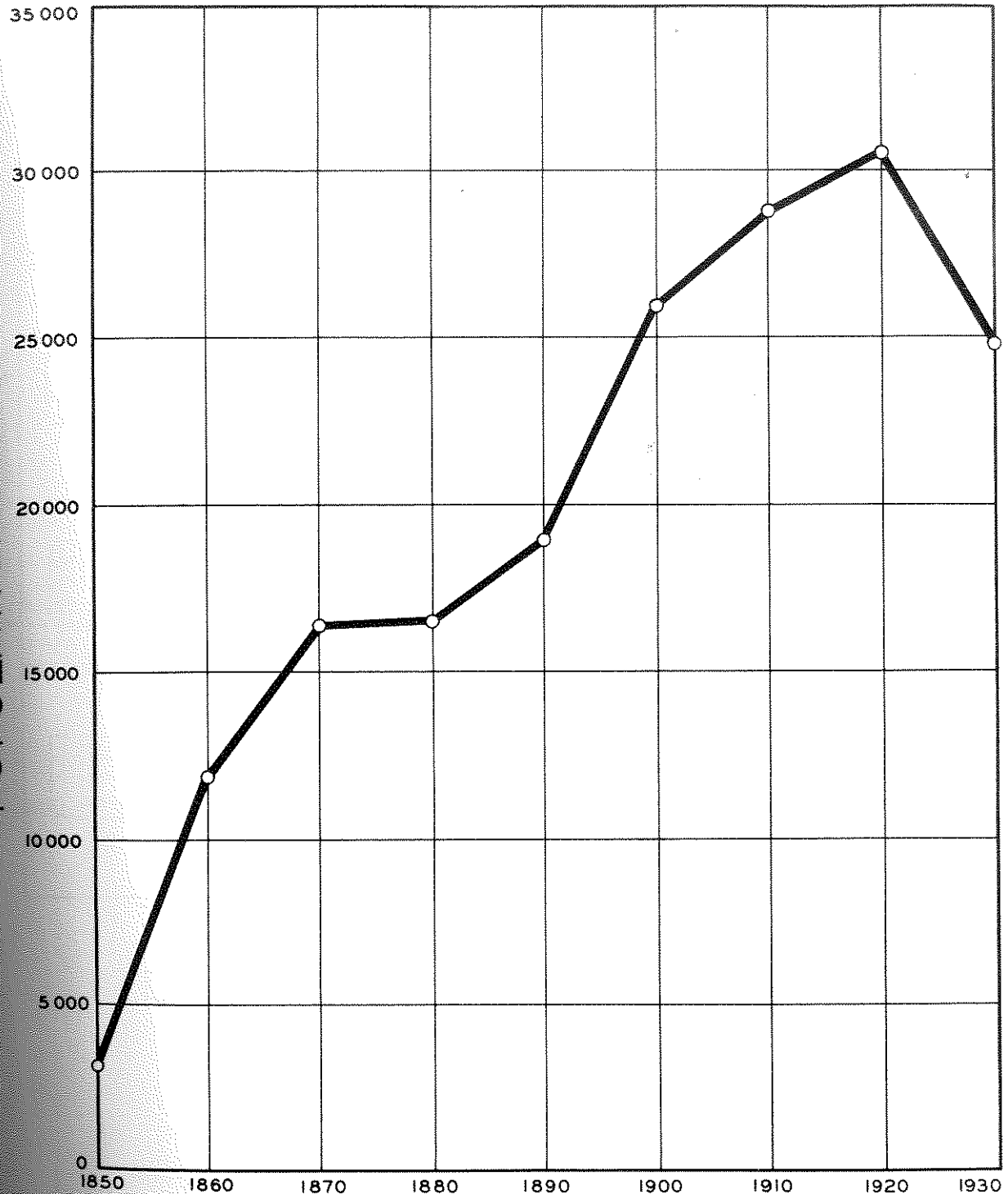
APPANOOSE COUNTY

1910 - 1930



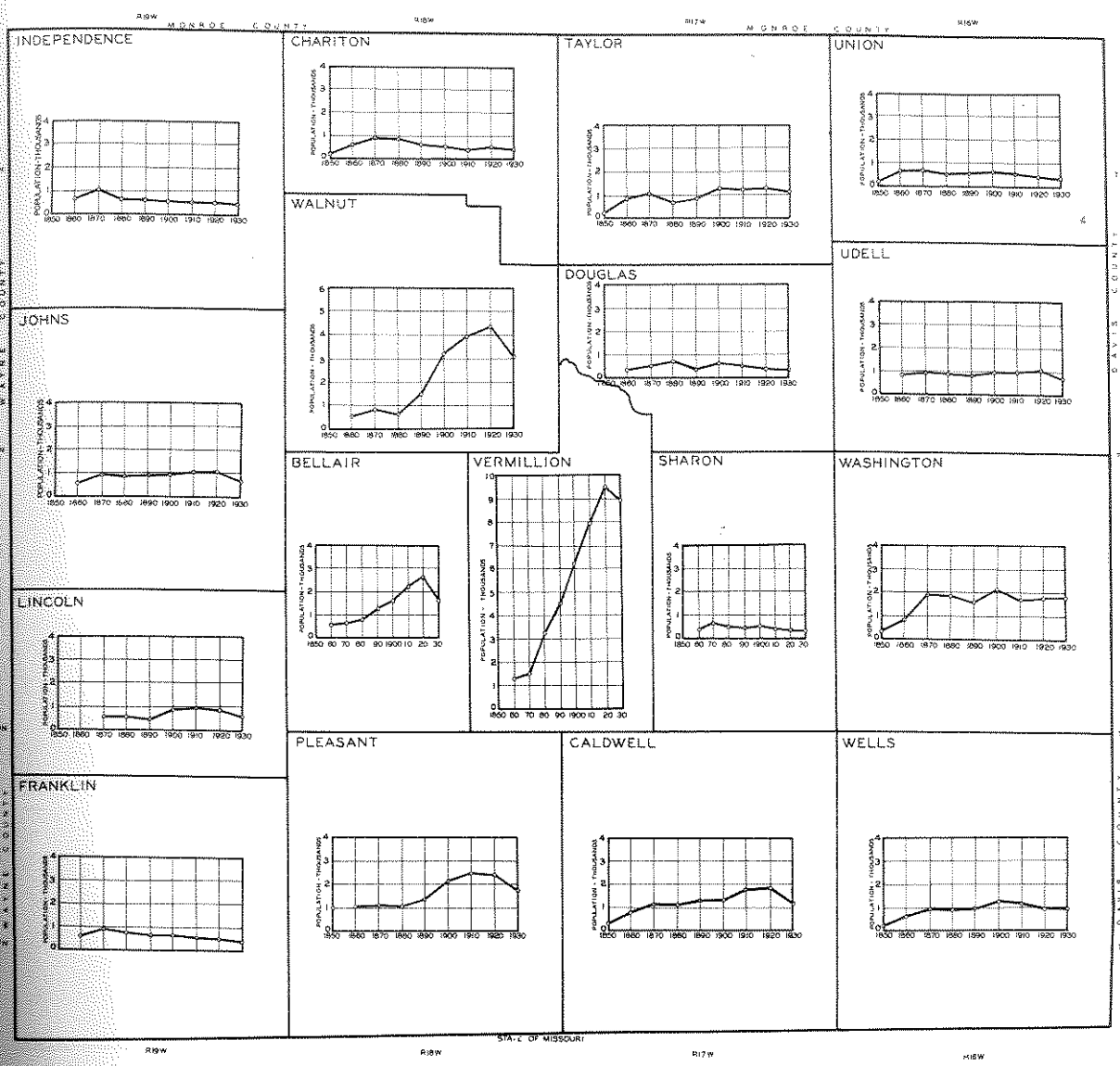
DATA FROM U.S. CENSUS

FIG. 6



POPULATION GROWTH
APPANOOSE COUNTY
1850 - 1930

FIG. 7



POPULATION GROWTH BY TOWNSHIPS 1850-1930

NOTE
VERMILLION TOWNSHIP CREATED ABOUT 1880-90. CENTER TWP. SAME AS CITY OF CENTERVILLE, WHICH IS SURROUNDED BY VERMILLION TOWNSHIP.

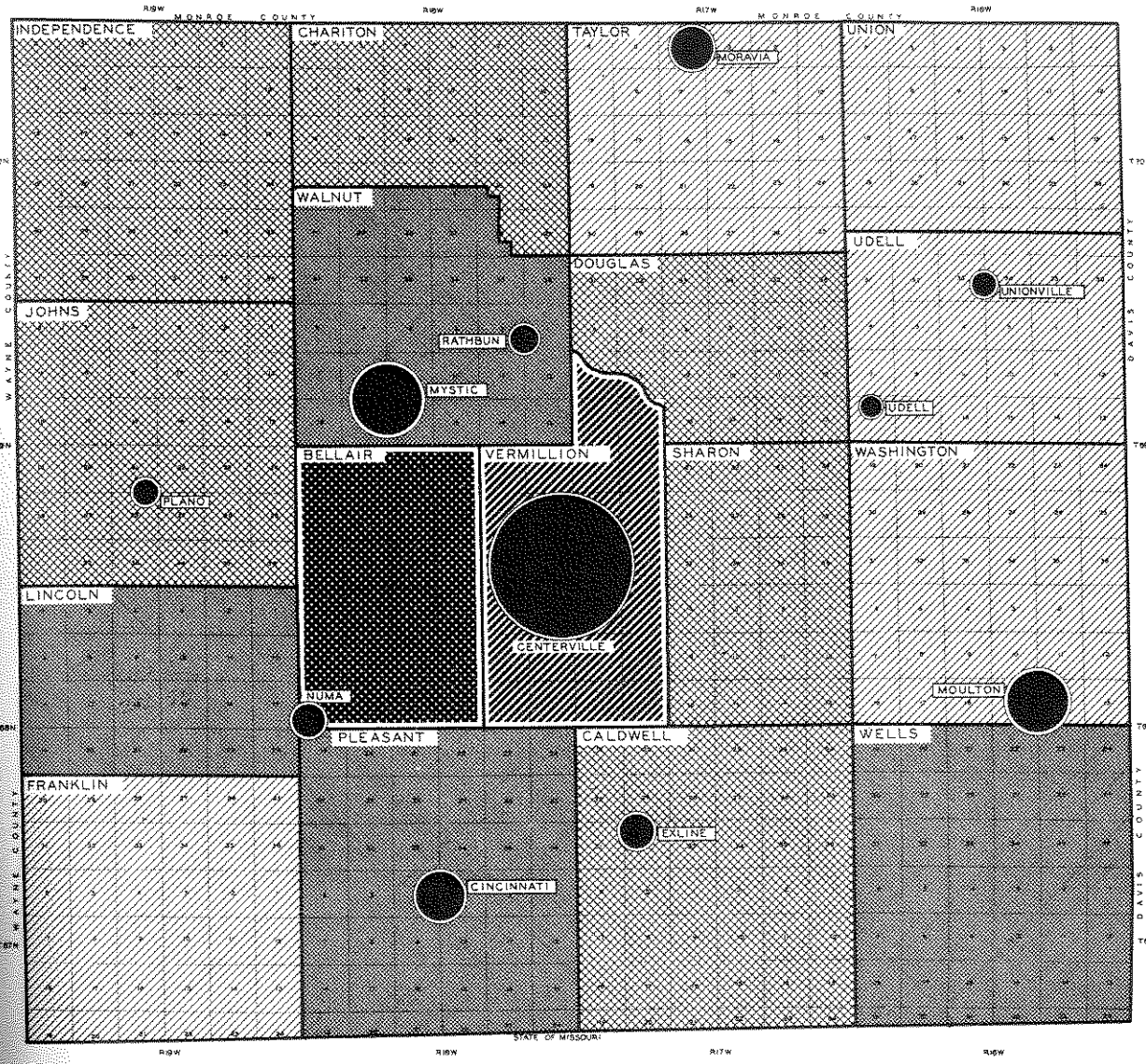
SCALE 1 MILE

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS, IOWA AGRICULTURAL EXPERIMENT STATION.

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

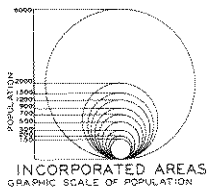
FIG. 8



POPULATION DENSITY
FOR UNINCORPORATED AREAS
1930

LEGEND

- 10 – 14.9 PERSONS PER SQUARE MILE
- 15 – 19.9 " " " "
- 20 – 29.9 " " " "
- 30 – 39.9 " " " "
- 40 – 59.9 " " " "



INCORPORATED AREAS
GRAPHIC SCALE OF POPULATION

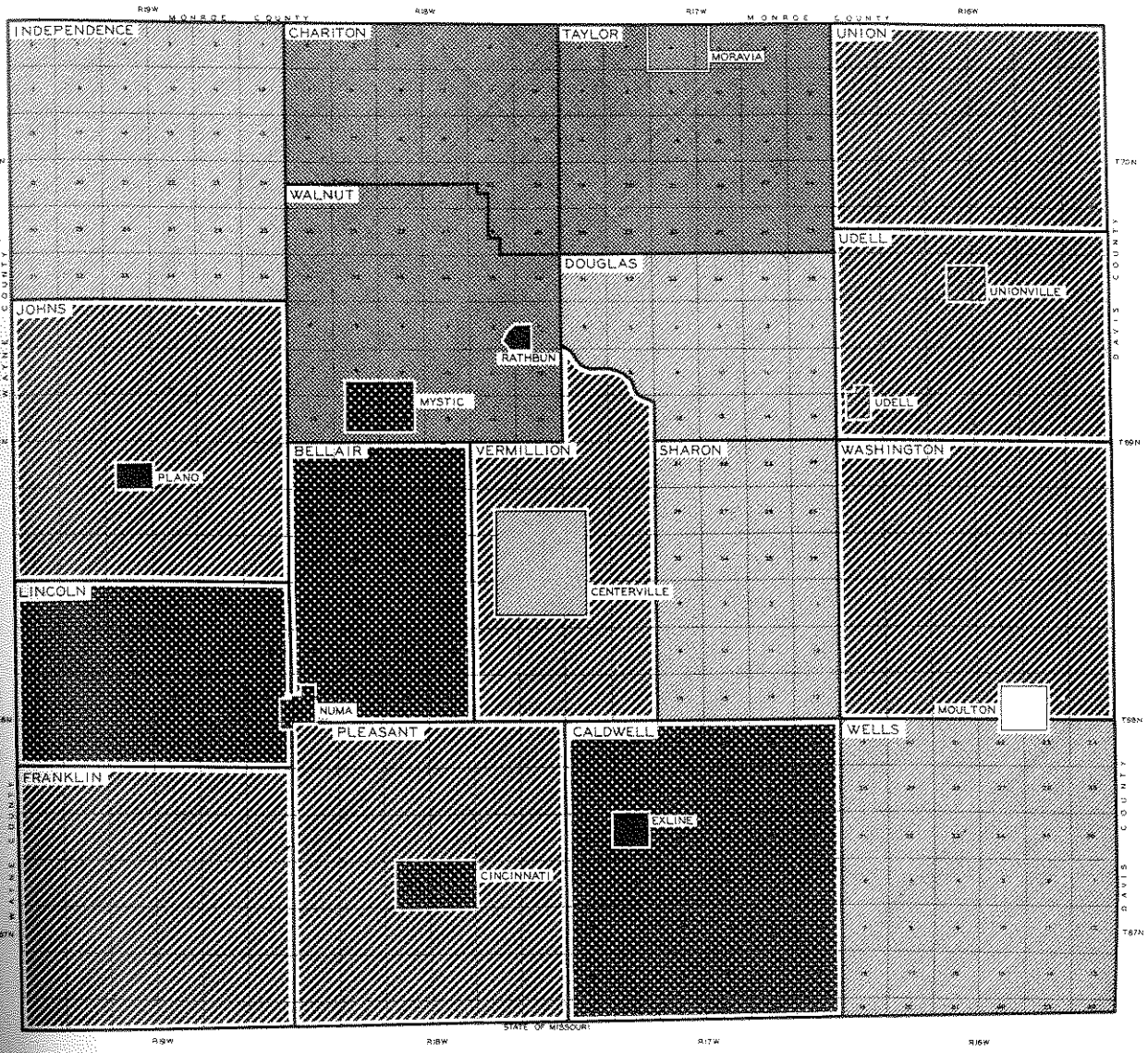
SCALE IN MILES

BASE MAP FROM TOPL. MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRI. EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 9



POPULATION DECLINE
BY PERCENT
1920-1930

LEGEND

- GAIN
- LOSS UNDER 10%
- LOSS 10-19%
- LOSS 20-29%
- LOSS 30-39%
- LOSS 40% & OVER

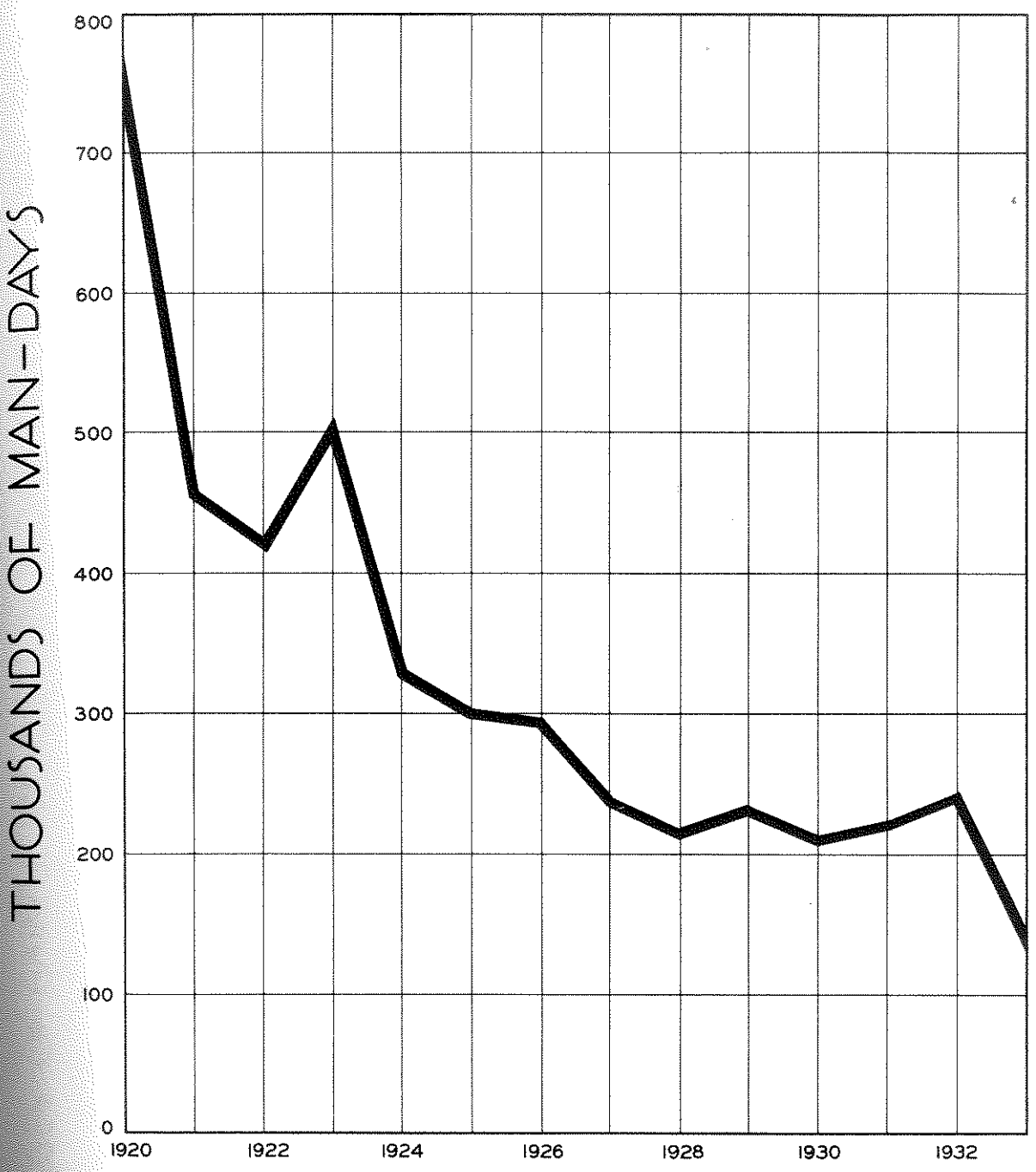
SCALE IN MILES

THIS MAP FROM FOR. MAP OF BUREAU OF DEPARTMENT OF AGRICULTURE, CULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 10



TOTAL NUMBER OF MAN-DAYS EMPLOYMENT IN COAL MINES

APPANOOSE COUNTY

1920 – 1933

DATA FROM U. S. CENSUS

FIG. 11

PERCENTAGES OF GAINFUL WORKERS IN BROAD OCCUPATIONAL GROUPS

APPANOOSE COUNTY
1930

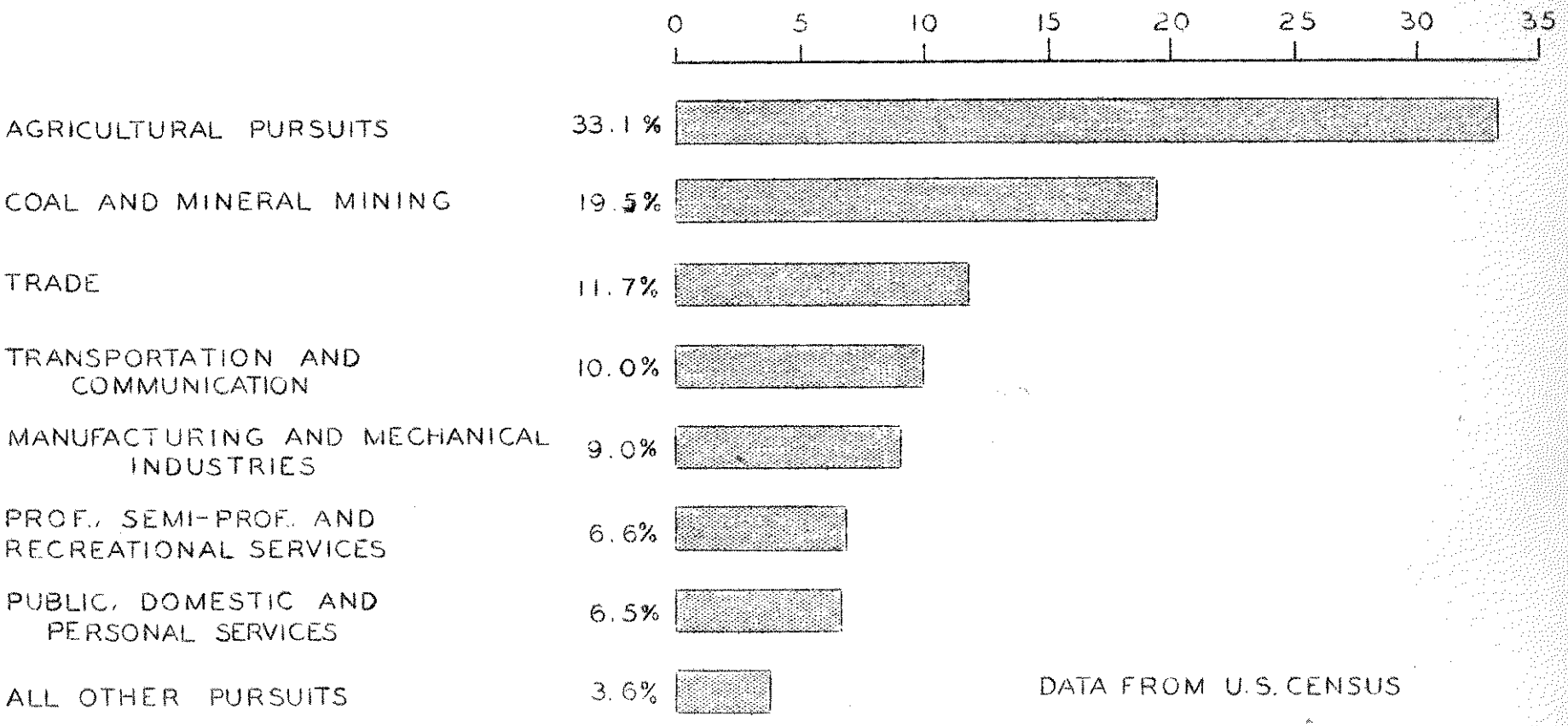


FIG 12

RATIO OF TAX LEVIES TO TAXABLE VALUATION

APPANOOSE COUNTY
1933-1934

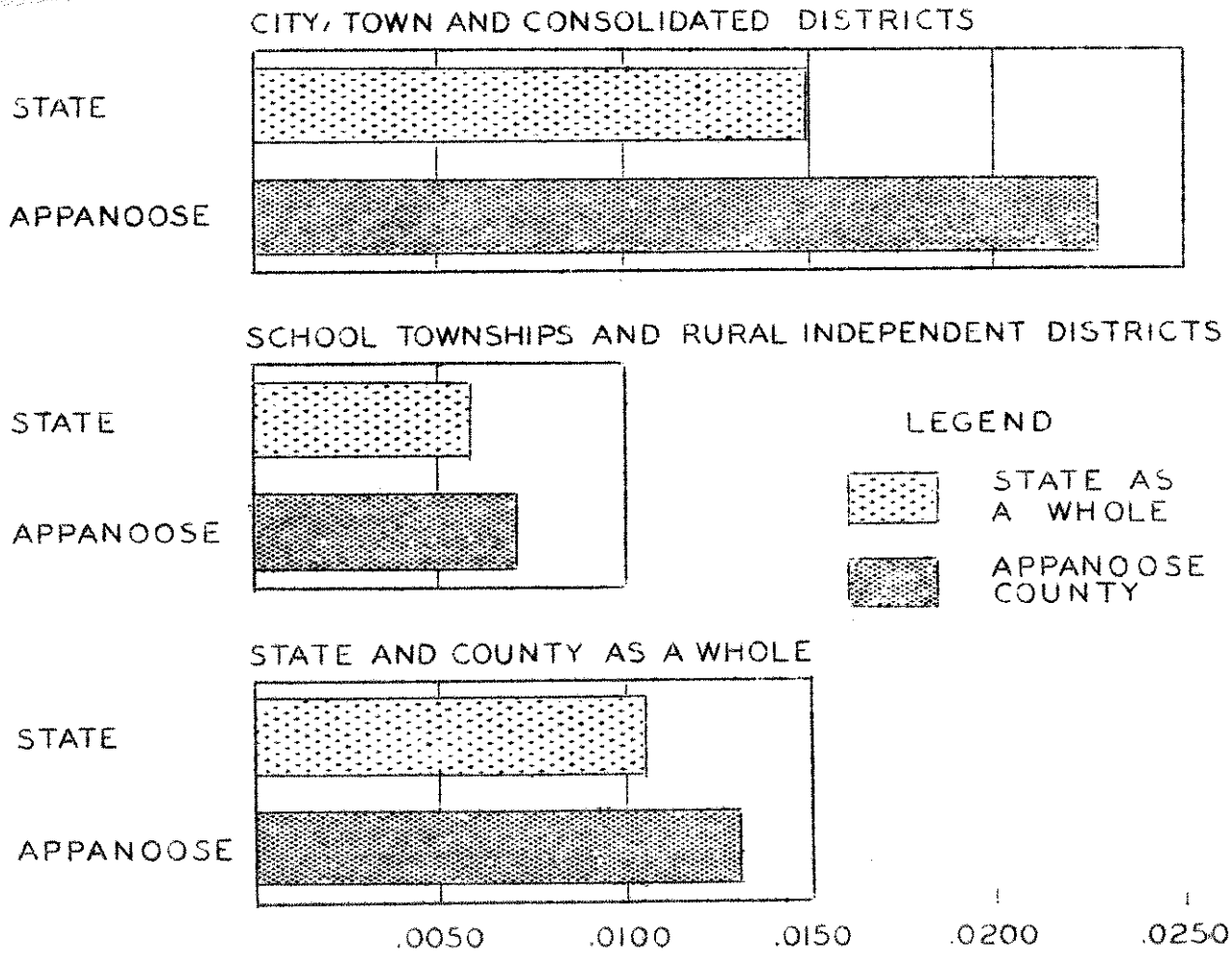


FIG. 13

AGRICULTURE AND INDUSTRY

Farming

Ninety-two per cent of the land in Appanoose County is in farms. Agriculture is the largest single industry in the county, producing approximately twice as much income as the second largest -- mining.

Of the total population, 35.7 per cent is listed in the United States Census for 1930 as living on farms. Among the gainful workers in broad occupational groups, 33.1 per cent were reported as receiving their income from agricultural pursuits. This latter figure is somewhat less than the state average.

Although the county is not as predominantly agricultural as many other parts of the state, it is readily apparent from the above figures that in any county planning program agriculture must receive adequate consideration.

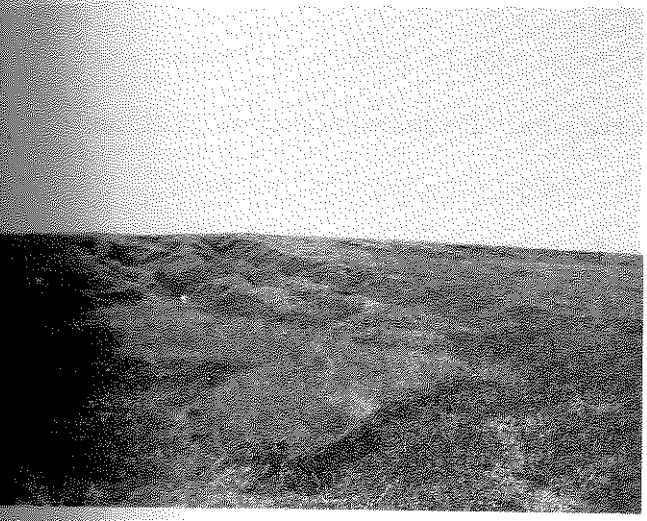
The type of agriculture followed in Appanoose County at the present time consists mainly of a system of general farming, including the growing of corn and small grain combined with the raising of livestock.

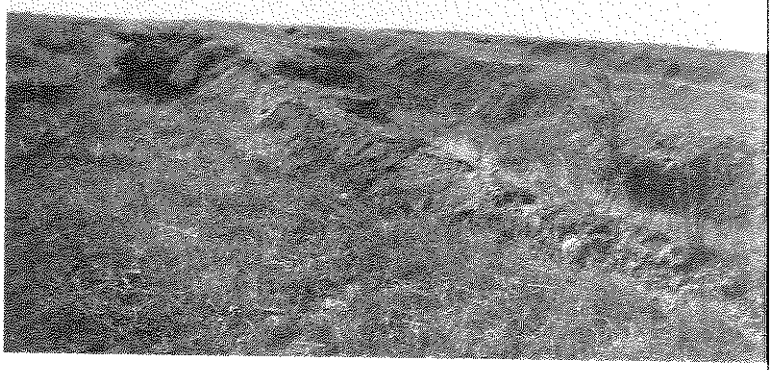
Small and part time enterprises are considerably more prevalent than in most parts of the state as a whole. About 21.8 per cent of all farms in Appanoose County have less than 50 acres whereas the comparable average for Iowa is 12.3; and 41.8 per cent of the farms have less than 100 acres as against 17.1 per cent for the state. The Agricultural Census of 1935 shows a further decrease in the average acreage of the farms in the county from 142 to 138.8.

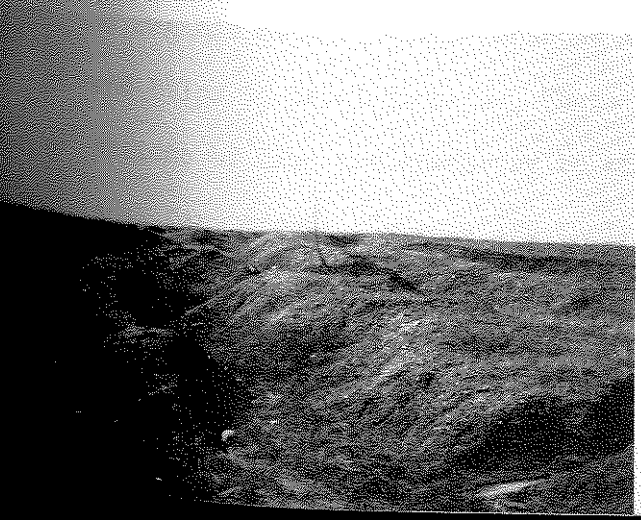
EROSION

To check completely all erosion is not humanly possible. However, by alternative uses of land it is possible either to retard or to speed up the washing away of top soil.

On the opposite page are shown several views of Appanoose County land where unchecked erosion has resulted in serious gullying and destruction of affected areas for farming purposes. This erosion will not automatically cease when it has completed its damage on these areas, but will continue its depradations on the surrounding good soil unless effective measures are adopted to control it.







Since more than half the soils of the county are of Shelby and Lindley types, both of drift origin and very erosive, it would appear that more intensive farming is inadvisable from the standpoint of conservation.

It is not the purpose of this study to make a detailed plan for the use of soils in Appanoose County. Such an undertaking would have to be more in the nature of a case study, in which ideal uses would be shaped by the immediate economic needs of the individual. (Refer back to Fig. 4.)

However, planning to conserve the land resources is of more general nature and can be given detailed consideration by a planning agency.

Much of the top soil in the county has already been washed away and gullying is severe. Many of these soils should be planted to permanent pasture or timber, especially where the slopes are greater than ten per cent or where they have been severely eroded. On other, less steep areas, still useful for agricultural purposes, erosion may be controlled by the use of contour farming, strip cropping and a rotation of corn, small grain, hay or pasture, allowing the latter to remain for several years. In some cases terraces may be found useful, especially to aid in the control of gullies.

On the cultivated areas, the Shelby soils require for greater productivity first of all the liberal incorporation of organic matter. Farm manures, if available, serve this purpose. If they are not available, then leguminous crops should be used as green manures in order to build up the content of organic matter, which enhances the ability of the soil to absorb moisture and helps to check erosion. These soil types are acid in reaction and additions of lime are necessary to bring about increases in the yields of general farm crops. Cooperative quarrying, crushing and distributing of lime might be developed to great advantage in Appanoose County. The application

PASTURE AND WOODLAND

Unspoiled by cultivation, this rolling tract shows how erosion may be prevented on sloping land by the use of grass and tree crops. While forestation and grazing are not economically possible everywhere, they are advisable for the more steeply sloped and erosive areas in Appanoose County.

of phosphate fertilizers is very desirable on these soils, and tests of superphosphates are recommended.

The Lindley soils are rough, drainage is excessive, and erosion is severe. Generally these soils are unsuited for farming; only a small part should be used. The Lindley types are natural forest soils and are adapted more for this purpose. They support a rather dense growth of trees such as oak, elm, hickory, butternut and basswood, with an undergrowth of hazel brush, buck brush, blackberry, scrub oak and thorn apple. The steeper slopes undoubtedly should be left in grass for pastures or should be used for the production of timber. When cultivated, much of the Lindley loam is subject to serious erosion. Where it is necessary to cultivate the Lindley soils, liberal applications of farm manure should be made or leguminous crops turned under for green manures, both to build up the organic matter content. These soils are acid in reaction and the application of lime is necessary for the best growth of leguminous crops. They are also low in phosphorus and applications of this fertilizer will be found beneficial.

Grundy silt loam covers one-fourth the area of the county. It is found on the level uplands, ridges, and flat divides between the soils adjacent to the drainage ways. It is generally not erosive and can stand intensive cropping without great danger. It needs protection, however, from sheet erosion and gullying when the slopes approach three to five per cent and when erosion on adjoining types encroaches upon its level areas. Terracing in some cases may be found to be an effective control measure.

The Putnam and Edina soils are very much like the Grundy. They are loessial soils and can stand heavy cropping without great danger of erosion. The recommended crop rotations will in most cases check erosion.

The Wabash and Waukesha soils are bottomland types. There is no danger

of erosion, and they can be cropped heavily. Care need be taken only to obtain good drainage in order to get the highest yields.

Much of the erosion can be controlled in Appanoose County by proper cultural and tillage practices, the method to be used depending upon the soil type, the degree of slope and the present physical conditions (which are dependent to a large extent upon past management).

In general, slopes of twelve to fifteen per cent and over should be used for permanent pasture or woodland, the latter being preferred when erosion is more severe. When the slopes are from five to twelve per cent, agricultural crops can be grown in a three- to six-year rotation including one to four years (depending on the slope and the amount of erosion) of hay. On land of this slope, strip cropping and terracing may also be found to be of value. (See Fig. 15.)

When the slopes are less than five per cent, intensive agricultural crops can generally be grown without danger of erosion, provided a three- or four-year rotation -- including a hay or pasture crop -- is followed. When the erosion is found to be moderate to severe on the more level slopes, terracing, contour farming and strip cropping may be advisable.

Recommended Use of Farm Land

Comparisons between present and recommended uses of farm land for all Iowa, for southern Iowa, for Appanoose County and for a sample township (Bellair) in Appanoose County are made in Figures 16 and 17. Detailed recommendations for cropping practices to be followed on each of the soil types of the county are included in Table 3.

The percentages are to be taken as directional rather than absolute since the available data are not exactly comparable. The recommendations suggest what is believed to be the best use of the farm land in order

check erosion and maintain fertility.

Other conditions in the county contribute indirectly to a poor utilization of farm land; these include excessive debt burdens, a high percentage of tenant operated farms, and the existence of many small farms practicing a system of farming which is not adjusted to the size of farm. Adjustments for these conditions are more general in nature and apply to groups of counties and states. They are considered in detail in The Second Report, April, 1935, of the Iowa State Planning Board.

Private and Cooperative Enterprises

The individual who plans his work, developing his farm on an orderly basis with adequate measures for soil conservation, provision for family recreation and opportunity for the enjoyment of beauty, will find his labor neither wasted nor diverted to a useless hobby. He will find, rather, that order is economy and that --- over a period of years --- a conservation program acts definitely to his financial advantage.

Sometimes group activity is better and faster than individual effort. The formation of the Appanoose County Soil Conservation Association was a step in the right direction. Although at present inactive, there are reasons to believe that the need for such a body is not dead.

It is undoubtedly the nucleus from which might be developed a broader organization offering to the farmers even more services, such as cooperative farm and an intensive educational program assisted by the Agricultural Extension Service, Iowa State College, Smith-Hughes teachers and other agencies.

Cooperative nurseries, elevators, quarries, depots for the disbribution of seed and fertilizer, credit associations and educational facilities are

within the scope of such an organization. And though it may seem untimely to recommend aesthetic developments to people already burdened with the practical considerations of livelihood, there are vast possibilities for the enrichment of life through such activities as campaigns for farmstead beautification. At the meetings of community organizations, ideally attractive and efficient farmyard layouts might be shown and discussed, after which members could apply to their own farms the information thus gained.

Rural Zoning

Zoning for rural areas as a means of protecting correct use of the land has been undertaken in Wisconsin. Under the Wisconsin law, certain areas are designated as farming areas, recreation areas, and forest areas.

This zoning does not affect present use. However, in the future, land that is suited primarily to forest will not be opened up for settlement for farming purposes. It does not prevent land owners in farming areas from using their land for forest production, and it allows forest and recreation areas to exist concurrently.

While the need for zoning in Iowa is not so apparent at present, the time may come when this procedure would prove valuable to county planning agencies in preventing lands unsuited to cultivation, especially land that is at present in forests, from being broken up for cultivation.

Before Iowa counties can take advantage of zoning as an aid to planning, the passing of an enabling act by the state legislature will be necessary to permit them to do so. Several states have already passed this county zoning enabling act.

Table 3 - Recommended Use of Farm Land

in

Appanoose County

Soils:

Soil Types	Area	Topography	Rating	Acidity	Erosivity	Rotations
Bremer, S. L.	561	L	5	1.0	low	*½-6; ½-1
Calhoun, S. L.	1375	L	6	1.5	low	½-2; ½-4
Crawford, L.	172	RR	10	4.0	high	7
Clinton, S. L.	879	RR	6	2.0	high	7
Grundy, S. L.	71743	R	1	1.3	med. high	½-4; ¼-9; ¼-11
Lindley, L.	30534	RR	9	2.5	high	7
Putnam, S. L.	19671	R	6	1.5	med. high	½-4; ½-9; ¼-11
Shelby, L.	94951	RR	6	2.0	high	¾-7; ¼-4
Wabash, S. L.	10254	L	6	2.0	low	½-3; ½-7
Wabash, L.	11122	L	8	1.5	low	7
Wabash Silty Clay Loam	13327	L	8	2.0	low	½-3; ½-7
Marion, S. L.	3439	U	8	4.0	low med.	½-4; ¼-7
Edina, S. L.	6142	L	4	2.0	low	½-4; ¼-9; ¼-11
Grundy Silty Clay Loam	123	L	1	1.0	low	½-4; ¼-9; ¼-11
Waukesha Loam	516	U	1	2.0	low med.	1

Note: Soils are rated from 1 to 10, number 1 being the best. Acidity is calculated in terms of limestone requirements per acre; Under topography L refers to level; RR rough to rolling; R rolling; U- Undulating.

*Fraction refers in each case to that part of total area for which each rotation is recommended. Number after dash designates rotation (See table 4--Rotations).

Table 4 - Rotations

Rotation Number :	Crops				
1	Corn	Corn	Small Grain	Legume Hay	
2	Corn	Small Grain	Legume Hay	Mixed Hay	Rotation pasture
3	Corn	Corn	Oats	Rotation pasture	
4	Corn	Oats	Mixed Hay	Winter Wheat	Clover
6	Corn	Corn	Small Grain		
7	Permanent Pasture and Forest Cover				
9	Corn	Soybeans	Winter Wheat	Mixed Hay	Rot. Pasture Rot. Pasture
11 (c)	Corn	Soybeans	Oats	Sweet Clover	

Mining

The first coal mine in Appanoose County was opened in 1857 on Little Walnut Creek, about a mile and a half north of the town of Mystic. As the "Mystic seam" proved to be easily worked, a large number of mines were opened in the region. The first large mine was started in 1858; connected by switching facilities with a railroad in 1881 it became a shipping mine. The operations in the Mystic district were mostly of local character until the coming of the Chicago, Milwaukee and St. Paul railroad in 1887, after which mining on a commercial scale began.

The peak of mining operations was reached during war years. There has been practically a stabilized production since 1929. (See Fig. 21.)

Limestone is available (see also page 2) with reasonable distribution in the county, and additional quarries may be opened to serve a need for a better distribution and reduce the cost of transportation.

Business and Industry

Manufacturing industries have never been highly developed in Appanoose County. In 1929 the county reported about one-fourth of one per cent of the total manufacturing for the state.

In 1929 Appanoose County reported 32 wholesale establishments with net sales aggregating about four-tenths of one per cent of the state total. This wholesale trade is confined very generally to Appanoose County, although in the foods group one or two establishments have been able to extend their territories into adjacent counties in Iowa and a considerable section of northern Missouri.

The coal industry has already been mentioned above, but it is no doubt worth while to touch briefly upon its economic aspects.

Appanoose County has long been one of the leading Iowa counties in coal production, and the economic position of this industry has had an important influence upon business conditions in the county. The chart of coal production in Appanoose County and the state of Iowa shows that the county has produced approximately 15 per cent of the state total each year since 1900. There has been no evidence of marked deviation from this relationship. As has been noted, however, the economic importance of Iowa coal production has been declining very generally during the last 20 years. Iowa coal mines apparently employ fewer than one-third as many persons now as in the days preceding the World War.

Industrial Opportunities

The presence in Appanoose County of good quality coal reserves makes it a more likely location for industrial plants using a large quantity of coal than for those in which fuel costs are not an important item.

Railroad facilities are good and the highway system is well developed. A number of good factory sites are available, and there are one or two unused buildings which could be adapted to most types of manufacturing. There is also a large supply of local labor qualified for employment. The communities are willing to cooperate in the development of new enterprises which show promise of success.

The county is underlain with good deposits of gypsum. These deposits were worked for a number of years, but difficulties in mining apparently caused the abandonment of the project. The company which had charge of these operations is doubtful of the prospect for future development.

In conclusion, it may be said that Appanoose County in general and the city of Centerville in particular, have never had highly developed industrial or commercial interests. With the exception of agriculture, mining has always

provided the chief source of income. If coal production can be expanded through the acquisition of additional markets, there appears to be a sound base for the expansion of both wholesale trade and manufacturing. The chief resources of the county, however, are dominantly of an agricultural and mineral character.

Soybean Products

A comparatively new industry in Centerville which processes farm products is the Standard Soybean Mills. This plant crushes soybeans to produce soybean oil and soybean oil meal. It is well located from the standpoint of raw materials being in the midst of the area of highest concentration of soybeans in Iowa. During the last two years, however, this plant has found it possible to operate at only about one-half capacity. Recent adverse growing conditions have increased the demand for seed and so raised the price of beans that plant operations have been curtailed. There is no reason to expect a continuance of these conditions. One disadvantage of the location of this plant is that it does not have milling-in-transit rates.

The market for soybean oil is in three industries -- soaps, foods, and the drying oils industries. The price it commands is affected by the supply and its interchangeability with the other oils consumed in those industries. A limited supply may be entirely absorbed in the drying oil industries at a good price. Larger amounts going into foods receive lower prices, and oils going into the soap kettle command still lower prices.

The market for soybean meal is as a stock concentrate in prepared stock feed, glue, and special food preparations. It competes with linseed meal and cottonseed meal as a stock concentrate. As a glue material it competes with imported tapioca starch. If the local farm market were cultivated it should largely take care of the meal from the local mills. The price at which

the meal is disposed of may be the controlling factor in the margin of profit, for the meal represents eighty-five per cent of the bean.

The soybean oil mills are concentrated in Illinois, Indiana and Iowa. The Iowa plants are sufficiently close to the middle-western soap and paint factories to compete with other mills, and are also well located for the farm market for the meal.

With a return to normal in soybean prices this plant should be able to operate profitably.

Subsistence Farming in Appanoose County

Frequently mentioned as a possible supplementary occupation in conjunction with industry, is part-time or subsistence farming. Coal mining, the most important industry besides agriculture, lends itself rather well to such a combination.

Preliminary to any recommendation with regard to the further encouragement of subsistence farming in Appanoose County, the Iowa State Planning Board carried on a field survey of existing subsistence farming in Appanoose County. Schedules were taken on 216 farms.

To facilitate an analysis of these schedules, the following four groups (suggested by the federal census) are described:

1. Part-time farms are farms whose operators spent 150 days per year off the farm or reported another occupation, and the value of the products of which did not exceed $750.00.

2. Self-sufficing farms are farms upon which the total value of products used by the family was 50 per cent or more of the total value of all products of the farm.

3. Commercial Farms are farms the sales of any product or group of products of which represent 90 per cent or more of the total value of

products of the farm.

4. Garden Farms are farms of less than 3 acres, the value of the products of which is less than $250.00

(Note: It will be seen that the four groups are not mutually exclusive. For instance, a part-time farm might be self sufficing, etc.)

Nearly three-fourths or 71.8 per cent of those surveyed were home owners, and the average number of years of farm experience for all groups was 21.2 years. Most of them have spent more than 10 years on the farms they now occupy.

The commercial farmers show the highest total net income and the highest net income per acre and are less dependent upon supplementary employment than are the other groups.

Only 50 per cent of the farmers in the commercial group reported other occupations, compared with 74.6 per cent of the self sufficing group and 75.9 per cent of the garden farms group.

The data show that about three-fourths of the heads of the families on all subsistence farms are receiving a supplementary income of approximately $325.00 per year. Within the groups there is the rather wide variation from $12.00 to $1640.00 annually in the amount of income from outside employment.

Of the 216 subsistence farms studies, 160 or 74.1 per cent report incomes from outside employment. The other 25.9 per cent are classed as part-time farmers because they ordinarily have another occupation and are at present out of work due to the closing of mines. For convenience the occupations of subsistence farmers have been grouped in five general classes. (See Table 6.) Mining provided outside employment to the greatest number of the subsistence farmers, 123 to be exact, as compared with two who worked at white collar jobs. The average wage received by these 123 miners is $270.00.

Table 7 is a summary of the study made in the county.

The advisability of increasing the number of subsistence farms in Appanoose County depends largely upon the trend of business and industrial activity, and the possibility of developing new industries.

Unless business and industry show possibilities of picking up it would be wrong to encourage or sponsor the development of resettlement on subsistence farms. Without supplementary income, these subsistence farms can provide only very low standards of living.

On the other hand, with a growing, fairly prosperous industry, workers may find, in the development of part time farming enterprises, the means of taking up the slack during periods of lag.

It is probable that desirable locations for cooperative resettlement projects would be in regions like that of Mystic, where a subsistence homesteads development might prove of assistance to families of that city in dire need.

To insure the success of the project, all-weather roads should be provided so that the small mines in the vicinity would be able to market their coal throughout the year. Because the land is cheap and the off the farm income is likely to be low, tracts of 5 to 10 acres would be desirable for each family.

Costs should be minimized by cooperative enterprises; cooperative commutation, marketing, pasturing, purchasing and recreational facilities should be organized by the settlers.

There is a possibility of expanding certain types of special farms in Appanoose County. A large increase in the total acreage in pickles would be justified by existing packing facilities and would not jeopardize the market price. Pickle production is intensive and does not require large individual acreages or large capital outlays.

It might be found desirable to practice bee culture on such farms. Only about $50.00 is necessary to start an apiary of 5 colonies.

Poultry packing plants now in the county would provide adequate marketing facilities for the expansion of poultry production.

Table 5 - General Data on Subsistence Farming in Appanoose County

ITEMS	PART-TIME*	COMMERCIAL	SELF-SUFFICING	GARDEN HOMES	TOTAL
No. of Cases	20	24	118	54	216
No. years farming experience (Av.)	19.0	28.0	22.1	17.3	21.2
Occupancy--years on place (Av.)	12.0	17.7	11.1	12.7	12.3
Size of Acreage (Av.)	19.3	21.5	27.7	1.4	19.6
Home Conveniences Av. No. (Basis of 10)	3.6	3.2	2.2	2.6	2.6
INCOME					
Net income per farm	259.66	370.83	219.04	36.89	199.13
Net acreage income per acre	13.49	17.23	7.92	41.40	10.13
No. having supplementary income	19	12	88	41	160
Supplementary employment income (Av.)	572.21	241.39	252.19	396.46	326.35
No. having income from other sources	1	9	19	5	34
Income from other sources (Av.)	53.50	104.89	152.11	77.40	125.72
% Income from supplementary employment	71%	22.7%	43.6%	82.4%	52%
Total Net Income	805.94	389.84	431.60	365.08	460.66

* Note: All 216 of the farms analyzed are part-time or subsistence farms. The 20 cases listed here as PART-TIME happen not to fall into any of the other three classifications (commercial, self-sufficing or garden homes) in addition to being part-time farms as defined on page 23.

Table 6 - Income from Outside Employment of Subsistence Farmers in Appanoose County

(Income from Gainful Occupations Other Than Farming)

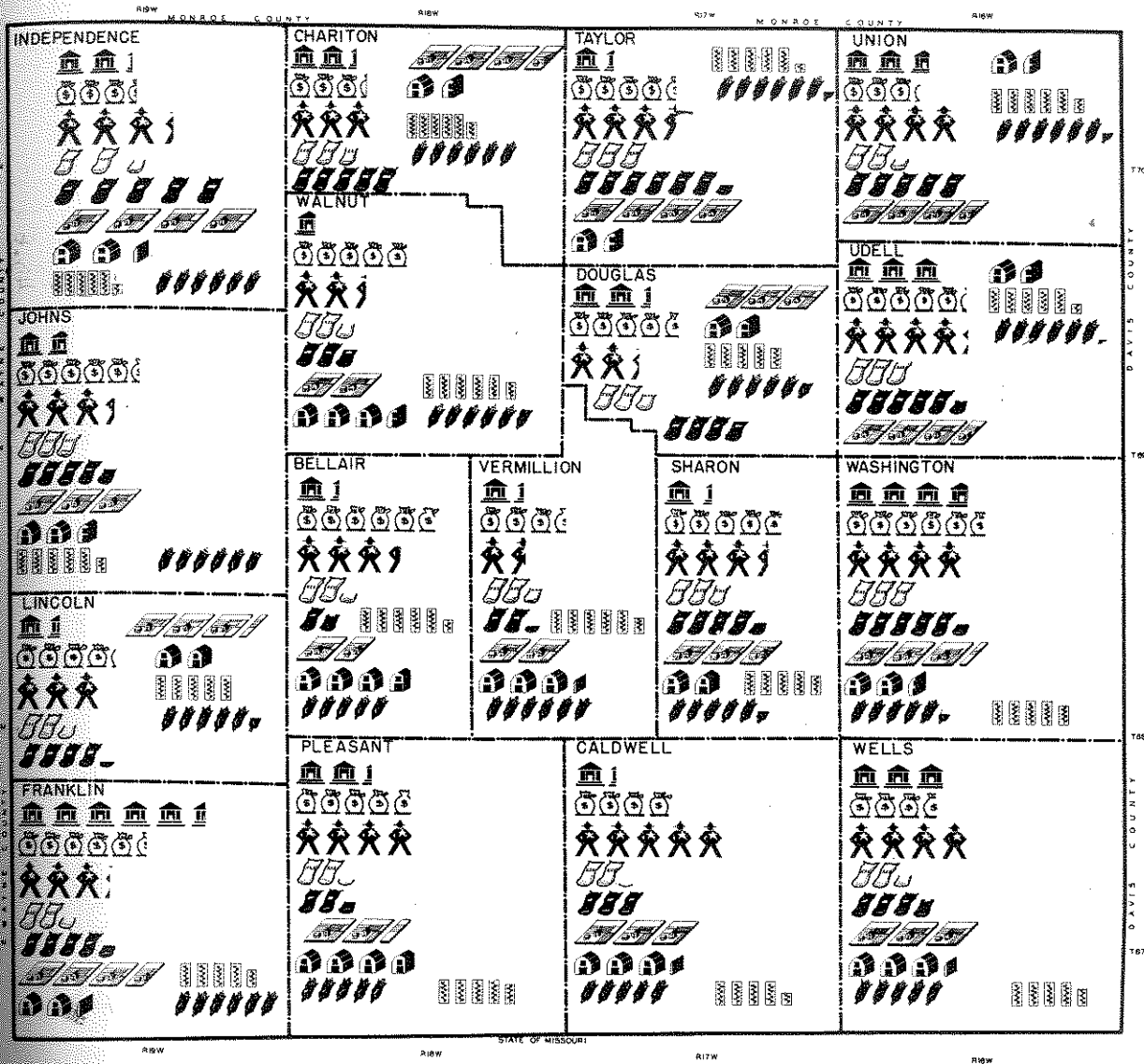
OCCUPATIONS	NUMBER OPERATORS	AVERAGE AGE	AVERAGE YEARLY INCOME
TOTAL GROUP	216	50	526.35
Business and Professional Work	9	54	517.50
White Collar Work	2	38	1070.00
Skilled Labor	15	45	647.33
Unskilled Labor	16	43	255.24
Mining	123	47	270.03
Unemployed and Relief Labor	18	57	220.00
No Other Gainful Occupation	37	60	

Table 7- Income and Expense Data for

Subsistence Farming in Appanoose County

Farm Expense and Income of Part-Time Farmers

		Less than 5 acres	5-9.9 acres	10-19.9 acres	20-29.9 acres	30-39.9 acres	40-79.9 acres	80-119.9 acres	120 & over	Total
1.	No. Cases	104	27	30	10	5	19	10	8	216
2.	No. acres (av.)	1.9	6.9	12.9	22.15	35.5	55.8	95.6	150.8	
3.	Income from Dairy Products (av.)	129.13	144.90	201.22	322.60	179.98	243.79	193.02	372.03	
4.	Income from Poultry (av.)	42.69	49.78	79.84	95.79	95.77	94.76	84.36	107.81	
5.	Income from Livestock (av.)	42.80	86.29	68.77	77.95	187.60	136.33	143.08	187.38	
6.	Total Gross Income from Acreage (av.)	165.93	259.99	313.29	444.92	463.25	474.86	420.48	667.21	
7.	Farm Operating Expense per farm (av.)*	59.82	78.81	80.74	90.51	172.00	104.13	89.50	125.56	
8.	Farm Operating Expense per acre (av)*	29.06	10.56	6.28	4.09	4.85	1.77	0.94	0.83	
9.	Total Net Income per farm (av.)	98.97	158.13	232.55	354.41	291.25	376.22	330.98	541.65	
10.	Total Net Income per acre (av.)	51.54	22.89	18.07	16.00	8.20	6.74	3.46	3.59	
11.	No. reporting Supp. Emp. Income	80	18	20	8	5	17	8	7	
12.	Supp. Employment Income (av.)	349.56	256.39	317.10	262.98	370.00	292.12	135.50	230.14	
13.	No. reporting Income from other sources	10	5	5	3	1	1	3	1	
14.	Income from Other Sources (av.)	82.20	359.20	105.40	114.00	53.50	50.00	35.67	46.00	
15.	Grand Total Net Income (av.)	375.76	395.57	461.52	598.99	671.95	640.22	450.08	748.48	
16.	No. horses (Total)	6	2	5	7	6	32	19	20	
17.	Age of head of Family(Av)	51.1	49.9	51.9	43.3	52.6	48.8	39.9	45.6	
18.	No. household Members (av.)	4.4	4.6	4.3	4.2	6.4	4.5	4.8	5.1	



AGRICULTURAL DATA

BY TOWNSHIPS – 1935

DATA FROM IOWA AGRICULTURAL EXPERIMENT STATION
AMES, IOWA

LEGEND		
CORPORATE OWNED LAND — EACH UNIT = 5%	FEED UNITS PER ACRE — EACH UNIT = 5 F.U./A	NUMBER OF FARMS — EACH UNIT = 50 FARMS
LAND VALUES-1930 — EACH UNIT = $10 PER ACRE	FEED UNITS PER FARM — EACH UNIT = 500 F.U./F	OAT YIELD — EACH UNIT = 25 BU./ACRE
1932 TAX DELINQUENCY — EACH UNIT = 10%	AVERAGE SIZE OF FARM — EACH UNIT = 50 ACRES	CORN YIELD — EACH UNIT = 25 BU./ACRE

SCALE 1 MILE

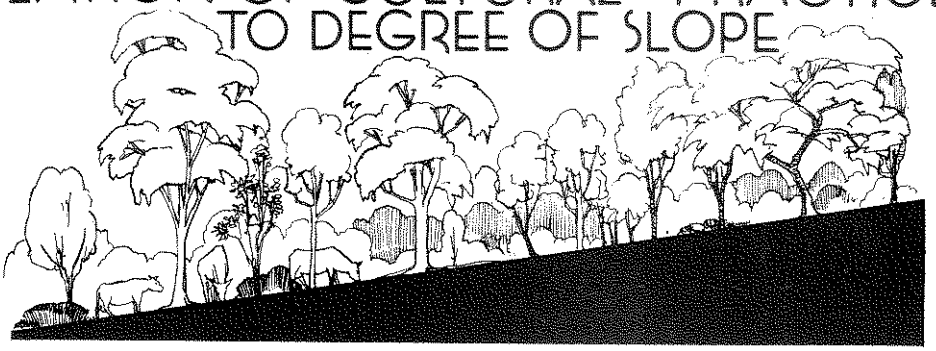
BASE MAP FROM SOIL MAP OF IOWA, U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 14

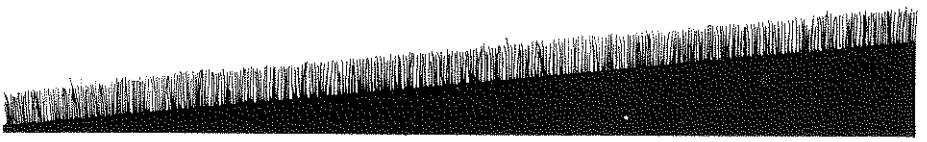
RELATION OF CULTURAL PRACTICES TO DEGREE OF SLOPE



15%

SLOPES OF 12-15 PER CENT

WOODLAND – OR PERMANENT PASTURE WHERE EROSION IS NOT SEVERE. STEEP AND HIGHLY EROSIVE LAND MUST NOT BE OVERGRAZED.



10%

SLOPES OF 5-12 PER CENT

AGRICULTURAL CROPPING IN 3- TO 6-YEAR ROTATIONS — INCLUDING 1 TO 4 YEARS OF HAY. STRIP CROPPING, CONTOUR FARMING AND TERRACING MAY BE OF VALUE IN SOME CASES.

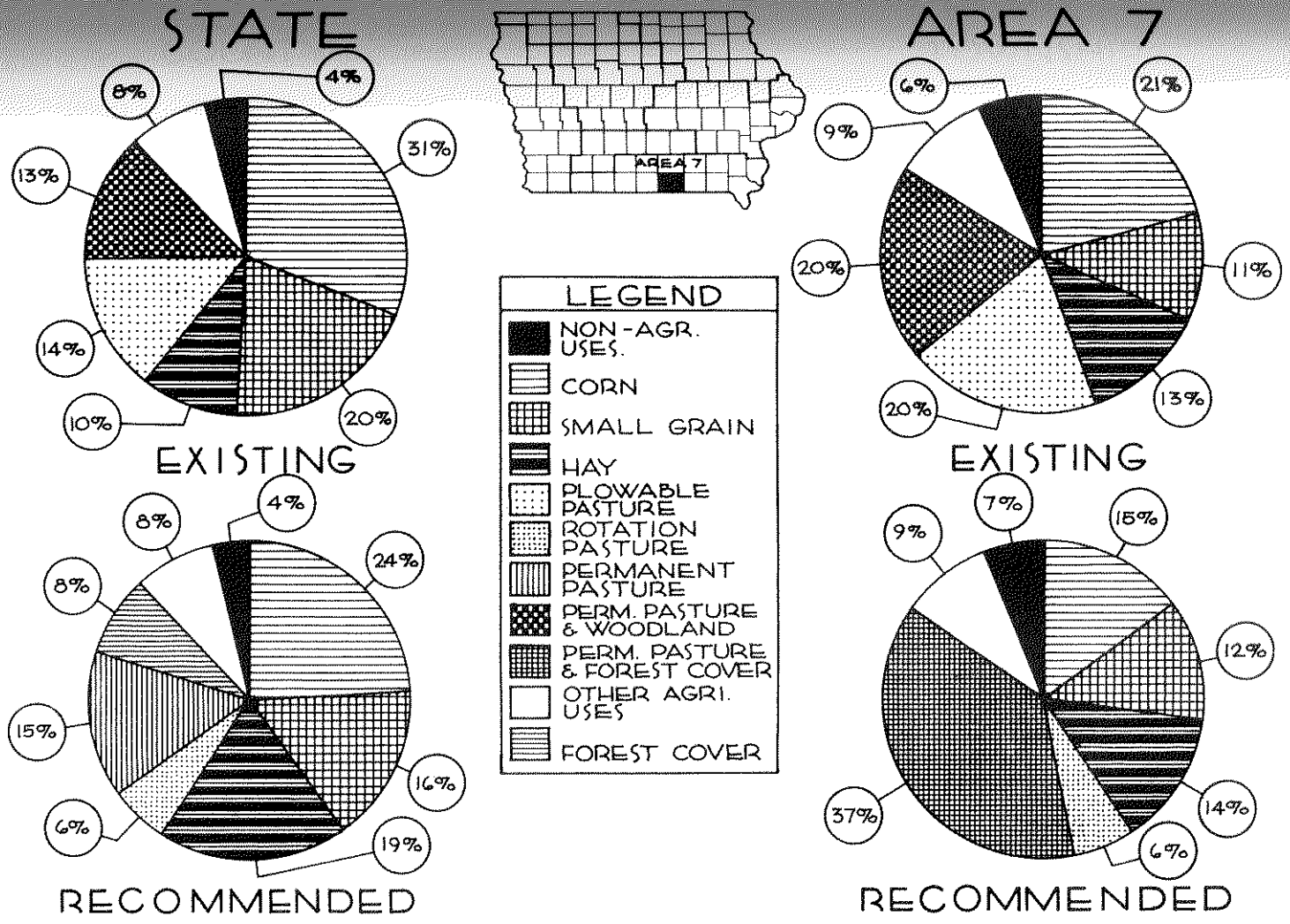
5%

SLOPES LESS THAN 5 PER CENT

INTENSIVE AGRICULTURAL CROPPING IN 3- OR 4-YEAR ROTATIONS – INCLUDING A HAY OR PASTURE CROP

NOTE: THESE PRACTICES APPLY IN GENERAL. SPECIAL CASES WILL REQUIRE ADJUSTMENTS AND VARIATIONS.

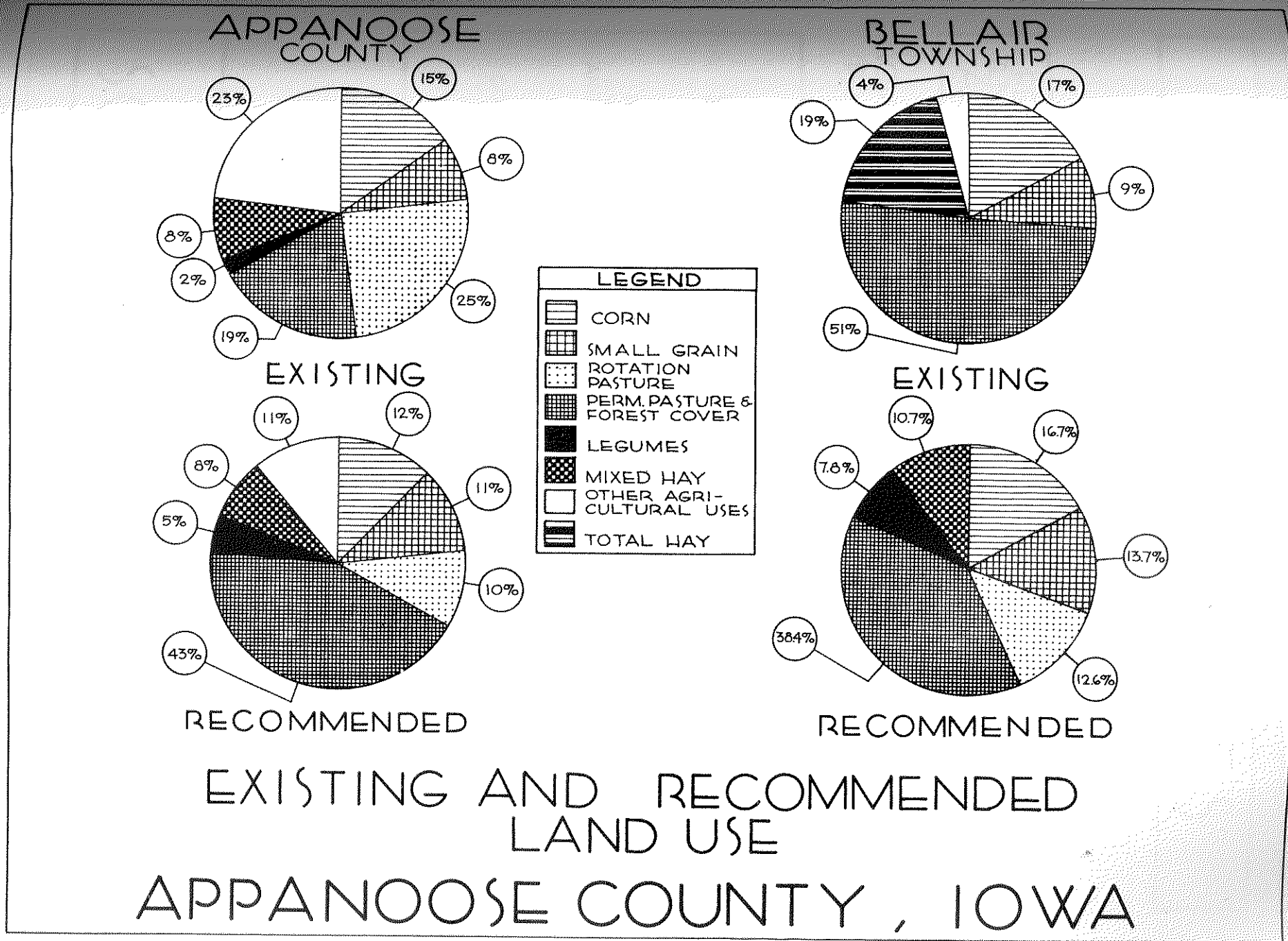
FIG. 15



EXISTING AND RECOMMENDED LAND USE

APPANOOSE COUNTY, IOWA

FIG. 16



EXISTING AND RECOMMENDED LAND USE

APPANOOSE COUNTY, IOWA

FIG. 17

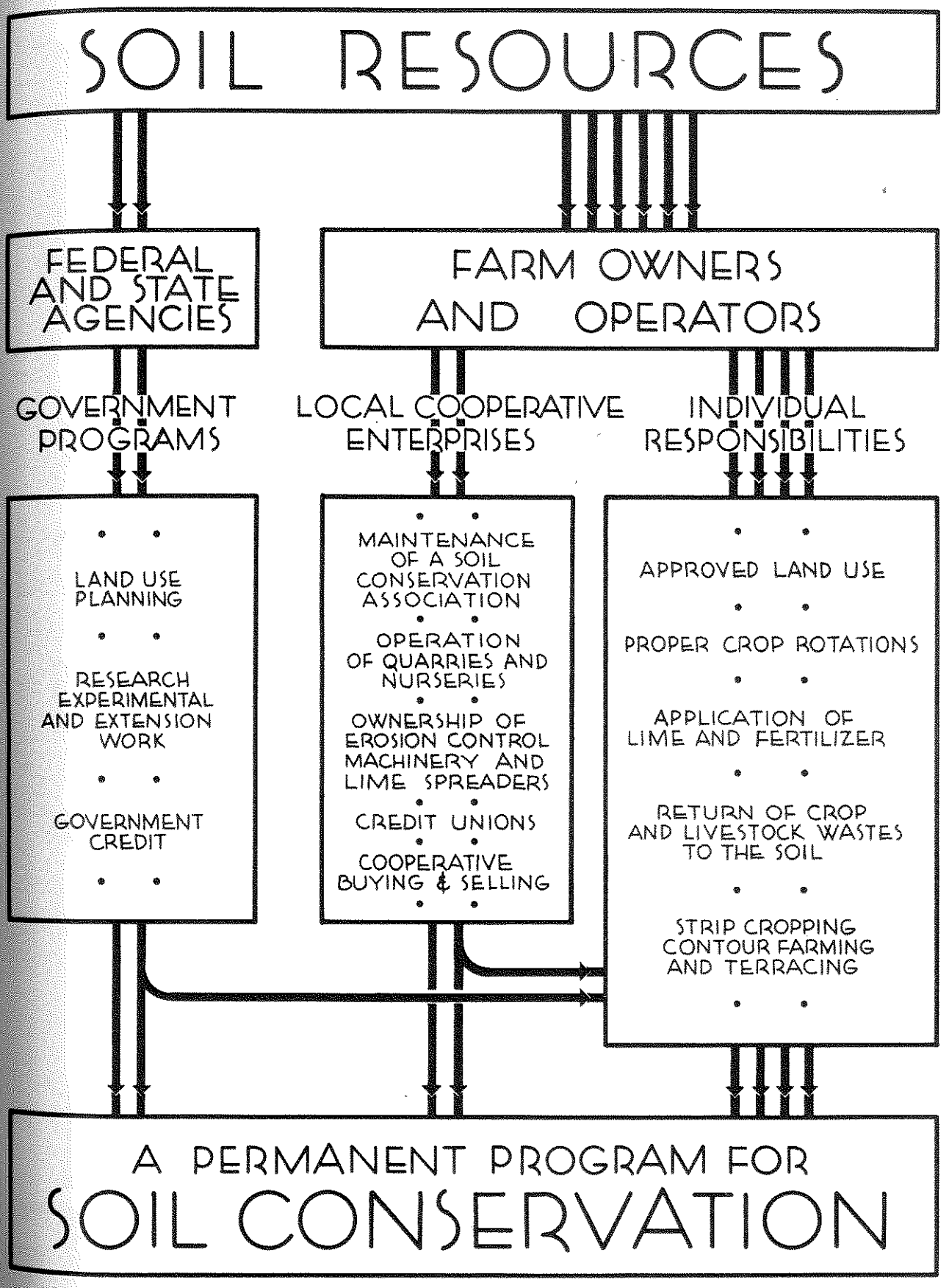
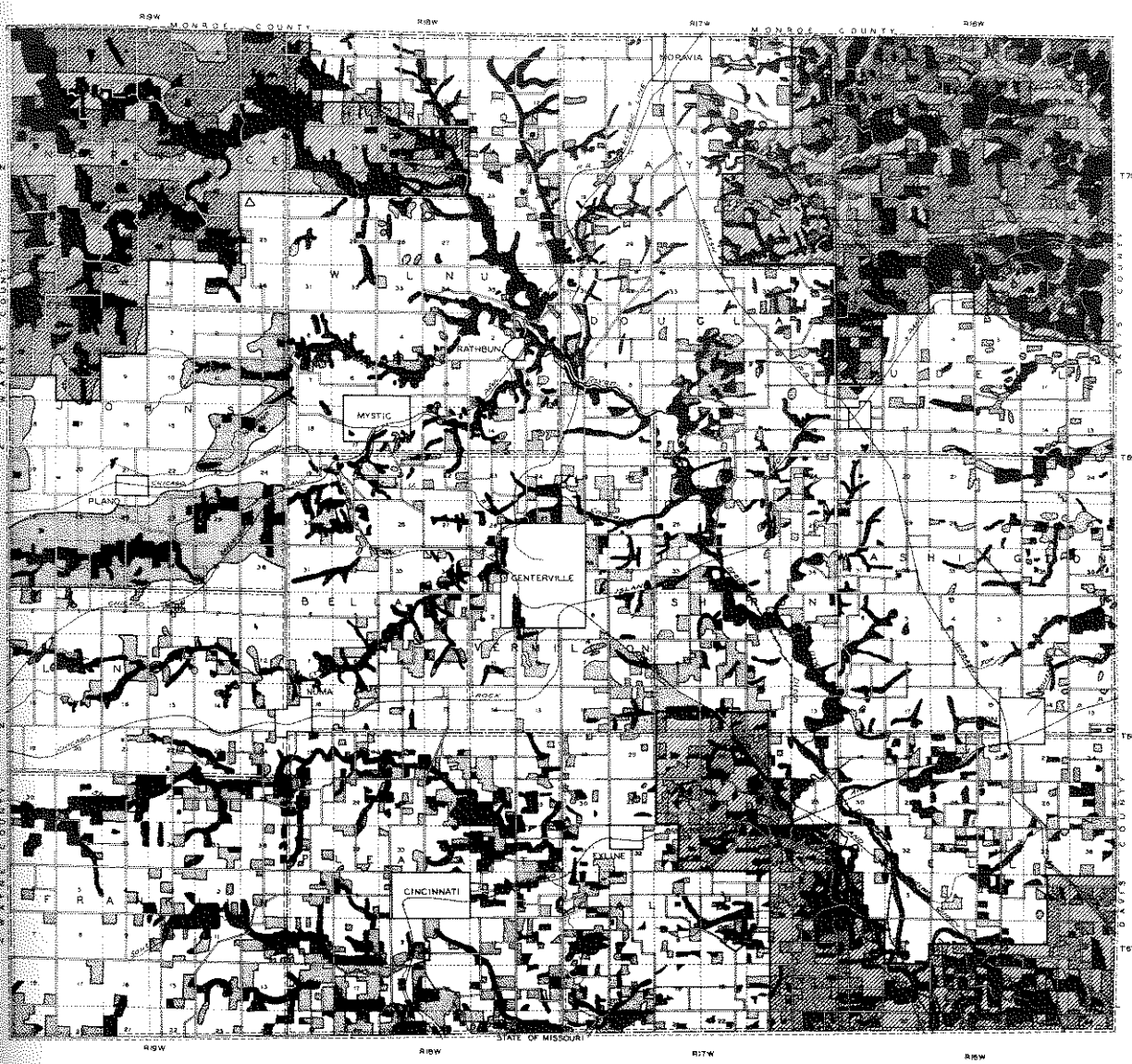

SOIL RESOURCES
FEDERAL AND STATE AGENCIES
FARM OWNERS AND OPERATORS
GOVERNMENT PROGRAMS
LOCAL COOPERATIVE ENTERPRISES
INDIVIDUAL RESPONSIBILITIES
LAND USE PLANNING
RESEARCH EXPERIMENTAL AND EXTENSION WORK
GOVERNMENT CREDIT
MAINTENANCE OF A SOIL CONSERVATION ASSOCIATION
OPERATION OF QUARRIES AND NURSERIES
OWNERSHIP OF EROSION CONTROL MACHINERY AND LIME SPREADERS
CREDIT UNIONS
COOPERATIVE BUYING & SELLING
APPROVED LAND USE
PROPER CROP ROTATIONS
APPLICATION OF LIME AND FERTILIZER
RETURN OF CROP AND LIVESTOCK WASTES TO THE SOIL
STRIP CROPPING CONTOUR FARMING AND TERRACING
A PERMANENT PROGRAM FOR
SOIL CONSERVATION

FIG. 18



EXISTING & POTENTIAL FOREST AREAS 1935

LEGEND

- EXISTING FOREST AREAS
- POTENTIAL FOREST AREAS
  INCLUDING: WOODLAND PASTURE, ERODED AREAS HEAVY BRUSH AREAS & SCATTERED BRUSH AREAS
- FOREST PURCHASE AREAS
  AREAS WITHIN WHICH LAND MAY BE PURCHASED FOR NATIONAL FORESTS.

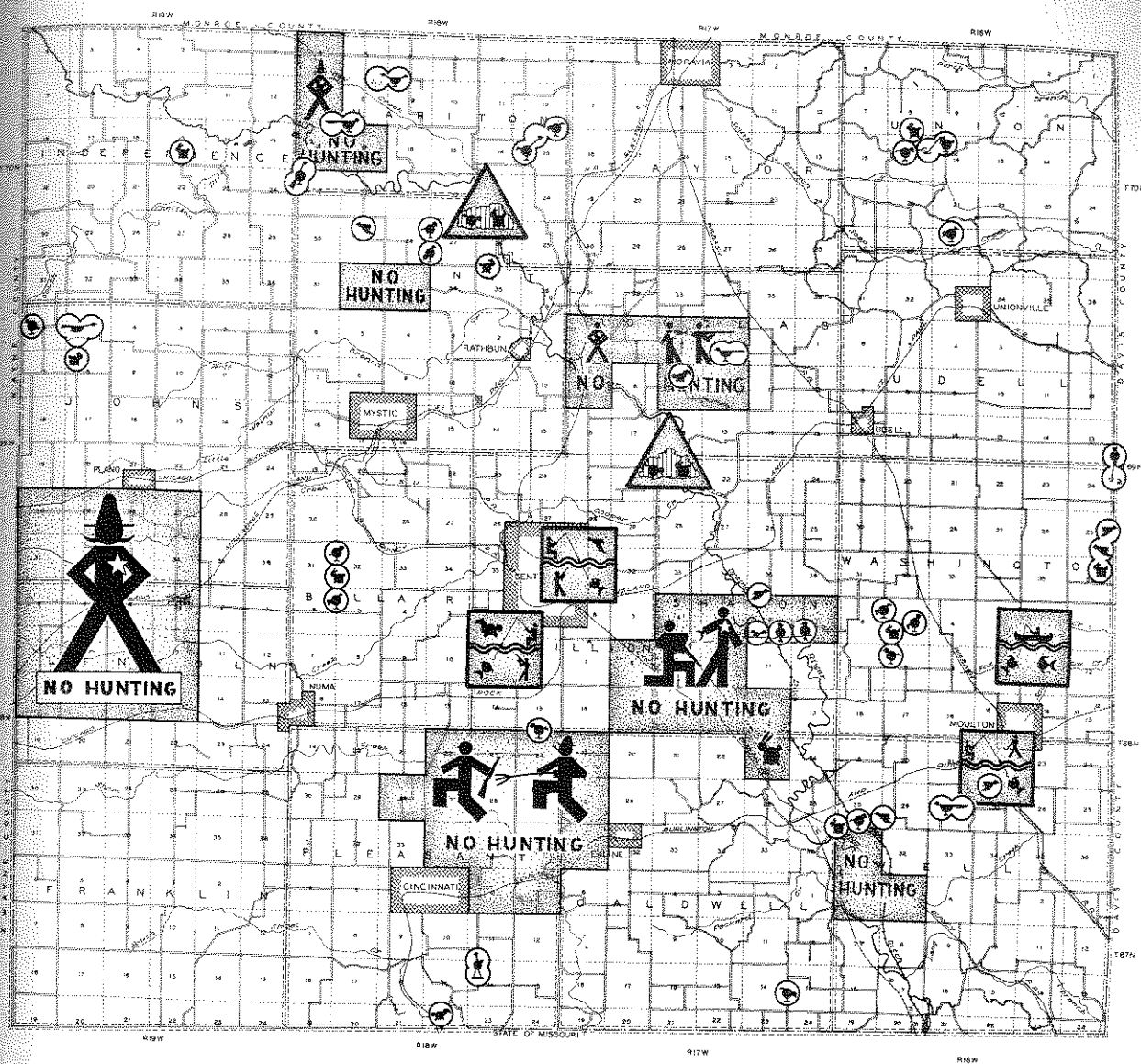
SCALE 1 MILE

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 19



CONSERVATION AREAS

EXISTING AND POTENTIAL AREAS FOR CONSERVATION AND RESTORATION OF WILD LIFE

1935

LEGEND

- UNUSED ROAD (POTENTIAL WILD LIFE NESTING AND PRODUCING AREA)
- EXISTING GAME MANAGEMENT AREA (UNDER AGREEMENT BETWEEN LAND OWNER AND CONSERVATION COMMISSION)
- RESERVOIR (POTENTIAL GENERAL RECREATION AREA)
- SLOUGH OR DRY LAKE (POTENTIAL UPLAND GAME NESTING AND PRODUCING AREA)

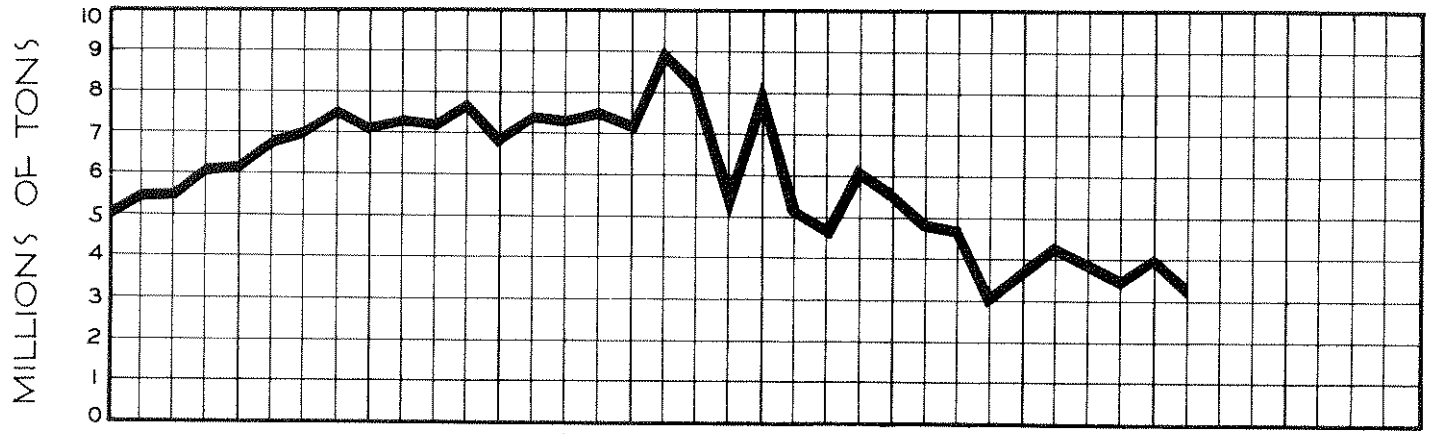
SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

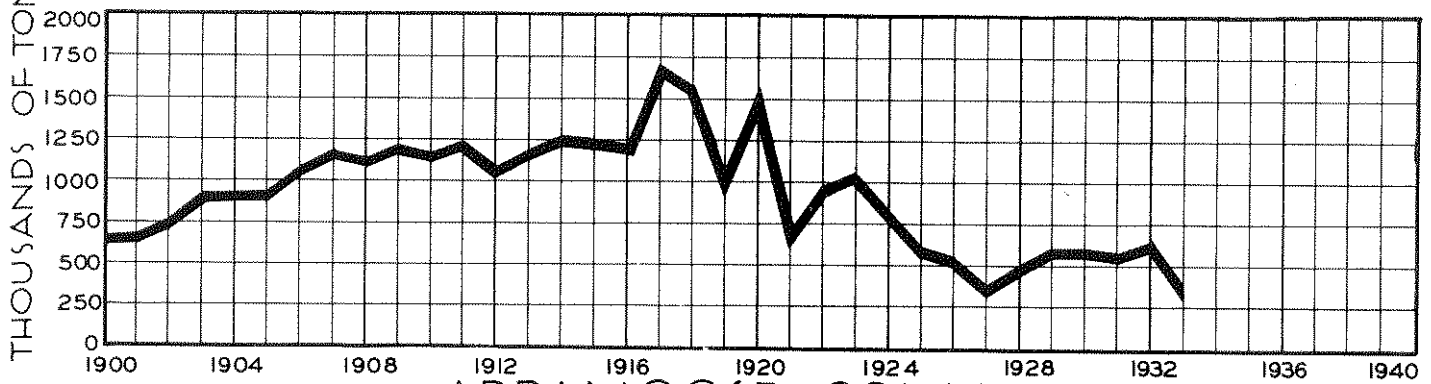
IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG.20



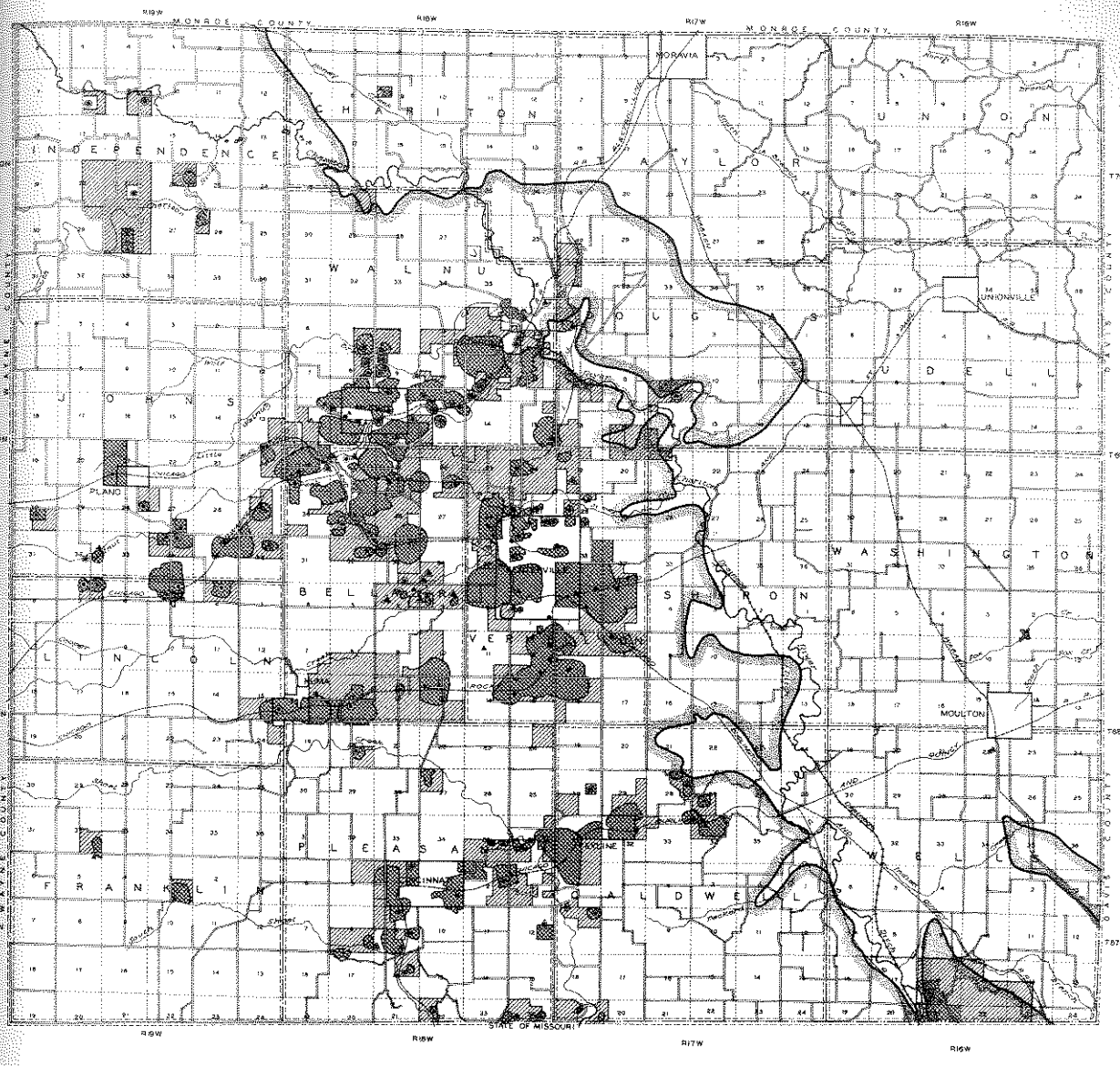
STATE OF IOWA



APPANOOSE COUNTY

COAL PRODUCTION

FIG. 21



COAL MINING

DATA FROM LOCAL OPERATORS

1935

LEGEND

- ACTIVE SHAFT MINE
- INACTIVE SHAFT MINE
- ACTIVE DRIFT MINE
- INACTIVE DRIFT MINE
- WORKED-OUT AREAS
- LEASED AREAS
- LIMIT OF MYSTIC COAL FORMATION

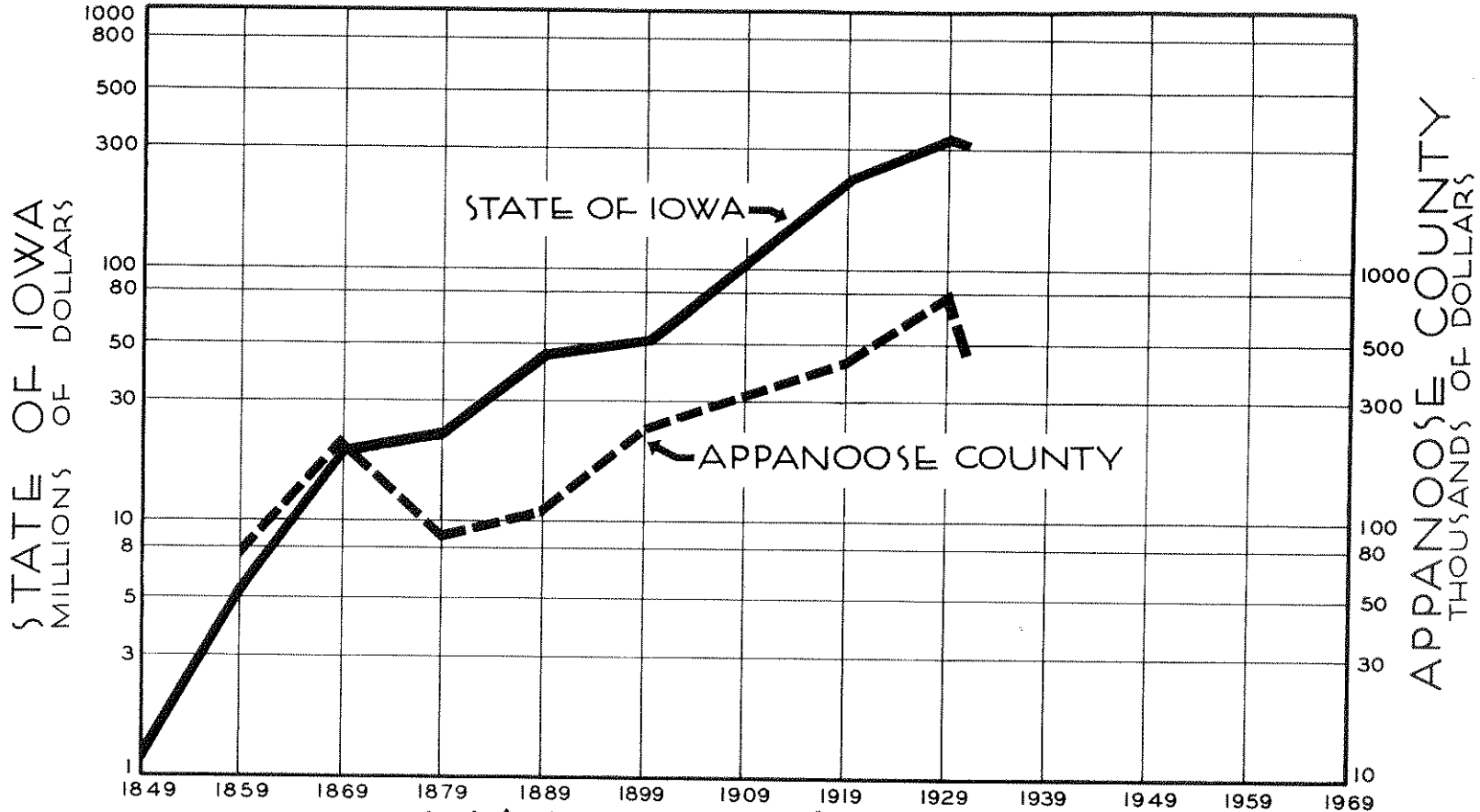
SCALE IN MILES

BASE MAP FROM SOIL MAP OF IOWA DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

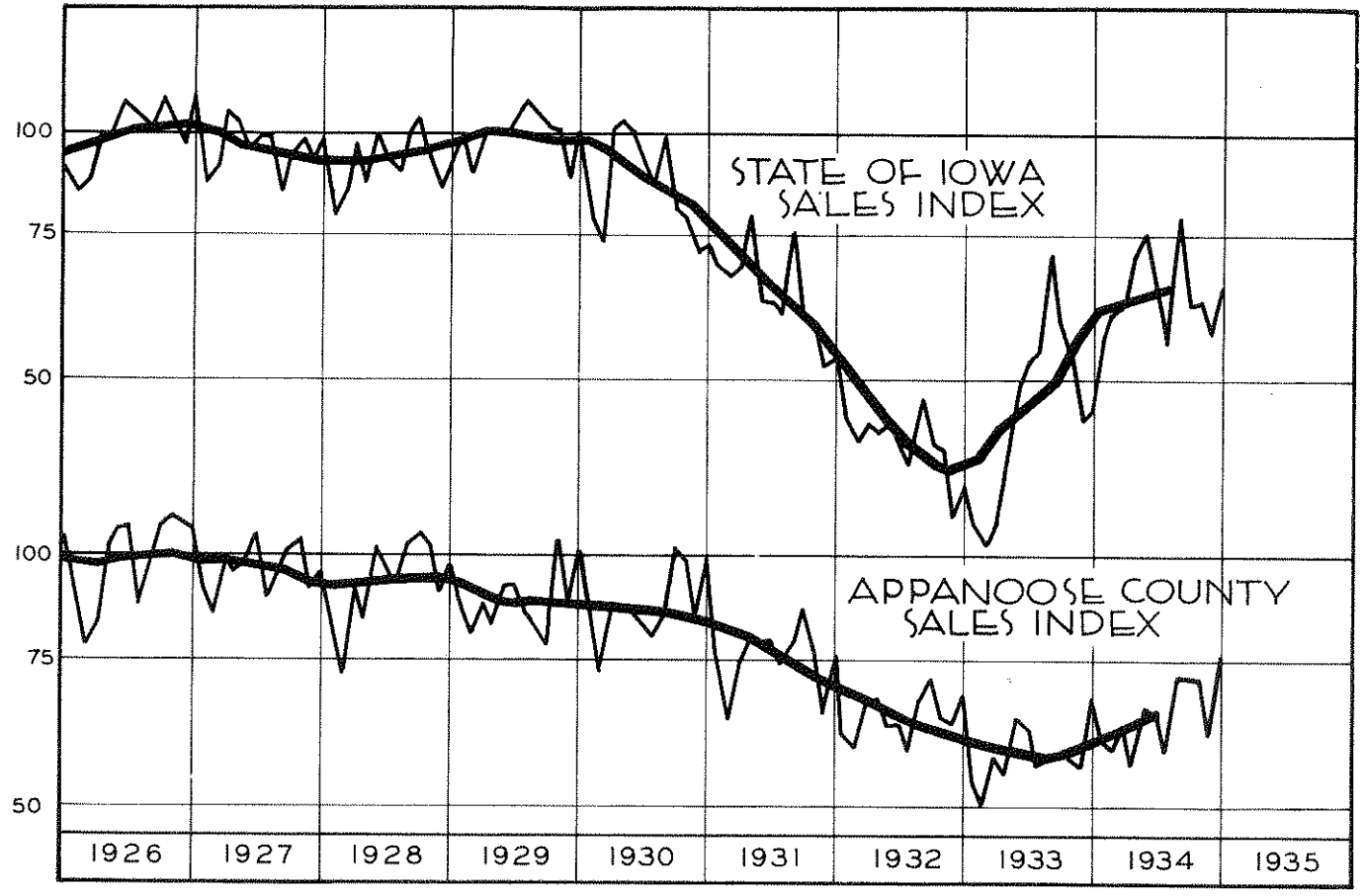
APPANOOSE COUNTY

FIG. 22



VALUE ADDED BY MANUFACTURING

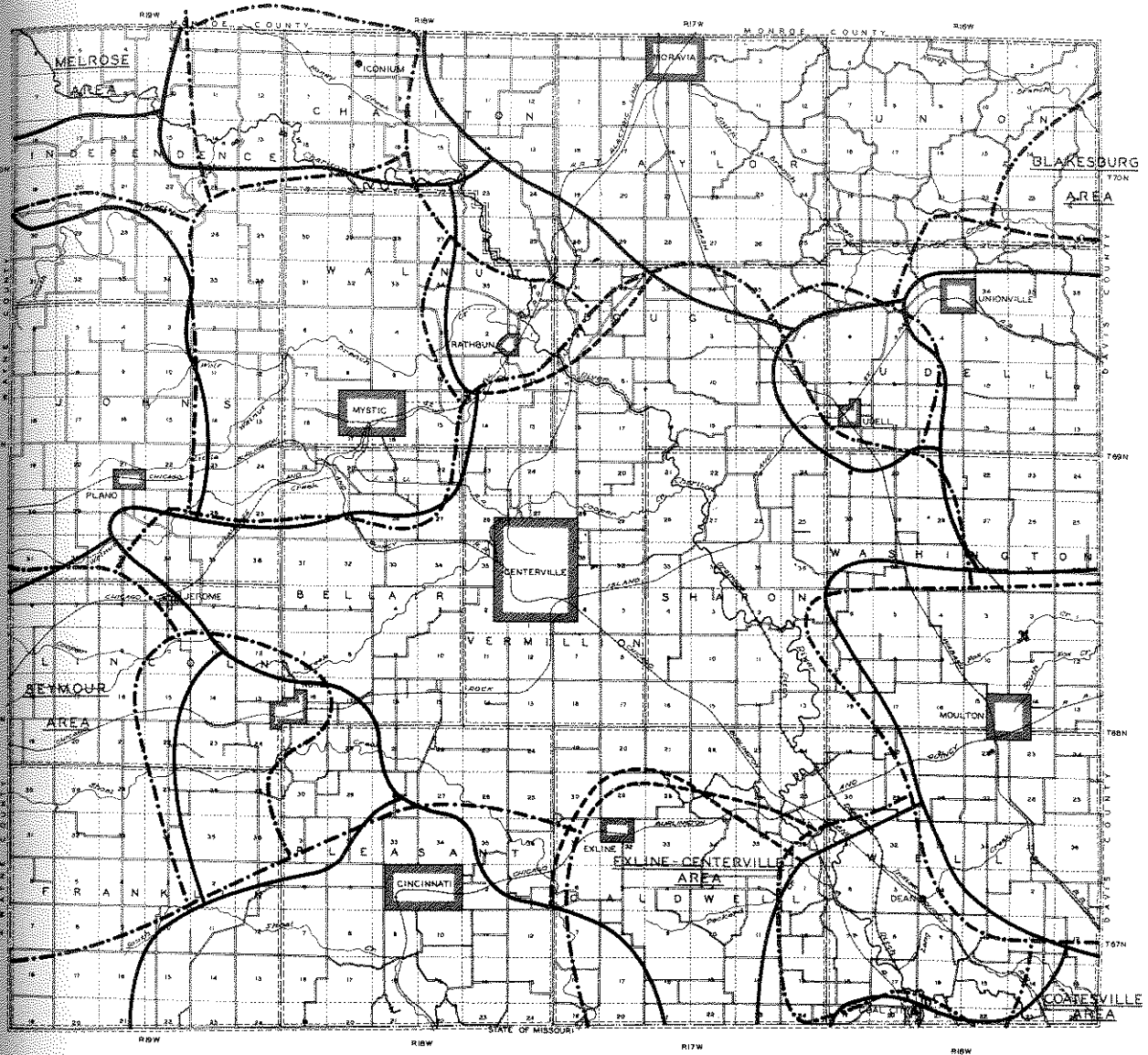
FIG. 23



TREND OF BUSINESS IN IOWA AND APPANOOSE COUNTY

1926 = 100

FIG. 24



MARKETING AREAS FOR FARM PRODUCE 1935

LEGEND

EGGS AND POULTRY

CREAM

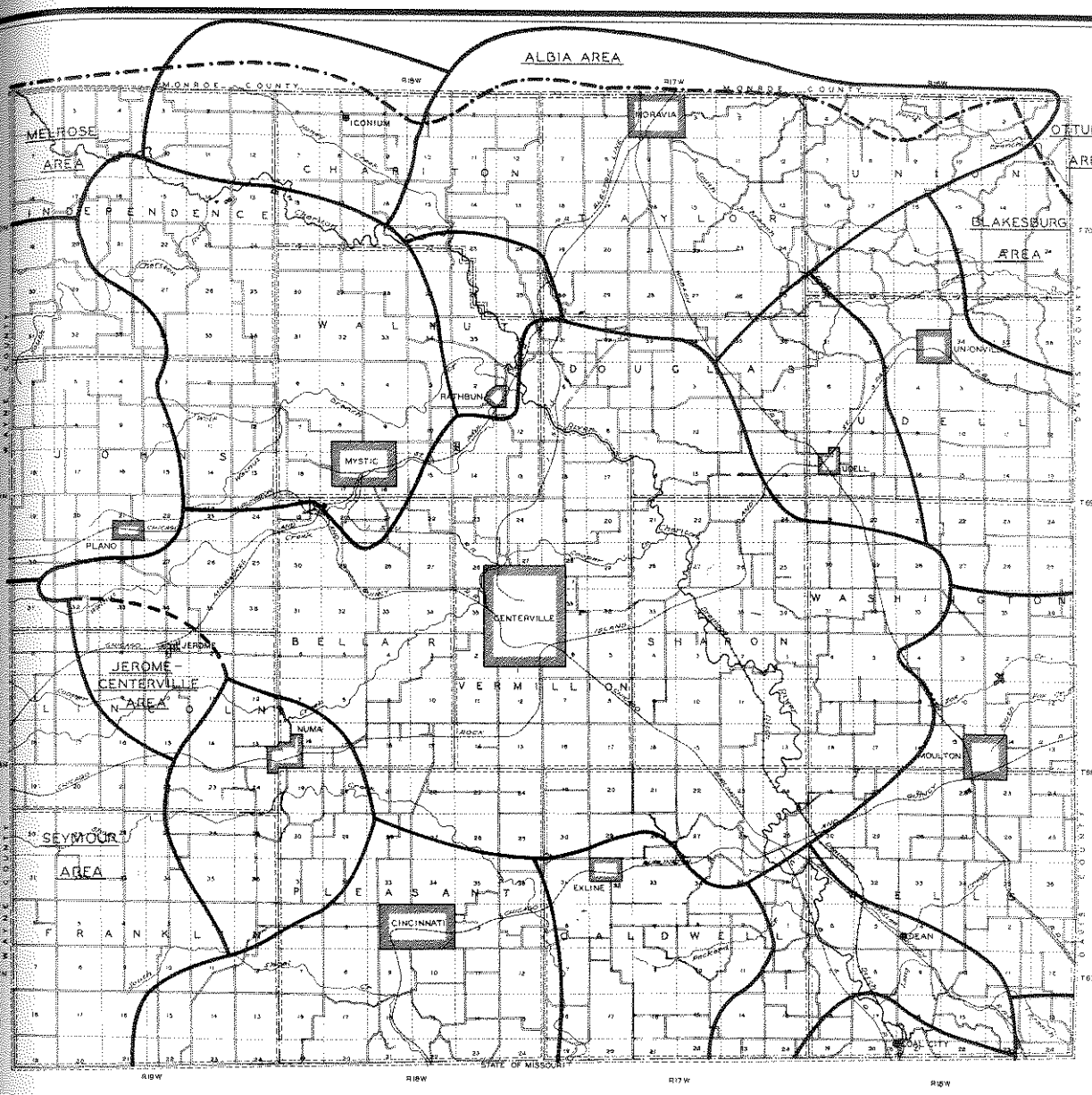
SCALE IN MILES

THIS MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 25



PURCHASING AREAS FOR RETAIL TRADE 1935

LEGEND

GROCERIES

WOMEN'S CLOTHING

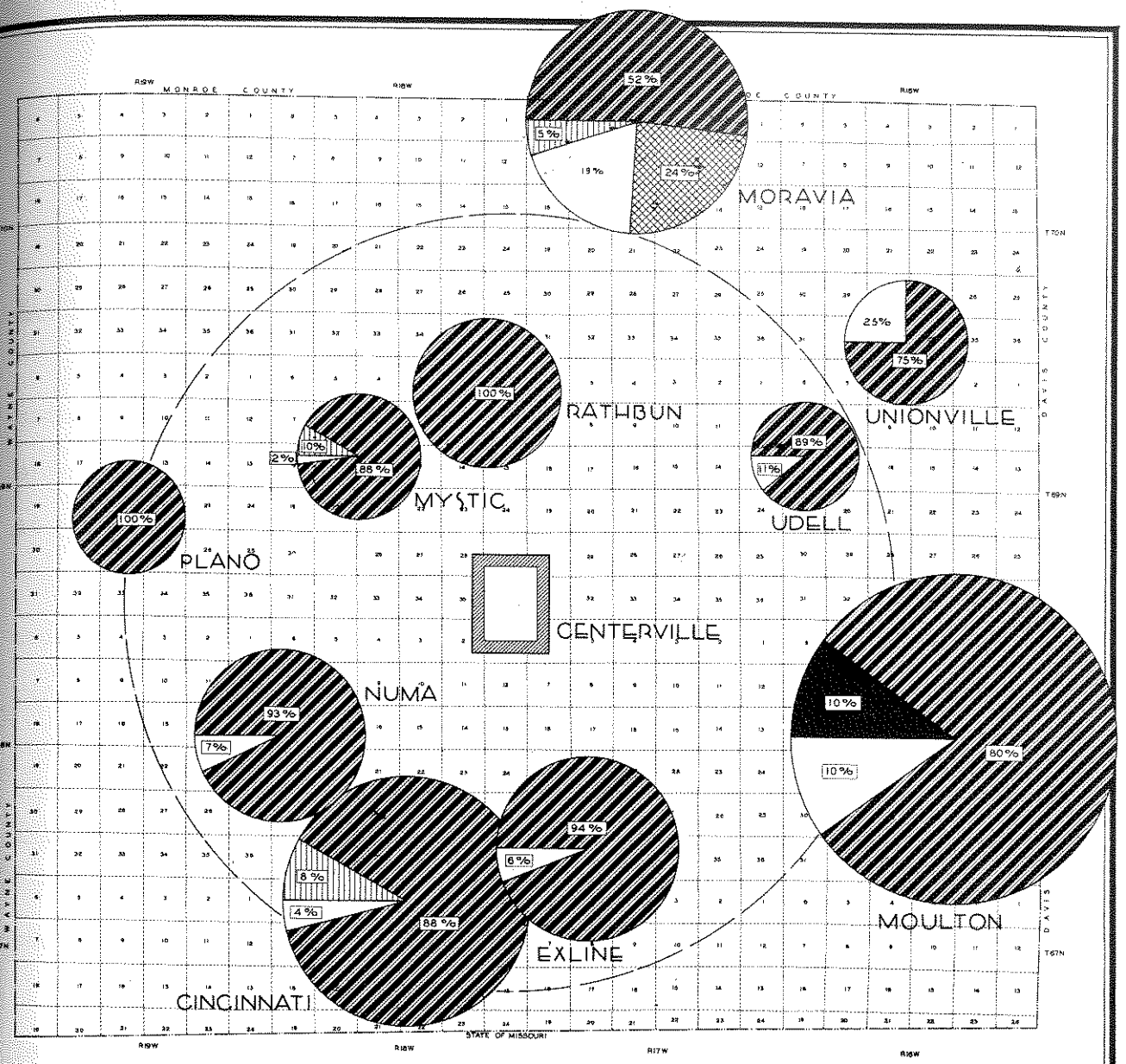
SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 26



LOCAL AND OUT-OF-TOWN PURCHASES OF WOMEN'S COATS AND DRESSES

BUSINESS SURVEY 1935

LEGEND

- HOME TRADING
- DES MOINES
- CENTERVILLE
- OTTUMWA
- ALBIA

SCALE IN MILES

BASE MAP FROM SOIL MAP OF U. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 27

ELECTRIFICATION AND COMMUNICATION

Electric Service

Urban electric service is good throughout the county. Transmission lines radiating out through the county from a generating station in Centerville to mines and towns outside the county provide service in several small towns where it would not otherwise be economically available. (See Tables 8 and 9.)

Rural electrification is limited to areas near corporation limits. Because of the comparatively low productivity of much of the land, many of the rural areas have been unable to electrify their homesteads and it is unlikely that general electrification will be the rule in the near future.

Telephone and Telegraph Service

Telephone coverage in the county is good, although many of the lines and much of the equipment are obsolete and in run down condition.

Service is available to all urban communities and nearly all rural sections Telephone exchanges in 10 towns, interconnected with each other and with the Bell system, furnish adequate local as well as toll service.

Most of the lines are mutually owned and are repaired only when they refuse to function properly; one company, however, maintains its lines in good shape. Eighty-five per cent of the lines are metallic.

Accounting practices among the several companies vary. Four companies keep fair records, but the records of only two of these can be considered as reasonably complete. These four companies are the only ones computing any depreciation.

If the various farm cooperatives and mutual organizations were to combine

into larger groups, it would be possible then to employ capable managers for the organizations.

Because of the numerous railway stations, telegraph stations are likewise numerous, and within comparatively easy reach of most sections of the county.

Radio

In urban communities, 50.8 per cent of the families have radio sets. No complete figures are available as to the present number of receiving sets in rural districts, but of the farms served by power lines, about 50 per cent have radio receivers.

General radio reception is limited to three Iowa commercial, the two state educational, and several Missouri commercial radio broadcasting stations, although evening reception is, as elsewhere in the state, governed only by the type of receiver and atmospheric conditions.

Table 8 -- Urban Electricity Consumption Survey
Appanoose County

		Domestic Electric Service					Commercial Light & Small Power				
		1930	1931	1932	1933	1934	1930	1931	1932	1933	1934
Centerville	*	1819	1799	1814	1804	1824	373	368	343	346	351
	**	378	447	457	402	376	1360	1694	1706	1582	1967
Mystic	*	383	394	357	337	351	70	61	57	66	68
	**	293	313	346	312	270	567	614	596	491	748
Moulton	*	311	291	254	240	250	62	62	59	60	60
	**	316	366	283	346	302	613	574	441	402	670
Cincinnati	*	211	205	176	173	178	40	40	45	38	37
	**	197	213	248	253	202	368	422	338	434	662
Moravia	*	212	204	174	173	174	64	70	53	49	52
	**	243	251	293	266	256	405	369	397	375	507
Exline	*	68	58	87	85	83	19	15	20	17	16
	**	251	256	184	185	178	255	282	220	247	606
Numa	*	94	98	90	81	85	19	19	17	17	14
	**	150	145	184	240	204	110	121	121	117	507
Rathbun	*	49	51	65	66	66	10	11	6	7	7
	**	168	208	184	150	154	98	101	218	194	341
Unionville	*	48	43	44	55	51	21	23	22	16	16
	**	309	311	347	259	242	117	159	114	171	320
Plano	*	30	25	24	31	30	9	11	8	7	8
	**	146	176	156	121	164	95	115	191	215	183
Udell	*	38	27	32	39	33	13	11	10	8	9
	**	205	241	230	202	229	116	164	175	157	384

* Number of customers
** Average consumption per customer in kilowatt-hours

Table 9 -- Urban Electric Appliance Survey
Appanoose County

	Center-ville		Moulton		Mystic		Union-ville		Udell		Rathbun	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
LIGHTS												
No. of schedules:	1367		275		338		51		50		64	
Electric service	1113	81.4	210	76.4	263	77.8	56	70.6	39	78.0	57	89.1
REFRIGERATION												
No. of schedules:	824		132		169		7		9		5	
Refrigerators	71	8.6	16	12.1	12	7.1	2	28.6	2	22.2		
COOKING EQUIPMENT												
No. of schedules:	1380		276		351		52		50		64	
Waffle iron	117	8.5	56	20.3	28	8.0			5	10.0		
Toaster	316	22.9	100	36.2	78	22.2	16	30.8	15	30.0	4	6.3
Range	40	2.9	11	4.0	11	3.1	1	1.9	1	2.0		
Hot plate	51	3.7	13	4.7	12	3.4	4	7.7				
Percolator	138	10.0	38	13.8			3	5.8	4	8.0	1	1.6
LAUNDRY & CLEANING												
No. of schedules:	1408		276		354		52		50		64	
Washing machine	689	48.9	146	52.9	141	39.8	21	40.3	25	50.0	32	50.0
Hand iron	948	67.3	197	71.4	217	61.3	36	69.2	33	66.0	42	65.6
Ironer	18	1.3										
Vacum cleaner	212	15.1	84	30.4	45	12.7	12	23.1	7	14.0	1	1.6
HEATING												
No. of schedules:	1319		276		333		42		45		62	
Room heater	19	1.4			2	0.6	6	14.3				
Water heater	15	1.1	22	8.0	6	1.8						
Heating pad	51	3.9	6	2.2	6	1.8	2	4.8				
RADIO												
No. of schedules	1408		276		354		52		50		64	
All electric	680	48.3	160	58.0	175	49.4	29	56.0	24	48.0	42	65.6
MISCELLANEOUS												
No. of schedules:	1408		276		354		52		50		64	
Curling iron	72	5.1	23	8.3	12	3.4	5	9.6	1	2.0		
Clock	91	6.5	21	7.6	9	2.5	2	3.8	4	8.0	1	1.6
Doorbell	23	1.6	2	0.7	2	0.6						
Battery charger	6	0.4	1	0.4					1	2.0		
Fan	127	9.0	47	17.0	32	9.0	7	13.5	15	30.0		
Sewing machine	21	1.5	11	4.0	8	2.3	1	1.9	2	4.0		
Soldering iron	11	0.8	10	3.6	1	0.3	1	1.9				

Table 9 -- Urban Electric Appliance Survey
Appanoose County
(continued)

Numa		Brazil		Plano		Moravia		Exline		Cincinnati		All Towns	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
62		50		42		122		106		175		2702	
62	83.8	35	70.0	24	57.1	104	85.2	63	59.4	119	68.0	2115	78.3
16		6		8		43		10		35		1264	
3	18.8			1	12.5	8	18.6			4	11.4	119	9.4
62		50		42		123		108		177		2735	
6	9.7			1	2.4	24	19.5	3	2.8	8	4.5	248	9.1
19	30.6	5	10.0	6	14.3	52	42.3	18	16.7	38	21.5	667	24.4
3	4.8			1	2.4	3	2.4			1	0.6	72	2.6
1	1.6			1	2.4	8	6.5			6	3.4	96	3.5
6	9.7			1	2.4	15	12.2	2	1.9	11	6.2	219	8.0
62		50		42		123		108		177		2766	
23	37.1	17	34.0	12	28.6	63	51.2	40	37.0	63	35.6	1272	46.0
44	70.9	25	50.0	23	54.7	88	71.5	51	47.2	106	59.9	1810	65.4
								3	2.8			21	0.08
6	9.7	2	4.0	2	4.8	38	30.9	10	9.3	18	10.2	439	15.9
62		49		42		99		108		177		2614	
						1	1.0	1	0.9			29	1.1
1	1.6									1	0.6	46	1.8
1	1.6											66	2.5
62		50		42		123		108		177		2766	
29	46.7	22	44.0	17	40.5	78	63.4	44	40.7	77	43.5	1377	49.8
62		50		42		123		108		177		2766	
1	1.6					14	11.4	10	9.2	7	4.0	145	5.2
4	6.4					15	12.2	4	3.7	5	2.8	156	5.6
												27	0.1
						1	0.8					9	
4	6.4			4	9.5	25	20.3	12	11.1			273	9.9
						2	1.6	1	0.9			46	1.7
										1	0.6	24	

PUBLIC WATER SUPPLIES

The use of impounded surface water has been increasing, and at the present time there are five reservoirs in use in Appanoose County. Two of these are railroad supplies; the other three are municipal supplies, two of which are in the Centerville system. Water analyses of municipal supplies at Centerville and Moulton indicate that both supplies are of about average hardness -- 165 to 170 parts per million, show slight traces of fluorine, are slightly high in sulphate, and contain some 300 parts per million of solids. Other minerals are present but not in such quantities as to be objectionable.

When located on adequate drainage areas and properly designed, impounded supplies will prove to be the most satisfactory source available in Appanoose County. In Fig. 30 is shown the location of existing reservoirs in the county. Shown also are the locations of all streams having at least 2.5 square miles (1600 acres) of drainage area, the approximate minimum on which to locate an impounded water supply.

Not all the streams shown are suitable for the location of an impounding reservoir because of topographical features of the valley, underlying geological formation, sources of pollution, type of cover on the watershed, soil erosion, silting rates and many other factors. Individual studies of any proposed sites would be necessary to determine the most suitable for a particular need.

The underground supply of the county is of two kinds -- surfacial water obtained from shallow wells located in the glacial drift overlying the rock formations, and deep well water obtained from water-bearing rock formations

Table 10 -- Deep Wells in Appanoose County

Location of Well	Year Drilled	Depth (feet)	Tested Capacity gal/min.	Water Found at depth of (feet)	Water Surface Below Curb (ft.)	Use
Centerville No. 1	Prior to 1893	2495	250	1200 to 2450	260	Not used.
No. 2	1895	1540	350	1470 to 1510	280	Not used.
No. 3	1904	2054	200		286	Was formerly supply for Centerville.
Moulton	1905	538	16			Private water supply.
Moravia	1933	559	17			Public school supply.

located at from 500 to 2500 feet below the general surface level.

The quantity of water produced by the surfacial wells is extremely variable; in some wells the supply is barely sufficient to meet farm needs, while in others the supply is adequate for the needs of a large railroad.

The deep well supply is more reliable as to quantity, which varies with the depth. A quantity sufficient for the needs of a small community can generally be had at a depth of 1500 to 2000 feet. A total of five deep wells have been drilled at various points in the last 45 years and the underground reservoir tapped. The locations of these wells are also shown in Fig. 30 and a summary of the data pertaining to this is given in Table 10.

The surfacial water is, in general, quite hard, but is of better quality than that obtained from deep wells. This latter supply is so highly mineralized that it is unfit for most commercial uses and is undesirable for domestic consumption.

The utilization of water resources involves not only the conservation and beneficial use of water but also the leaving of the water in such a condition as to be of value to the next user. The problems of drainage, flood control, sewage disposal, industrial wastes and others thereby present themselves for incorporation into any plan relating to water. Most of these problems are present in Appanoose County.

The major water planning problem of Appanoose County is that of public or municipal water supply, for this county ranks highest in the state in the number of towns of 350 to 2000 population which have no public supply. A summary of the municipal water supply conditions existing in the county is given in Table 11 and Fig. 31.

Of these towns and cities, only Centerville has an adequate municipal

water supply; Moulton has an impounded surface supply, but has not installed a treatment plant, hence the supply is unsuited for domestic consumption. The remaining towns obtain their domestic supply from shallow wells which tap the surfacial water with its many sources of pollution and contamination.

The status of Appanoose County with respect to the remainder of the state is indicated by the following extract from the Second Report of the Iowa State Planning Board:

"In regard to new water supplies in towns not now having water supplies, there are thirty-seven with populations ranging from five hundred to one thousand, with an aggregate population of about twenty-five thousand, which do not have public water supplies. In the group with populations ranging from 350 to 500 there are 51 with an aggregate population of 20,634 without public water supplies..... Judging from the experience in other towns in the state of similar size, it is conceivable that of the group with populations ranging from 500 to 1,000, all of the towns will develop public water supplies in the near future. And of the group with populations ranging from 350 to 500, it is considered economically feasible for one-half, or about 25 of these towns to develop public water supplies.

"Since public water supplies are to be given preference in the public works projects, these towns can be considered as potential prospects for public works of this type."

In those towns of less than 500 population, the problems of health hazards are alleviated somewhat by the sprawling arrangement of the town over a large area. The general conditions surrounding the use of individual or family wells can be materially improved in many instances, but to contemplate the installation of either a deep well or impounded surface supply would be futile when the financial and economic status of these small towns is considered. A review of the population trends as indicated in Table 11 only strengthens the statement that the smaller towns are unable to finance the installation of water supplies. On the other hand, public health problems will undoubtedly force the town of Mystic to develop a municipal water supply, and the town of Moulton to install a treatment plant. The smaller towns of Cincinnati and

Table 11

Municipal Water Supply Conditions in Appanoose County

Town	Population			Municipal Water Supply
	1910	1920	1930	
Centerville	6936	8486	8147	Adequate -- impounding reservoirs
Mystic	2663	2796	1953	None -- only source is individual wells
Moulton	1233	1387	1476	Impounded supply, untreated -- fire protection
Cincinnati	1355	1301	911	None--depend on family wells
Moravia	682	837	684	None--high school has deep well; town depends on family wells
Exline	660	755	437	None--depend on family wells
Numa	659	602	399	None " " " "
Rathbun	382	630	299	None " " " "
Unionville	---*	---*	221	None " " " "
Plano	---*	272	153	None " " " "
Udell	186	214	151	None " " " "

* Not incorporated at time of census.

Moravia will probably continue to use existing supplies unless some water borne epidemic should arouse them.

In view of the highly mineralized condition of the underground waters it is suggested that any water supply developments should be in the field of impounded surface supplies, even though more expensive, rather than deep well supplies.

Stream pollution and sewage disposal problems are of secondary importance in the county. Those towns having municipal water supply, Centerville and Moulton, also have sewage disposal plants. In those smaller towns which do not

have water supply, the problem is practically non-existent. The installation of a municipal water plant by Mystic would require the construction of a sewage treatment plant to eliminate a heavy pollution of Walnut Creek.

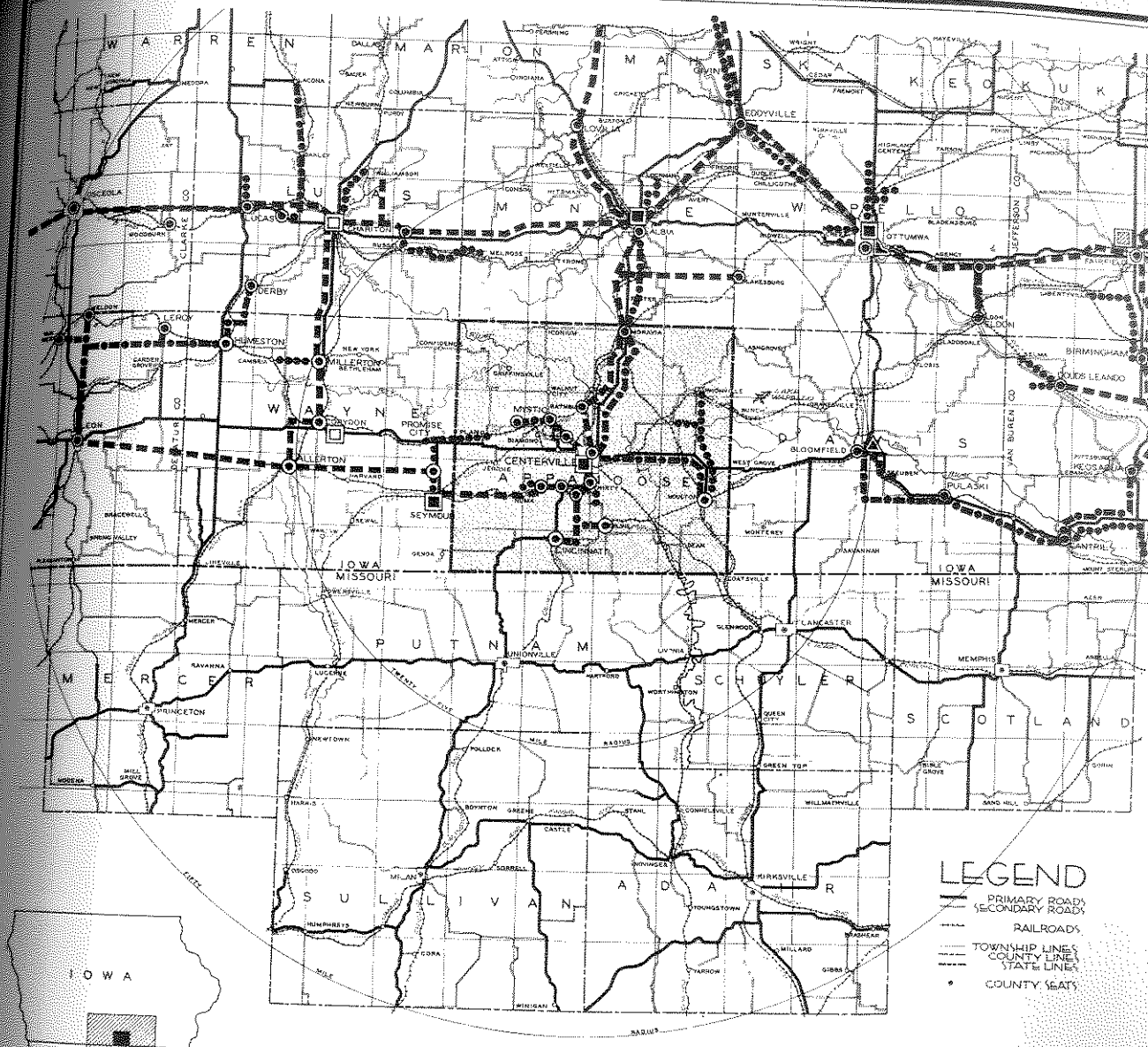
There are no industries in the county which require the disposal of large amounts of industrial wastes. Some contamination undoubtedly results from coal mine drainage, but it is questionable that this source has any appreciable effect on the streams used.

The broad flat valley of the Chariton River presents a unique situation involving both drainage and flood control problems. Two drainage districts were formed in 1905 and 1906 by those living in the Chariton River valley, and the river was straightened from the Rock Island Railroad bridge east of Centerville to the Iowa Missouri line, at a cost of $30.00 to $40.00 per acre of land included in the district. In the upper reach of the district some benefit has been secured but in the lower portions of the dredged section, the flood problem is made more acute. The flood waters from the upper reaches are brought down and piled on the valley more rapidly than before, due to the improved channel, but are prevented from continuing down the river by the existence of a reach of choked and tortuous channel a few miles below the state line, which acts as a natural bottleneck.

Any attempt to eliminate the "bottleneck" will require the cooperation of Iowa and Missouri and will be opposed by the people living along the river in the region below the obstructed point, since it would increase the size of floods in that region, unless other measures are included which will provide for sufficiently rapid drainage.

CHARITON RIVER FLOOD SCENES

These two pictures were taken several days after the high water stage of the 1935 spring flood. The upper scene shows flooded farm land north of Centerville on the road to Moravia and Albia. The normal channel is in the immediate foreground. The lower scene shows receding waters east of centerville. The normal channel was behind the photographer.



REGIONAL MAP

APPANOOSE COUNTY AND AREA WITHIN 50 MILE RADIUS

SHOWING

ELECTRIC SERVICE FACILITIES

MARCH, 1935

	ACTIVE	STANDBY	EMERGENCY
STEAM GENERATING STATION	■	▨	□
DIESEL " "	△	▲	▲
HYDRO " "	◺	◭	◭
SUB-STATION	◉		

CONVERTER STATION

OVER 13.2 K.V. TRANSMISSION LINE

13.2 K.V. " "

UNDER 13.2 K.V. " "

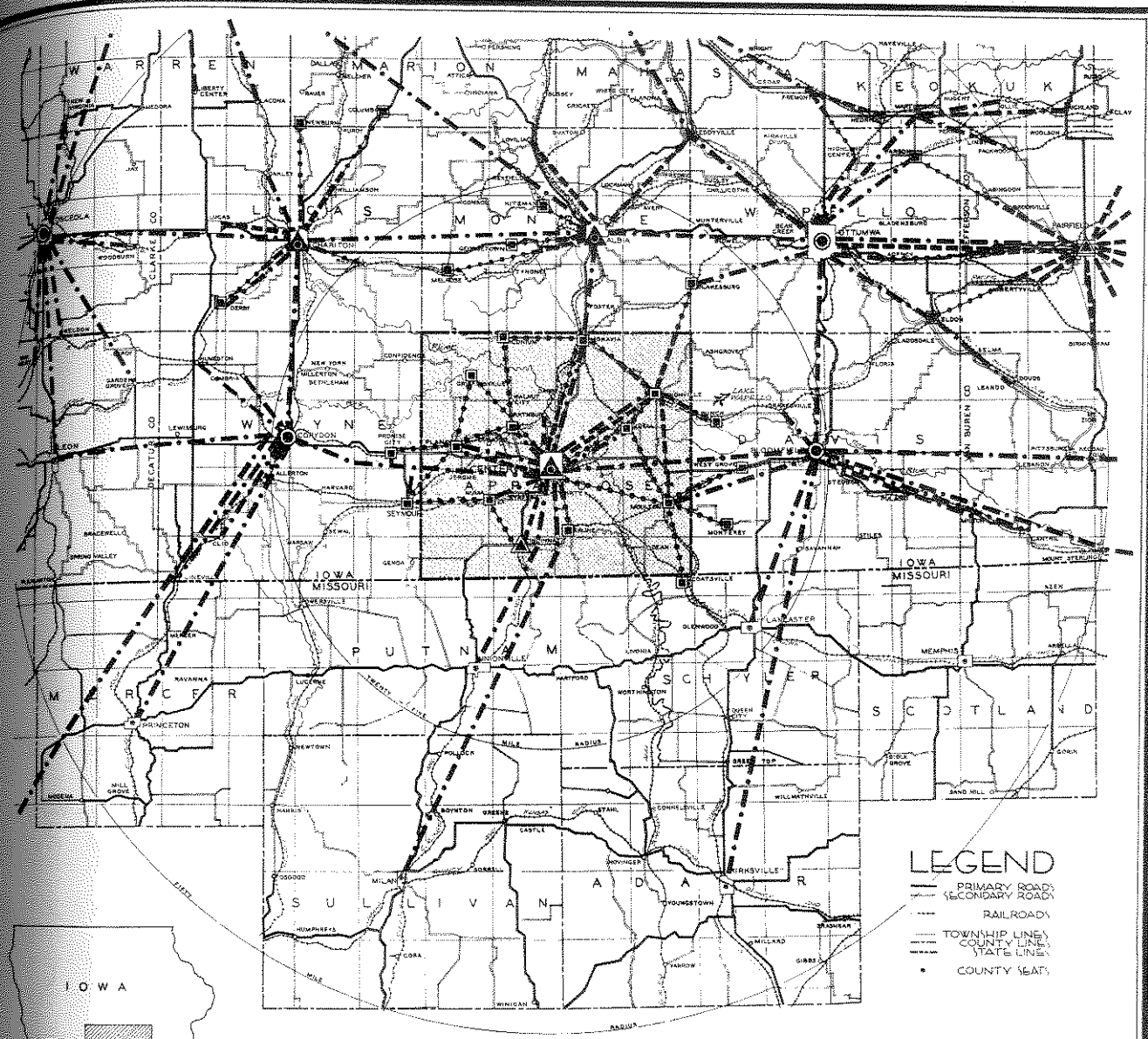
SCALE IN MILES

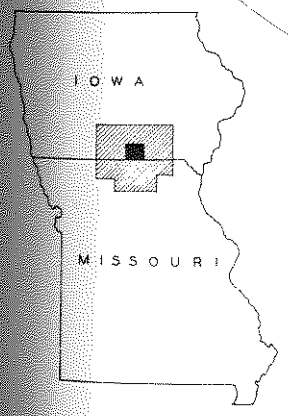
IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

TAKEN FROM U.S. DEPT. OF AGRICULTURE BUREAU OF PUBLIC ROADS TRANSPORTATION MAP AND MISSOURI STATE HIGHWAY MAP).

FIG. 28





KEY MAP

REGIONAL MAP

APPANOOSE COUNTY AND AREA WITHIN 50 MILE RADIUS

SHOWING

TELEPHONE SERVICE FACILITIES

- BELL EXCHANGE & TOLL CENTER
- ASSOC. IND. EXCH. & BELL TOLL CENTER
- ASSOCIATION INDEPENDENT EXCHANGE
- INDEPENDENT OR MUTUAL EXCHANGE
- BELL SYSTEM TOLL LINE
- ASSOC. IND. TOLL LINE
- IND. & MUTUAL TOLL LINE

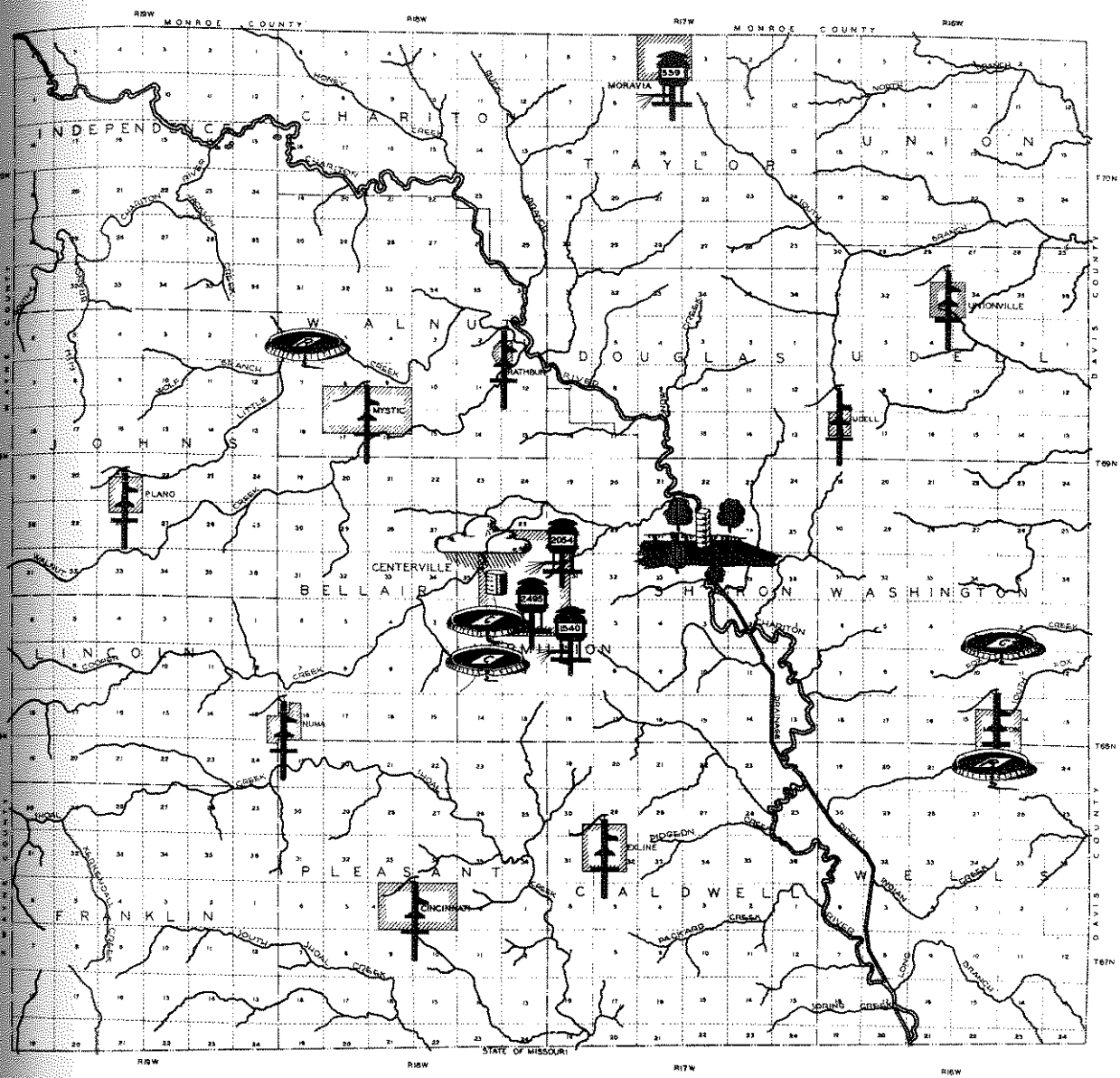
SCALE IN MILES

TAKEN FROM U.S. DEPT. OF AGRICULTURE, BUREAU OF PUBLIC ROADS, TRANSPORTATION MAP AND MISSOURI STATE HIGHWAY MAP.

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 29



WATER RESOURCES
EXISTING & POTENTIAL SOURCES OF WATER SUPPLY
1935

LEGEND

SURFACE RUNOFF RESERVOIR
R - RAILROAD SUPPLY
C - CITY SUPPLY

SHALLOW WELL

DEEP WELL
FIGURES INDICATE THE DEPTH OF WELL IN FEET.

RAINFALL GAUGING STATION

STREAM GAUGING STATION (PROPOSED)

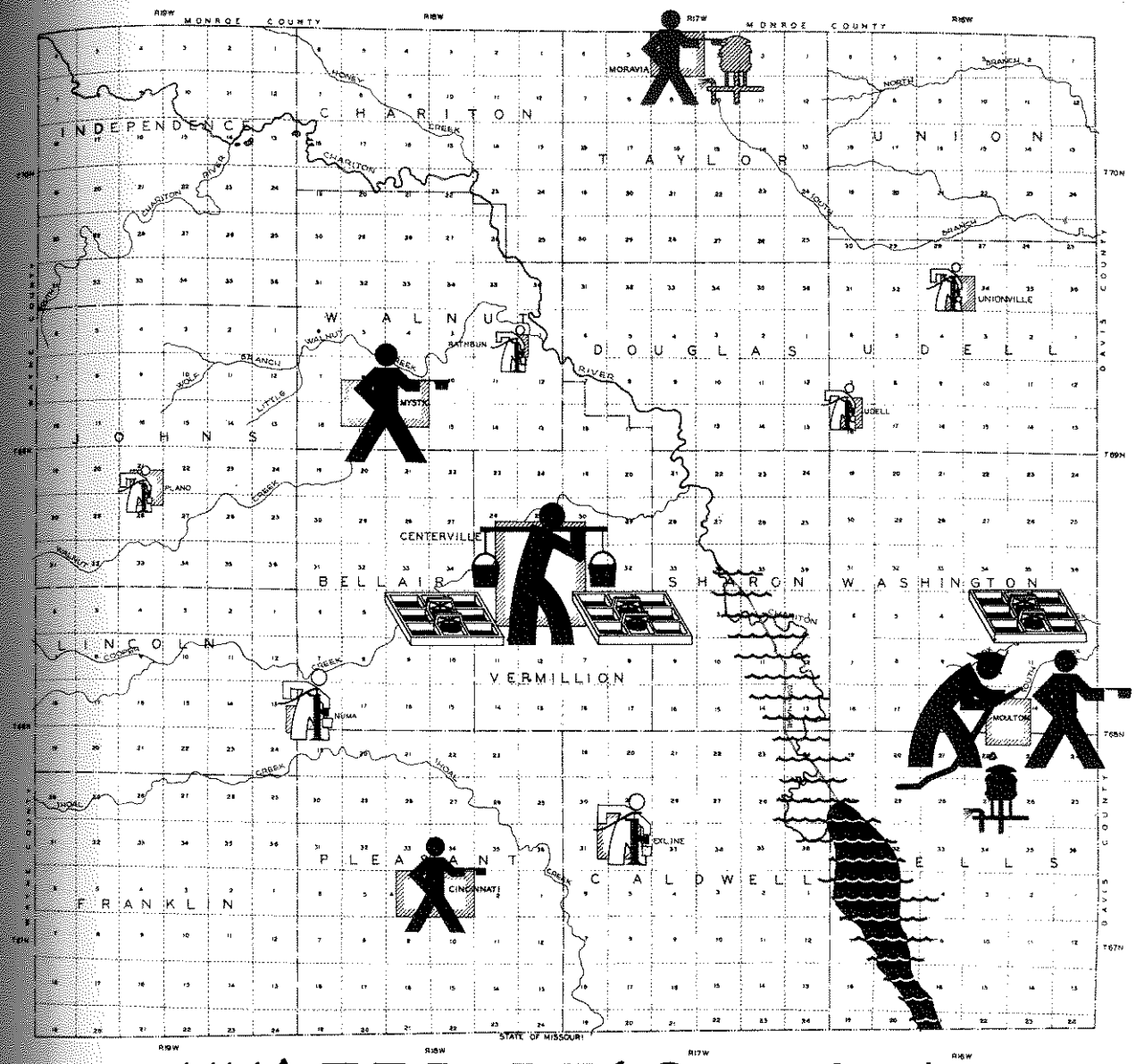
SCALE IN MILES

THIS MAP FROM SOIL MAP OF APPANOOSE COUNTY, U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

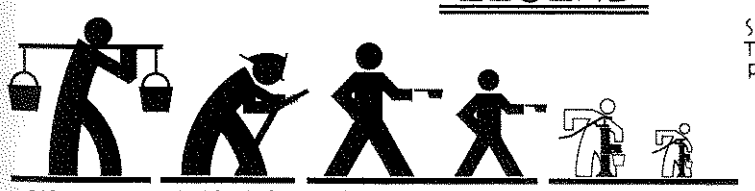
FIG. 30

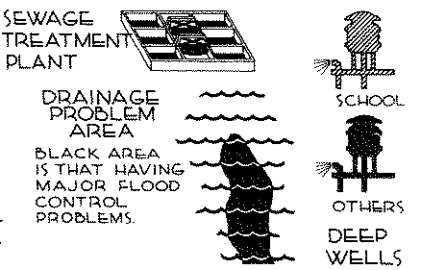


WATER RESOURCES

EXISTING & RECOMMENDED USES OF WATER

LEGEND





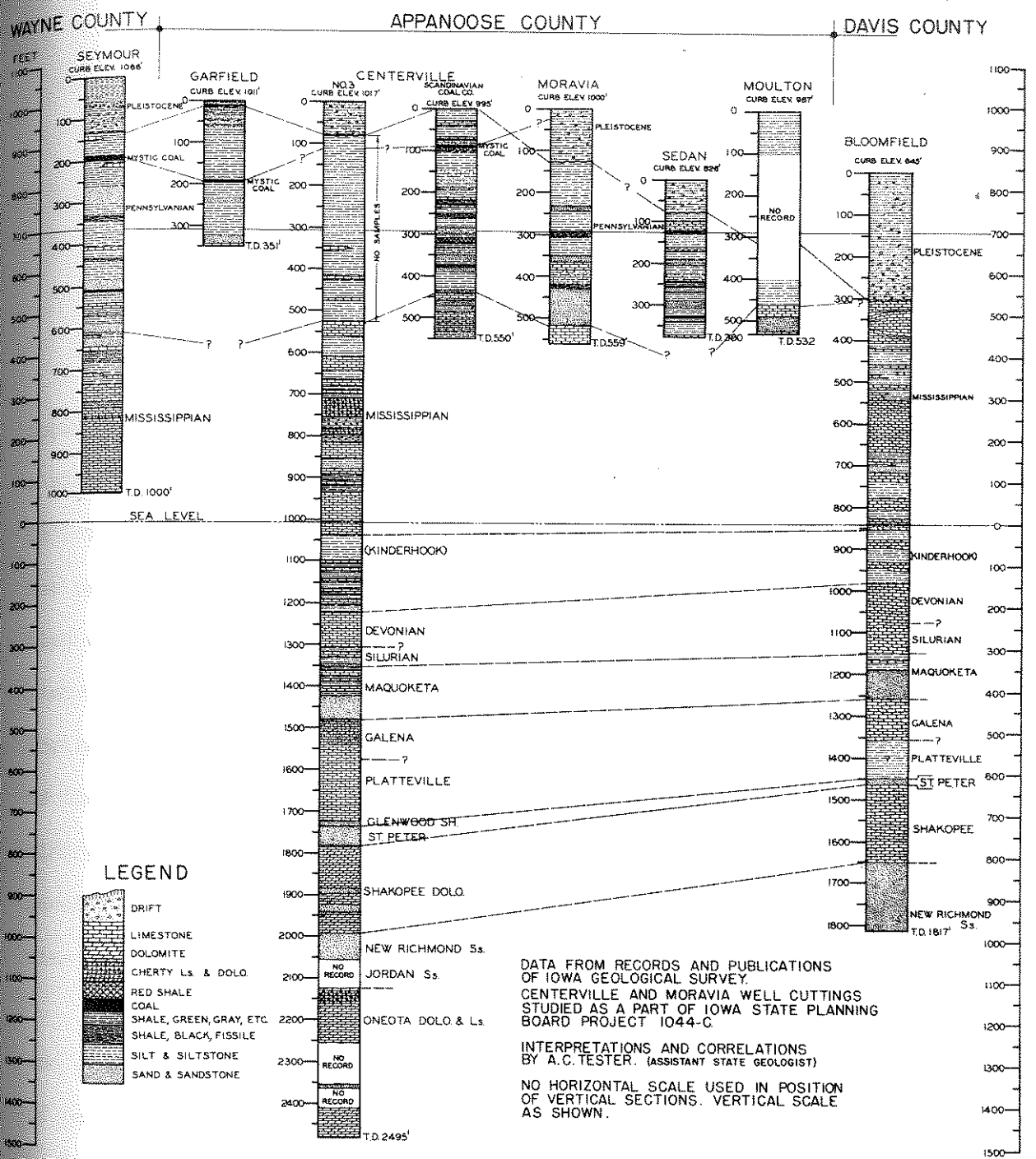
SCALE IN MILES

THIS MAP FROM SOIL MAP OF APPANOOSE COUNTY, U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 31



GENERALIZED DEEP WELL SECTIONS OF APPANOOSE AND ADJACENT COUNTIES

SHOWING MAJOR TYPES OF ROCK FORMATIONS AND TENTATIVE CORRELATIONS AND PRINCIPAL WATER BEARING ZONES

FIG. 32

TRANSPORTATION

By Mark Morris, Research Engineer
Iowa State Highway Commission

This section of the report deals with the transportation problems of Appanoose County. Its purpose is to present and discuss these problems of a single county in such a manner as may be readily adaptable to any county in Iowa. Although the problems are specifically those of Appanoose County, the presentation is designed to exemplify a method of approach for the solution of the transportation problems encountered in the other counties of the state. The solution of many of these problems seems quite naturally and logically considered on the basis of the county unit in Iowa, for the county is the smallest political sub-division having direct jurisdiction over considerable portions of the transportation systems of the state, and local needs for transportation service may be by tradition most readily and efficiently administered to on the county basis.

The somewhat generalized technique presented here for the consideration and solution of these county transportation problems may, perhaps, fall short of perfection by a considerable margin, but it is a sincere effort to outline a method of attack which will at least provide for an orderly approach to the several important and perplexing transportation problems of the county and will reveal the principal factors to be considered in attempting the solution of these problems. It is a first attempt at a consideration of the transportation problems of a county as a group. Much attention has been given to some of the problems of a particular system of transportation in the county,

such as the highway system and its several members, or some member of the railroad system, yet little thought has been given to the coordination and integration of the different systems. The first attempt in the development of a technique may be expected to have certain shortcomings but it will at least offer a basis of endeavor for the development of more refined techniques.

Need for Transportation

Of first consideration are the needs of the county for a transportation system or systems, which should serve both the urban and rural population. The rural population is quite uniformly distributed throughout the county (See Fig. 5, "Rural Homesteads and Miners' Homes"). It will also be noted that the incorporated towns and villages are quite uniformly distributed about the county, with the greatest concentration of population at the county seat, Centerville, which is located at the approximate center of the county. A glance at a topographic map of the county (See Figure 3, "Reconnaissance Topography") reveals that the rural population is quite uniformly distributed regardless of the variations in topography-- the hills, the rolling country, and the prairie having about the same distribution of homes.

The occupation of the residents in these homes must be given consideration in the survey of the needs for transportation. The principal industries are farming and mining. The rural population, as may be expected, is engaged principally in farming and to a lesser extent in mining. The urban population is engaged in mining, warehousing, distributing goods and produce, marketing, and the miscellaneous service industries and professional activities associated with concentrations of population. It is further observed that there is a quite uniform distribution of rural schools and

churches, and that the centers of population are well equipped with schools and churches. Briefly, the county contains all the essential elements of an agricultural community, the farms, the towns, the schools, the churches, and their accessories and constituent populations engaged in the several occupations incidental to living and making a living in such a community.

Farming and mining are primary industries. Without transportation such industries can exist only in the most primitive form. The secondary industries group is represented by such important members as warehousing, distributing and marketing. Industries of this group are wholly dependent upon some means of transportation for existence in any form. Furthermore, some form of transportation is essential to attain even a moderate amount of benefit from communication, education, religion, medication, association and recreation. All these things, the primary industries, the secondary industries and the welfare of the people, demand some sort of transportation.

In Appanoose County each farm must be accessible to a market for its produce and for the purchase of goods used in the operation of the farm and sustenance of the farmer. Each miner must have access to his work and to a market for his product. The butcher, the baker, the grocer and the merchant need a way for obtaining goods and for the customers to reach their stores. The schools, the churches, the libraries and other centers of culture must be accessible to all. Doctors, hospitals and nurses can serve efficiently and widely only if patients can be reached by them or brought to them. Only by transportation can these things be accomplished. The widely and uniformly distributed farmers, miners, tradespeople, professionals and all others need transportation of some sort.

Transportation is, by this brief, generalized analysis shown to be an essential activity of the community having even the relatively small area of

a county. The movement of produce and goods, the free intercourse of peoples and the normal activities and functions of industry, commerce, and government depend upon some means of transportation.

Transportation Facilities Available

In any study of the transportation problems of the county, careful consideration must be given the current facilities and the service they render. When this examination is made in Appanoose County it is found that there are available representatives of two of the great transportation systems of the nation. These two are the railway and highway systems. Geographically, waterways are impractical for access to this county. Thus far the airway and pipeway systems have found little to attract them to this territory. The railway and highway systems will likely be the principal agencies serving the community for many years. A general inventory of the present extent and condition of these facilities is prerequisite to the study of transportation problems in the county.

Railway System

The railway system of transportation is represented by several important railroad companies. Main lines of the Chicago, Rock Island and Pacific; the Chicago, Milwaukee and St. Paul, and the Wabash railway companies cross the county, rendering it quite readily accessible to distant great markets in Chicago, Kansas City, St. Louis and Des Moines within the span of a few hours' to half a day's journey. By these same roads and the branch lines of the Chicago, Burlington and Quincy Railway Company, closer markets are available in Ottumwa, Oskaloosa, Ft. Madison, Burlington, Keokuk, Davenport, Moline, Rock Island, and many lesser cities and towns.

By the railway system much of the coal, farm produce, dairy products and

a small quantity of processed goods is moved to the distant and nearer markets listed here, and goods brought from these markets to the principal towns of the county. The relative volume of total business of each of the lines (Fig. 33, "Railroad System") is believed to be quite indicative of the relative service to the county. Before a definite statement can be made, a careful study of the railroad shipments and passenger fares into and out of the county would be required. Each of the railroads should be considered in the order presented in the tabulation below, and classified by relative volume of business on each.

Table 12

Mileage of Railroad Lines in Appanoose County

Primary Lines		Miles in County
Chicago, Rock Island and Pacific		29.7
Chicago, Milwaukee and St.Paul		22.7
Wabash		22.7
	Total	75.1
Secondary Lines		
Chicago, Burlington and Quincy		28.6
	Total	28.6
Tertiary Lines		
Chicago, Burlington and Quincy		
Cincinnati to Moulton		20.3
Sedan, south		5.9
Iowa Southern Utilities (Electric)		19.1
	Total	45.3
	Grand Total	149.0

Excepting the Wabash and the Iowa Southern Utilities, these lines are members of great trans-continental systems radiating from Chicago, the largest railroad center of the nation, to various points on the western coast. Appanoose County, like the major portion of the State of Iowa, is well situated to participate in trans-continental traffic.

This county is somewhat better favored in railroad mileage and service than the average county of the state. There are, in Iowa, approximately 9,706.78 miles of railroad lines. Appanoose County, containing within her boundaries approximately 149.0 miles, has about 1.53 per cent of the railroad mileage of the state. On the basis of the number of counties in the state, the average mileage per county is approximately 98.1, or 1.01 per cent of the total in the state.

Since Appanoose County is one of the small counties, this margin above the average places it at some advantage over the average county with respect to average distance from railroad service. Detailed studies should be made in the study of transportation problems to determine the average haul of farm produce to railroad shipping points. Such a study, as in the case of the majority of studies suggested here, is too extensive for inclusion in this report. Suffice it is to say for the present that every point in the county is well within a distance of 11.0 miles from a railroad line. The majority of the area of the county is within a much shorter distance than that, the longer distances being found in but the northwestern portion of the county.

The railroad equipment at stations is that commonly provided for handling the produce and goods customarily consigned from and to the various shipping points. The rolling stock is similarly classified. Much of the operating equipment, both in stations and rolling stock, is obsolete. The

county, however, has little jurisdiction over these matters. They are, therefore, omitted from this discussion.

Briefly, a summary of the railroad facilities reveals that the county has sufficient railroad mileage and equipment to perform adequately for the county the functions which may be properly expected of a railroad system. These functions as defined for the purpose of this report will be discussed after presentation of the general inventory of highway facilities.

Highway System

The rural highway system of the county and state is composed of several sub-systems, designed by law as the Primary Road System, the County Trunk Road System, and the local county roads. Responsibility for the Primary Road System is an obligation of the State. Responsibility for the county systems rests with the County. All are public highways financed by some form of taxation, and constructed for public use with a minimum amount of restriction and regulation.

The rectangular system for the sub-division of land into sections one mile square, each surrounded theoretically by a roadway, provides for an extensive rural highway system. The uniform distribution of rural homes and farmsteads practically demands that this sytem be almost wholly improved to provide equitable service to all who require highway transportation service. This ideal has been closely approached in a number of Iowa counties, but Appanoose County has yet a long way to go, as may be noted from an examination of Table 13 presented here.

Table 13

Condition of Highway System

Appanoose County

January 1, 1936

Road System	Condition — Type of Improvement and Mileage				
	Not Built	Permanent Grade	Surfaced	Paved	Total in System
Primary	2.30	--	23.60	36.6	62.50
County Trunk	133.25*	7.25*	2.25*	--	142.75
Local County	711.75*	--	-- *	--	711.75
TOTAL	847.30*	7.25	25.85	36.6	917.00

*NOTE: There are 103.0 miles of surfacing on County Trunk Roads not built to permanent grade, and 86.25 miles of surfacing on County Local Roads not built to permanent grade.

Considerable progress has been made in surfacing the county trunk system, but very little has been done on the local county roads. Farmsteads in all other respects comparable suffer great differences in transportation service. Progress in providing equitable service will be slow because of the great mileage of roads in the local county system requiring some improvement.

A field examination reveals that much of the surfacing on the County Trunk system has been placed on roadways poorly prepared, either as to gradient or cross-section, to receive it. The result of such practice is increased cost of maintenance due to erosion of the roadway at the edge of the metalling and sometimes into it. Many miles of reasonably good road are spoiled by poor sight distance over hills and at corners. A relatively small amount of low cost grading would greatly improve these situations on the County Trunk system.

The Primary Road system is, for the most part, adequate for the traffic

served. Some portions are yet to be surfaced. Two short sections are recent additions to this system. Discussion of this system in this report is particularly concerned with deficiencies which are presented in another part of the report.

In addition to the brief generalized inventory of mileage and condition, a more detailed inventory of the physical property of each road system should be prepared prior to the thorough study of the highway system problems of the county. Also, knowledge of the volume and classification of traffic on each section of roadway should be made available. This traffic survey should include an investigation of the sources and destinations of the units of traffic. An intelligent approach to the problem requires the acquisition and examination of the factual data. The work of obtaining this data is slow and tedious, but the accuracy, dependability and equality of the solution of highway problems are at stake. For some years this fact has been recognized by leading highway engineers and officials, and technique of procedure is being developed both to reduce greatly the cost of the work and to increase its value as an aid in solving highway transportation problems.

City Streets

The village and city streets are, in most instances, of adequate width. Many are, however, inadequately surfaced. The cost of higher type of surfacing is prohibitive on the customary assessment basis, due to the low value of the benefited, and assessed, property. Careful studies of volumes and type of traffic should be made and a selection of the lowest cost surfacing which is adequate for the needs of the traffic should be made. The parking problem should be investigated thoroughly. In general, the storage of cars or vehicles on the street is the most expensive of several methods that may be used.

Functions of Transportation System

The most logical function of the railway system is to provide the long hauls to and from distant markets. The nature of the facilities prohibit extensive local service other than in bulk produce such as grain or coal. The roadway is fixed and the equipment cumbersome for light, rapid service. The movement of produce, goods and people is therefore most readily and efficiently accomplished by this system for long hauls between a relatively few fixed termini.

The function of the highway system is to provide means of moving produce from the individual homes, mines, and farmsteads to the local markets, to fairly distant markets and to shipping points on the railroads, and to move goods from these points to the homes, mines and farmsteads. There is also movement -- between homes, villages and towns -- of people, produce and goods, as previously described.

The city streets should provide for free and efficient movement within the city. They connect with both the highways and the railroads.

Collectively, the railroads, highways and streets with their various vehicles and conveyances and operators form, in the broad sense, the transportation system of the county.

Transportation Problems of the County

The transportation problems arise from the inadequacy and deficiencies of each system, and from the lack of co-ordination in their functions. The inadequacies and deficiencies of each system are largely found in common causes, such as

1. The dispersion of the originations and destinations of the units of traffic.

2. The magnitude and scope of the systems required to serve the traffic.

3. The depreciation and deterioration of units of equipment, trackage and roadway under service and the action of weathering.

4. The obsolescence of equipment, designs and structures.

5. The diversity of the nature of units of traffic and natures of the cargo.

6. The public attitude toward provision of adequate financial support for construction and maintenance of the system.

The dispersion of the originations and destinations of the units of traffic may be illustrated by considering that any vehicle at any home or farmstead may desire or need to go to any home, farm, store, market or town in the county, the adjacent county, or any other county. The vehicle may be auto, truck, horse and buggy, team and wagon, motorcycle and part of the journey or movement may be by train.

The connection of all these origins and destinations requires a transportation system of considerable magnitude and scope. These large systems are costly in both construction and maintenance of equipment, trackage, roadway and structures.

Use and weathering causes deterioration and depreciation of all of these facilities. A shift to an improved design of vehicle, trackage or roadway introduces obsolescence.

On the highway the diversity of units is found in the types of vehicles and their loadings, in their speed, weight and size, and in the traffic habits of the operators. On the railways it is found in different cargoes requiring different types of cars, different rates of movement as for perishables, and differences in handling as for stock, grain, coal, inflammables, and explosives.

Last, but far from least, of the problems of transportation is the attitude of the public in financing or supporting the required facilities. It wants the service, but is reluctant to pay even the reasonable cost of provid-

ing it, particularly for the portion of the highway system owned collectively by the public, that is, the roadway and its structure. The public seems quite willing to finance that part of the system which it owns as individuals -- the cars and trucks.

Suggested Solution of the Problems in Appanoose County

In the ideal transportation system it would be possible to go directly from each home, each farmstead, each mine, each business, each office, and, in fact, from each place of human interest to each of the like places in the county without loss of distance or time, and without excessive expenditure of energy and money. Transportation of peoples, produce and goods would in this system be accomplished along straight lines from one place to another. Perhaps the nearest approach to the ideal would be provided by the airways system in which each individual dependent upon transportation in any way either would have sufficient transportation equipment to supply his needs for delivery of himself, his produce and goods, or would have direct access to the use of such equipment.

For many obvious reasons, a near approach to this ideal is either impossible or impractical over land. In some special cases it may be closely approached on water. It is, however, equally obvious that for Appanoose County dependence on transportation overland, either by railway or highway system, will be persistent, for many years, certainly well beyond the end of any improvement program for these facilities, and the useful life of the products of such a program. The thing to do, therefore, is to make the best use of the current facilities that can be devised. This, of course, is a compromise with the ideal, but it has a distinct advantage over the ideal in that it may be realized in a relatively short period of time and can be expected to supply a

a contribution to the comfort and happiness of the people of the county for many years while the ideal passes through its boisterous, reckless initial stages to a useful maturity.

Nature exhibits many beautiful examples of the economy of effort in accomplishing results. One that seems of particular interest to students of traffic movements is that in the drainage system of a great river. Each little drop of water that falls upon the earth, excepting those caught by evaporation and returned to the clouds, attempts at once to find its way back, in obedience to the laws of gravity, by the most direct or convenient route to the sea from whence it came. Tiny rivulets are formed, either on the surface or within the earth itself. Combining these, form the branches, creeks, small rivers, and eventually the large river rolling on to its destination. Water returns again to the downward starting place by another route -- through the air.

Similarly, in many ways, do traffic streams originate and expand in reaching the destination of the majority of the traffic units which,however, eventually return to the place of starting, either by the same or by a similar route. Each roadway is a part of the drainage system of a particular traffic pool to and from which the flow is reversible at the option of the operators of the traffic units. One way of looking at a transportation system, therefore, is to consider it and its members as means of draining certain potention traffic pools in a manner providing the most efficient movement for the greatest number of units in and out of each pool and, to a certain extent, about in it.

From this point of view, centers of concentration of population in cities, towns and villages, are likely to provide the deepest pools of potential traffic and to develop the greatest pressure and its incidental volume of flow of traffic. The strictly rural areas resemble broad, shallow pools difficult of access to every portion with equal efficiency by any system. The movement or flow of

traffic from pool to pool and about within each of them, must therefore be attained at some compromise with the ideal transportation system. The greater the volume of movement between pools or points, the less the departure from it. The greater the dispersion of originations and destinations of units of traffic, the greater the departure from the ideal.

The owners, operators and users of the traffic units, be they autos, trucks, busses, wagons, buggies, freight or passenger trains, must bear the cost of construction, maintenance and operation of these units and their respective facilities. The design of a transportation system and the coordination of transportation is appropriately begun with the intention of serving first as efficiently as may be possible the greatest number of these basic beneficiaries of the facilities to be provided. Then attention is directed to the design of the systems for the efficient movement of the lesser streams, first to connect with the larger streams for flow out of and into their areas, and second to inter-connect within themselves insofar as may be practical for movement about the pools of potential traffic.

On this basis the suggestions for the improvement of the transportation system of Appanoose County which follow are designed to serve the greatest number of the people for a given area or potential traffic pool, be it rural or urban, that at this time it appears practical to provide with transportation facilities of the nature described.

Railway System:

The function of this system, for the purposes of this report, is assumed to be principally that of providing the long haul service of bulk movements of people, produce and goods. The nature of the equipment and the facilities largely limits this system currently to that type of service. Such service is of most benefit when connecting centers of concentration of population, both

within and without the county, and when connecting strategic points on the highway system with these centers of concentration similarly. Produce may then move probably with greater efficiency particularly to distant markets, than by the highway system alone.

To accomplish the desired ends for Appanoose County thought should be given to the provision of adequate station service and facilities at Udell, Centerville, Numa, Seymour, Mystic, Moravia, Moulten and Sedan, to handle the type and quantity of produce and goods most logically expected to move from or to these places. Wherever two railroads enter the same place, the facilities should be jointly owned and operated, if at all possible or feasible. The station service might well be considered on a commission basis, the agent or attendant serving part time on a commission basis.

Studies of coordination of transportation of the entire State and Nation would likely result in the recommendation for the abondonment of all or some portions of the railroads in this county. Discussion of that is beyond the scope of this report, but siffice it is to say here that serious consideration of the general proposals above would be apropos for the portions of the several railroads available that connect important distant markets. By coordination of the railroad system with the highway system the county could quite probably be adequately served by a considerably less mileage of railroad than at present. Many items of local costs of transportation would be reduced, not the least of which is grade separation. More concrete suggestions for the solution of the railway transportation problems must await the studies briefly outlined here.

Highway System

The function of the highway system is that of providing overland haul of great freedom of movement for either long or short haul, principally the latter. The units of traffic are largely individually owned and operated. They

provide intimate and personal transportation service. The system designed for their operation involves all of the problems stated in this report on pages 52 and 53. These problems are almost wholly within the jurisdiction of the state, the county, or the towns and cities. From the point of view of the county, the provision of a system which permits the proper functions of the highway system is the major undertaking of a county government.

There are now in Appanoose County three rural road systems (see Table 12) as prescribed by law, and an urban system, the city streets. The State is responsible for the Primary Road system, the county for the County Trunk and Local County Road Systems, and the towns for the street system. This portion of the report deals with suggestions for the improvement and betterment of each of these four general systems as they are now available in Appanoose County. (Fig. 34).

Primary Road System

The functions of the Primary Road System are to provide for the movement of traffic between major concentrations of population within the state, first, and to connect important outlying concentrations within each county with the system resulting from the connection of the major places such as county seats, and cities and towns. In Iowa, the Primary Road System is quite fully developed, and for Appanoose County, is rather complete.

Since the jurisdiction of this system lies with the State, the suggestions here will be limited to those apparent deficiencies of the system in which the county has a vital interest.

It is proposed and suggested that the following relocations be made:

1. Road Number 60 to be routed along the east city limits of Centerville and diagonally across the eastern portion of the city to the present county road toward Exline. That it follow this county road and the present Primary Road toward Exline to a point directly west of

Exline, and thence diagonally to Cincinnati. This would involve:

(a) Relocation in Centerville.

(b) Separation of grade crossings on the C.R. I. & P., and if possible, the C. B. & Q. Railroad in Centerville.

(c) The abandonment of present Primary Road from Streppyville to Cincinnati.

The above suggestion is based on the following facts:

(a) A much greater number of units of traffic will be served by a grade crossing separation in Centerville than at Streppyville, as indicated by traffic surveys.

(b) A better location is obtained through Centerville.

(c) A better alignment is obtained to both Exline and Cincinnati.

(d) These may be accomplished without an appreciable increase in Primary Road mileage in the county -- only one-half mile, in fact.

2. The stubs to Rathbun, Numa and Plano should be given a low cost type of surfacing.

3. Grade crossing separations should be made for all C.R.I. & P., C. M. & St. P., and Wabash crossings, as yet without them.

4. The Primary Road from Centerville to the county line through Cincinnati, and to Exline, on new location, should be paved.

Other than for these suggested projects the Primary Road system is in condition and adequately improved for the volume and nature of the traffic using it.

County Trunk Road System

The functions of the County Trunk Road system are to provide for the efficient movement of traffic between concentrations of population within the county, where that service has been logically omitted from the Primary Road system; to provide the main lines of this road system required to give all parts of the county access to markets and shipping points; and to provide for movement between all parts of the county by connections of these main lines one with the other, and with those of adjacent counties.

The selection of the locations of the roads which will form a county trunk system to perform adequately and efficiently these functions has occupied the major portion of the time spent in the preparation of this report. This is perhaps one of the most difficult problems to undertake in the transportation field. It is difficult even when wholly dissociated from local political considerations and other local influences as the author has been. The introduction of these things would increase the difficulty and probably decrease the real usefulness, and detract from the unity and integrity of the system. It is inevitable that this be so when political expediency and special influence are among the important factors in the selection of this system.

Factors considered were the need of each community for access to each other community; the shortest line of travel that would accommodate the most people needing or using that kind of service; the relationships to other road systems and the access to railroad shipping points. Consideration was also given to the size, shape and location of natural trade areas, the development of coal fields, the reclamation of land, the future abandonment of railroad service and the density of rural population along the road. Each of these factors had some influence on the final selection. One of the more important factors was that of density of rural population.

The present system was used insofar as possible, and relocations involving major changes were avoided similarly. The suggested system undoubtedly contains some defects, but it is a sincere, unbiased and unprejudiced effort to provide the best County Trunk system that can be devised for the situation as it exists in Appanoose County. Some considerable increase in mileage over that of the present system was required. The roads contributing to this increase were, for the most part, important county local roads serving directly in many instances more farm places, schools and churches than some sections of road on the pres-

ent County Trunk system. In all, the mileage increase totals 63.25 miles.

Detailed descriptions of the location and extent of each addition and relocation are too extensive for this report. They are better observed when presented on a map, as shown in Fig. 35, "Suggested Road System". The principal additions to the present system to provide the suggested system are:

1. Moravia to northeast corner of the county
2. Udell toward Centerville
3. Udell toward Rathbun
4. Moulton toward Centerville
5. Moulton toward Sedan and Exline
6. A point 2.5 miles west of Cincinnati toward Plano
7. East of Numa toward Mystic
8. North of Mystic toward Rathbun
9. Plano to Mystic
10. Exline toward Coal Valley

The relocations are:

1. North of Rathbun
2. Through Udell
3. Between Moulton and Centerville
4. Between Moulton and Dean

Of these, 1 and 3 were for the purpose of establishing cross connections, 2 was to obtain better alignment, and 4 to take advantage of a railroad grade crossing project proposed by the county for the Wabash crossing approximately three miles south of Moulton.

The County Trunk Road system as outlined connects the outlying concentrations of population with each other and with the Primary Road system, and it forms the main lines of the system serving the towns and their trade areas and

inter-connecting these areas.

It is suggested that this system be completed and surfaced with shale, gravel, or crushed stone. Preparatory to surfacing, sufficient grading should be done to provide a roadway cross-section that will drain water to adequate side-ditches. Also some grading should be done to improve sight distance over hills and around corners.

Local County Road System

The function of this system is to give access to the County Trunk, and Primary Road systems. It is principally a farm-to-market system, little other traffic having interest in it. The details of location are best obtained from a study of Fig. 35., "Suggested Road System".

County Land Service System

The roads of this system serve principally to give the rural residents living along them access to the Local County, County Trunk, and Primary Roads. They form the small rivulets that drain the potential rural traffic pool to the local county roads and the county trunk roads. It is a widely dispersed, disconnected system of roads, consisting of sections one to two miles in length, each section serving almost exclusively but two to six homesteads.

In many ways this is the "poor relation" of the road systems. It contains in most counties, as well as in Appanoose County, approximately one-third of the total road mileage of the county. It serves directly but a small portion of the population, yet each residence is within a mile of one of the other road systems. Studies of transportation systems have yet to provide even a tentative solution of the problem this system creates. Many suggestions have been made, such as that of moving the homesteads to a position where they might be served with less mileage; that of the purchase by the county of portions

of the land served where dwellings cannot be moved; that of returning the roads to the land to become private roads or lanes, and that of merely abandoning them to their fate. None of these suggestions has been studied thoroughly. It is felt that there is some good in each of them, and that there are possibilities in their judicious combination. Much thought must be directed toward these roads before a solution is obtained.

Service Provided by Suggested Road System

The map in Fig. 35 presents graphically the service provided by the suggested road system for Appanoose County. The scale of the road symbols, however, prevents a more intimate and detailed view of this service. To bring out these features, Tables 14, 15, 16 and 17 have been prepared.

Table 14 deals with rural homes, schools and churches, showing the number of homes on each system and the distance to surfaced roads for the homes, schools and churches in each system for the present condition of surfacing. On the Primary Road system all but 2.0 per cent of the homes are on surfaced road, as all but 5.0 miles of the suggested Primary Road system are surfaced. For the proposed county trunk system, 70.0 per cent of the homes are on a surfaced road. Another 8.0 per cent are within the first one-half mile zone from such a road, and 6.0 per cent are within the second. For the proposed local county road system but 44.0 percent of the homes are on a surfaced road, with only another 14.0 per cent within the first one-half mile zone and the same amount in the second one-half mile zone.

Were the suggested system to be surfaced as proposed, 100.0 per cent of the rural homes, schools, and churches on the Primary, County Trunk, and Local County roads would be served directly by a surfaced road.

The County Land Service system would have but 5.0 per cent of the homes on a surfaced road. Approximately 50.0 per cent would be within the first one-

TABLE 14
SUMMARY OF LOCATION OF FARM HOMES
IN RELATION TO SUGGESTED HIGHWAY SYSTEMS

Suggested Road System	Total Miles (Approx)	On Surfaced Road						Off Surfaced Road But Within ½ Mile of Surfaced Road						Over ½ Miles, but Less than 1 Mile from Surfaced Road						Over 1 Mile From Surfaced Road						TOTAL		
		Homes	Percent	Schools	Percent	Churches	Percent	Homes	Percent	Schools	Percent	Churches	Percent	Homes	Percent	Schools	Percent	Churches	Percent	Homes	Percent	Schools	Percent	Churches	Percent	Homes	Schools	Churches
Primary	62.0	293	98	12	100	4	100	6	2	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	299	12	4
County-Trunk	206.0	551	70	10	56	7	58	59	8	-	-	1	8	47	6	4	22	2	17	129	16	4	22	2	17	786	18	12
County-Local	331.0	460	44	14	34	3	37	148	14	7	17	1	13	147	14	7	7	2	25	299	28	13	32	2	25	1054	41	8
County-Land Service	318.0	20	3	-	-	-	-	184	32	10	44	2	50	139	24	4	17	-	-	234	41	9	39	2	50	577	23	4
TOTAL	917.0	1324	49	36	38	14	50	397	15	17	18	4	14	333	12	15	16	4	14	662	24	26	28	6	22	2716	94	28
Accumulative Percent			49						64						76													

half mile zone from a surfaced road, and the remainder within the next half-mile zone. All would thus be within one mile of a surfaced road.

Table 15 shows briefly the present condition of the suggested highway system, and indicates in a general way the work to be done to bring the roads of each system to the condition proposed for this suggested system. The task of providing adequate and efficient highway transportation facilities for Appanoose County is far from completed, particularly on the County Trunk and Local County Road systems, and hardly started on the County Land Service system, the "poor relation" of these two.

In Table 16 the places served by the suggested systems in their present condition have been tabulated to show their relationship to the total number of rural homes, schools and churches. It is interesting to note that the first three of the systems serve 78.7 per cent of these rural places.

In Table 17 the service provided for the entire population of the county has been analyzed. It is interesting to note that the Primary Road system of the county constitutes but 6.8 per cent of the total road mileage, and serves directly 62.7 per cent of the population. This is due to the fact that the cities and towns are on this system and have direct access to it. It may also be argued that these concentrations of population are also on the County Trunk Road system which serves directly, without the cities and towns, 13.1 per cent of the population with 22.5 per cent of the total road mileage. Combining, then, the Primary and County Trunk Road system, which is perhaps fairer, it is found that 29.3 per cent of the total road mileage serves directly 75.8 per cent of the population of the county. The County Local Roads, hardly touching a village or town, serve, with 36.1 per cent of the road mileage, 28.6 per cent of the population, and the County Land Service system, containing 34.6 per cent of the total road mileage, serves but 8.5 per cent of the population. In

TABLE 15

Present Condition of Suggested Highway Systems

Appanoose County

January 1, 1936

Road System	Miles in Suggested System			Percentage of Suggested System	
	Unsurfaced	Surfaced	Total	Unsurfaced	Surfaced
Primary	5.0	57.0	62.0	8.1	91.9
County Trunk	103.5	102.5	206.0	50.2	49.8
County Local	240.0	91.0	331.0	72.5	27.5
County Land Service	315.7	2.3	318.0	99.3	0.7
TOTAL	664.2	252.8	917.0	72.4	27.6

TABLE 16

Service Provided by Suggested Highway Systems

in Present Condition of Improvement

Appanoose County

January 1, 1936

Road System	Places Served in Rural Districts	On Surfaced Road		Within 1/2 Mile of Surfaced Road		From 1/2 to 1 Mile to surfaced Road		Over 1 Mile to Surfaced Road		Total Number	Percent of Total in County
		Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total		
Primary	Homes	293	98	6	2	--	-	--	-	299	11.0
	Schools	12	100	--	-	--	-	--	-	12	12.8
	Churches	4	100	--	-	--	-	--	-	4	14.3
	TOTAL	309		6						315	11.1
County Trunk	Homes	551	70	59	8	47	6	129	16	786	28.9
	Schools	10	56	--	-	4	22	4	22	18	19.1
	Churches	7	58	1	8	2	17	2	17	12	42.9
	TOTAL	568		60		53		135		816	28.8
County Local	Homes	460	44	148	14	147	14	299	28	1054	38.9
	Schools	14	34	7	17	7	17	13	32	41	43.6
	Churches	3	37	1	13	2	25	2	25	8	28.5
	TOTAL	477		156		156		314		1103	38.8
County Land Service	Homes	20	3	184	32	139	24	234	41	577	21.2
	Schools	--	-	10	44	4	17	9	39	23	24.5
	Churches	--	-	2	50	--	-	2	50	4	14.3
	TOTAL	20		196		143		245		604	21.3
ALL Systems	Homes	1324	49	397	15	333	12	662	24	2716	100.0
	Schools	36	38	17	18	15	16	26	28	94	100.0
	Churches	14	50	4	14	4	14	6	22	28	100.0
	TOTAL	1374		418		352		694		2838	100.0

TABLE 17
SUMMARY OF RURAL HOMES, RURAL SCHOOLS, RURAL CHURCHES

TOTAL POPULATION AND AREA OF COUNTY
SERVED DIRECTLY BY SUGGESTED HIGHWAY SYSTEM

Suggested Road System	Surfaced	Unsurfaced	Total	Percent of Total	Rural Homes Served Directly		Rural Schools Served Directly		Rural Churches Served Directly		Population Served		Area	
					Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Sq. Mi.	Percent of Total
Primary	57.0	5.0	62.0	6.8	299	11.0	12	12.8	4	14.3	15560	62.7	35	6.8
County-Trunk	102.5	103.5	206.0	22.5	786	29.0	18	19.1	12	42.8	3267	13.1	115	22.5
County-Local	91.0	240.0	331.0	36.1	1054	38.8	41	43.6	8	28.6	3883	15.7	185	36.1
County-Land Service	2.3	315.7	318.0	34.6	577	21.2	23	24.5	4	14.3	2125	8.5	178	34.6
TOTAL	252.8	664.2	917.0	100.0	2716	100.0	94	100.0	28	100.0	24835	100.0	513	100.0

these circumstances the suggested road systems provide, in the Primary, County Trunk, and County Local road systems, containing a total of 65.4 per cent of the county road mileage, direct service to 91.5 per cent of the population. Were these roads to be surfaced as proposed, 91.5 per cent of the population would be served directly by a surfaced road, and the remaining 8.5 per cent would be located within one mile of such a road.

Highway service comparable to this has been provided in a considerable number of counties in the northern half of the state, where grading, bridging and surfacing costs have been much lower than for the majority of southern Iowa counties. Annually an additional number of counties in the central portion of the state approach this condition of improvement on both county trunk and local county roads. A few southern Iowa counties have comparable systems insofar as condition of improvement is concerned, even where the grading and bridging costs are similar to those in Appanoose County. Inasmuch as the financial support of the Primary Road System is from State Funds, discussion of costs is confined to the county systems alone.

Financial Program for Railway System

Under present laws, the charges for railroad services are under the jurisdiction of state and national regulatory bodies. The county unit is too small for authority in these matters. For this reason a discussion of a financial program for the railroads from the point of view of a county is impractical and impossible. The only opportunity for the expression and consideration of that viewpoint is before the duly authorized bodies of the state and federal governments.

The improvements of railroad facilities as suggested in this report would have to be authorized by the Interstate Commerce Commission. Representatives of that organization would have to be convinced of the earning power of the

additions and betterments suggested. In reaching the decision of this value an extensive study of the several factors of railway transportation service referred to here would be given careful and thorough consideration. Coordination and correlation of the needs of this particular county, and those of other counties through which the railway passes would also be sought. Eventually, rates commensurate with the service provided for each commodity should result.

Cost of Suggested County Trunk and Local County System

After an examination of the highway systems suggested for this county, and a review of the service and benefits to be derived from its adoption and construction, the thought arises that it is perhaps beyond the financial ability of the county to provide the service indicated. Were the present traffic on each section of the roads of the proposed systems known it would be possible to compute quite accurately the savings to be realized by the improvement. The savings resulting from lower operating costs per mile for fuel, for tires, and for general upkeep of the motor vehicles would, almost certainly be an astounding figure. Previous experience with similar situations where the traffic factors were known have shown this to be the case repeatedly and persistently. The figure will undoubtedly be of such size as to indicate that the present annual highway costs, composed of the annual loss due to operation on present roads and of the normal operating costs of the vehicles would be but little less than the costs resulting from the improvement plus the resulting normal operation costs of the vehicles. In other words, the motor vehicle operators are now paying a substantial portion of the cost of the improved system without enjoying any appreciable portion of the benefits to be derived from the improvement.

A reasonably accurate estimate of the cost of constructing and improving the roads of the present county road systems to the condition indicated for

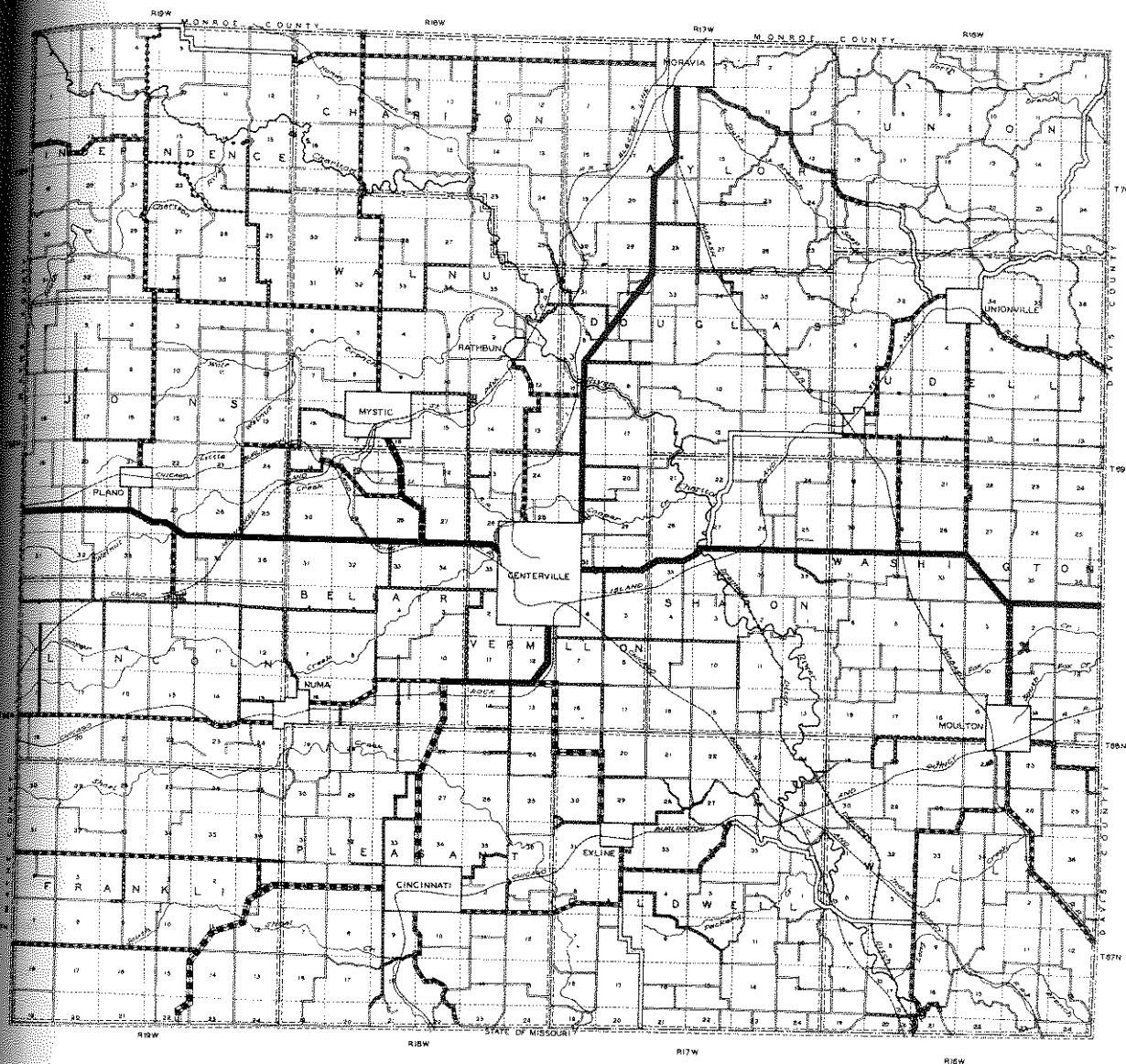
the suggested system is impossible on the basis of the data available for the preparation of this report. An inventory of the physical property of the roads on the suggested system would be required for the determination of the portion of the required improvements that are now available in bridges, culverts, permanent grading, erosion control works, salvageable surfacing, and right-of-way. An extensive field examination has indicated that much could be accomplished, particularly on the County Trunk Road system with a relatively small expenditure per mile for forming a satisfactory cross-section of roadway, for grading to improve sight distance over hills and around corners, and for the acquisition of occasional small parcels of land to improve alignment. Although some of the gradients are quite steep, they can be negotiated readily with modern motor equipment, if the roadway is in good condition.

Similarly, much can be accomplished in the Local County Road system to provide roadway facilities adequate for the volume and nature of local traffic.

For the county land service roads grading only is recommended at this time. Of course adequate bridges and culverts will be required where they are now missing.

For the improvement and maintenance of the County Trunk roads, Local County roads, and County Land Service roads to the condition described in this report and illustrated in Figure 35, "Suggested Road System", it is estimated that the annual expenditure of approximately $200,000.00 would be required for a fifteen-year construction program. Shortening of the program would increase the annual cost in proportion to the amount of decrease in the construction period.

During the past fifteen years the average annual expenditure for road purposes on these roads in Appanoose County has been approximately $140,000. In normal years the annual expenditure was about $150,000. The per capita



ROAD SYSTEM

SHOWING

EXISTING PRIMARY, COUNTY TRUNK, AND LOCAL ROADS

1935

LEGEND			
SURFACE	PRIMARY	COUNTY TRUNK	LOCAL
PAVED			
OILED GRAVEL			
GRAVEL OR SHALE			
STONE			
DIRT			

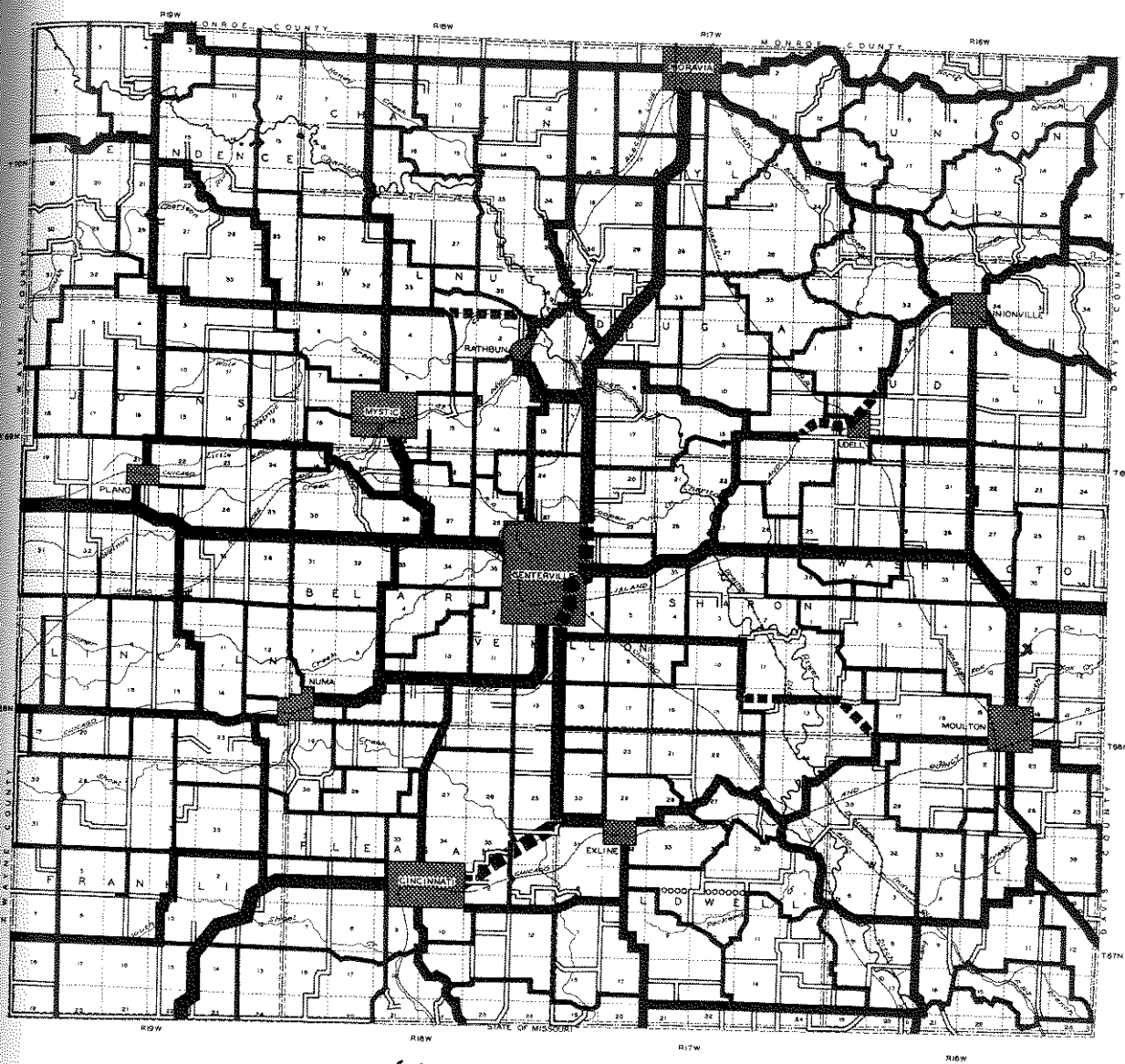
SCALE IN MILES

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

SOIL MAP FROM SOIL MAP OF IOWA, U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

FIG. 34



SUGGESTED ROAD SYSTEM

Prepared by Mark Morris, Research Engineer, Iowa State Highway Commission

LEGEND

- PRIMARY ROAD — STANDARD CROSS-SECTION WITH ALL-WEATHER SURFACE
- COUNTY TRUNK ROAD — STANDARD CROSS-SECTION WITH ALL-WEATHER SURFACE
- LOCAL COUNTY ROAD — STANDARD CROSS-SECTION WITH ALL-WEATHER SURFACE
- TO BE MAINTAINED ONLY
- ROAD TO BE ABANDONED
- PROPOSED NEW ROAD (APPROXIMATE LOCATION)

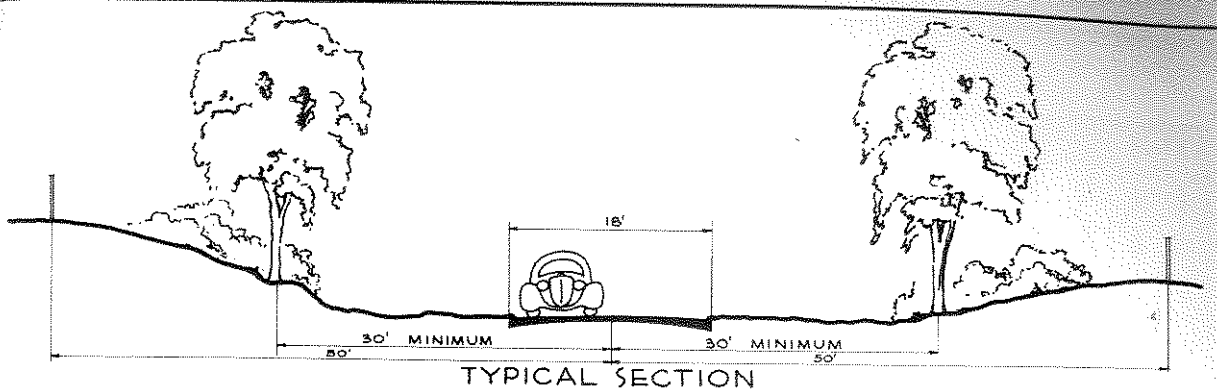
SCALE IN MILES 0 1 2 3

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

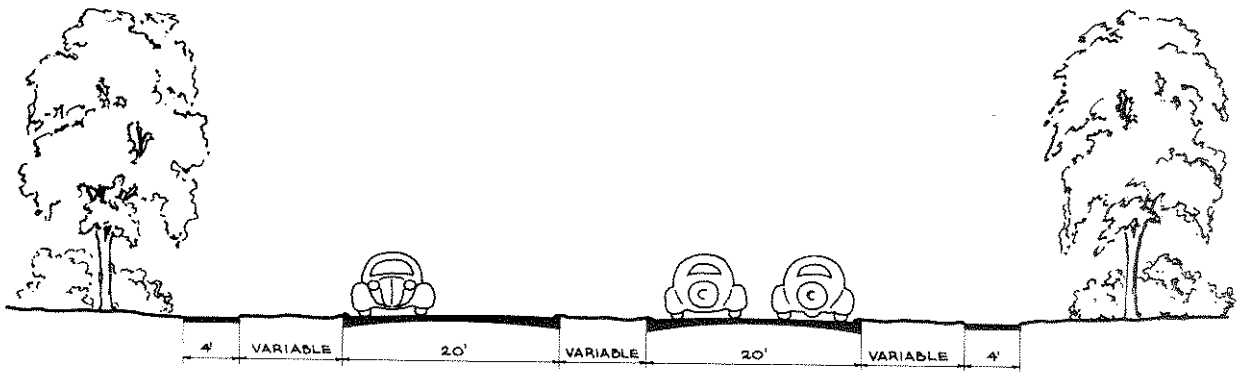
APPANOOSE COUNTY

FIG. 35



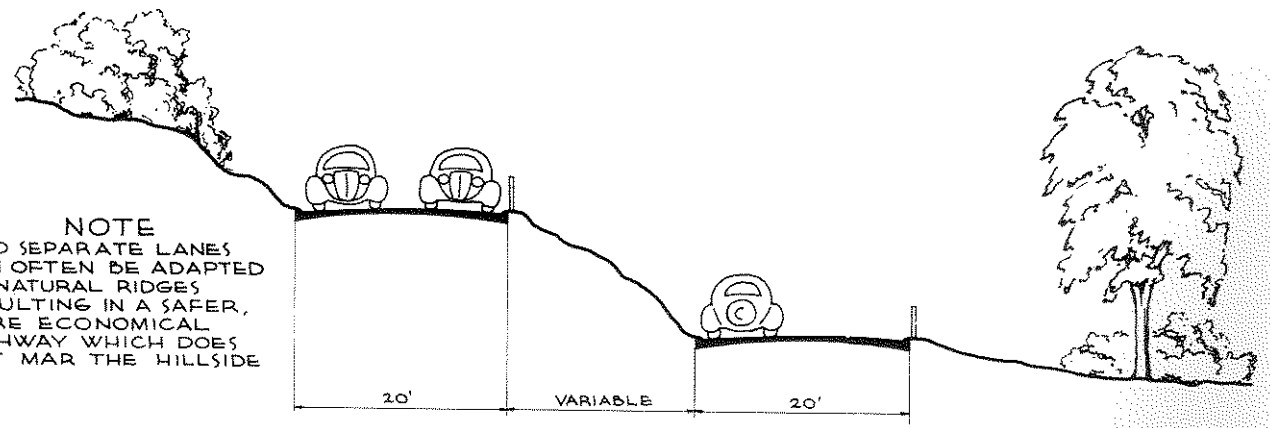
TYPICAL SECTION

APPANOOSE COUNTY ROADSIDE TREE PLANTING
COURTESY IOWA HIGHWAY COMMISSION



TYPICAL SECTION

LIMITED MOTORWAYS
COURTESY NEW ENGLAND REGIONAL
PLANNING COMMISSION



NOTE
TWO SEPARATE LANES CAN OFTEN BE ADAPTED TO NATURAL RIDGES RESULTING IN A SAFER, MORE ECONOMICAL HIGHWAY WHICH DOES NOT MAR THE HILLSIDE

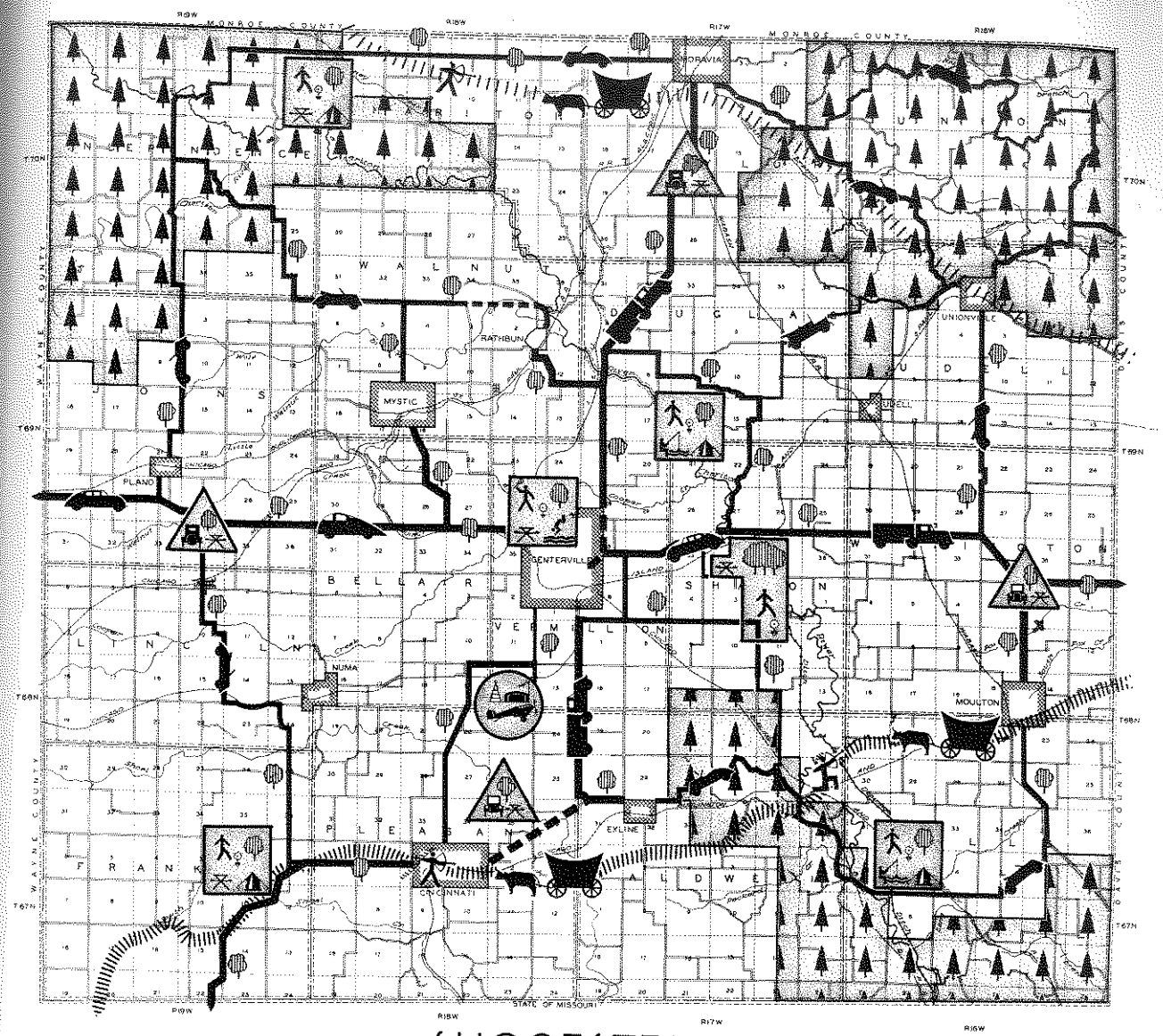
HILLSIDE SECTION

COURTESY NEW ENGLAND REGIONAL PLANNING COMMISSION

HIGHWAY SECTIONS

IOWA STATE PLANNING BOARD

FIG. 36



SUGGESTED COUNTY PARK AND PARKWAY SYSTEM

LEGEND

- SUGGESTED COUNTY PARK
- SUGGESTED WAYSIDE PARK
- AIRPORT
- STATE PARK
- AREA WITHIN WHICH LAND MAY BE PURCHASED FOR NATIONAL FORESTS
- PRIMARY ROAD PARKWAY
- COUNTY TRUNK "
- LOCAL COUNTY "
- LANDSCAPING OF "
- ORIGINAL DRAGOON (MORMON) TRAIL 1838-1846 FROM ORIGINAL IOWA LAND SURVEY
- LATER MORMON TRAIL 1846 FROM E.R. HARLAN - CURATOR STATE HISTORICAL LIBRARY

SCALE IN MILES

BASE MAP FROM SOIL MAP OF U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF SOILS & IOWA AGRICULTURAL EXPERIMENT STATION

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 37

PART II -- CITIES AND TOWNS

EXISTING CONDITIONS

Population Trends

With the exception of Moulton, no city or town in Appanoose County showed a population increase from 1920 to 1930. (See Fig. 38). Cincinnati and Numa showed decreases also in the decade following 1910. Although there is no reason to believe that the trend toward smaller populations in most of the Appanoose County towns will continue without change, there is implied the possibility that some towns will never be as large as in the past.

Modern transportation and communication make unnecessary the close spacing of communities that once was required. Perhaps the future will see a combination of some of the Appanoose County towns into fewer but more highly organized social communities.

Social Organizations

In the number of community activities, the towns of Appanoose County are about on a par with the other towns in Iowa. In junior organizations -- number, membership and attendance -- they are consistently above the state average.

In other features, however, such as civic organizations, adult social organizations, recreational facilities, athletic activities, and service, professional, and retail agencies, the communities of Appanoose County are below

the state average.

Concerning civic organizations, outside of Centerville with its five organizations: two towns have commercial clubs or similar groups; one town has a volunteer fire department as the only civic organization; one town has a W.C.T.U. as the only civic organization; six towns have no civic organization of any kind.

The apparent lack of interest in community social affairs, evidenced by the analysis, may be explained somewhat as follows:

1. Unemployment has been disproportionately high in Appanoose County.

2. A large foreign group, living in more or less isolated mining camps, has not been exposed to the benefits of social organization.

3. Inadequate financial support for the schools has discouraged expanding their usefulness in community programs.

The main enthusiasm in social organizations in Appanoose County has been shown by rural groups, which comprise nearly forty per cent of the population. The unincorporated towns and mining camps are almost entirely without social, athletic or recreational facilities.

Income and Employment

Economic conditions in Appanoose County, as described on pages 5 to 8, apply directly or indirectly to each community. Those dependent directly on coal mining have suffered most, but all have felt the influence of decreased purchasing power. Fig. 39 suggests a condition which, though shown here with respect to Centerville alone, is more or less typical of the entire county in the relation between 1929 and 1934 incomes.

Housing

Housing conditions in the communities of Appanoose County, as on the farms,

are below the state average. In mining towns, of which Mystic has been the subject of a survey (reported in research bulletin No. 186 of the Agricultural Experiment Station at Iowa State College), housing conditions are especially poor. Modern sanitary facilities are rare, and dwellings are in poor condition.

Dwellings in Centerville vary from excellent to very poor. Little is to be gained, however, by stressing the physically and socially unhealthful circumstances in the housing of the lower income families unless some remedial measures can be suggested. Adequate income and education in higher standards of living are obviously needed, but consideration must also be given to the possibility of resettlement.

Fig. 40 shows a comparison of monthly rentals in Centerville as reported for the years 1929 and 1934. Figures 41 to 45 inclusive show other data pertaining to housing and related subjects in Centerville.

Topography

A basic factor in urban settlement and development is topography. Fig. 46 shows the topographic characteristics of the incorporated towns of Appanoose County.

The effects of topography upon transportation routing and general land utilization are highly important.

Urban Land Uses

Urban land may be classified as developed or vacant. Fig. 47 shows vacant areas in the incorporated communities of Appanoose County. Included as vacant in the classification were certain non-urban areas such as acreages, in the case of which a normal sized plot was considered as in residential use, and the remainder vacant.

Of the total incorporated area in Appanoose County, 27.1 per cent has been developed. The individual town percentages vary from 13.6 in Unionville to 47.9 in Rathbun. These figures are low compared to the Iowa average of approximately fifty per cent developed, and the U. S. average of about sixty per cent. The low average ratio of developed area to incorporated area in these towns may be explained partly by the decline in population since 1920.

In contrast to the low percentage of developed area, the amount of developed area per 100 persons is comparatively high -- 20.25 acres for the average Appanoose County town, compared to 8.2 acres in the average U. S. city. This in turn may be explained by the comparatively small size of the towns, low land values and large residential lots.

Urban land which is developed may be privately developed, or used for public and semi-public purposes. Privately developed areas may be divided into residential areas, commercial areas, and light and heavy industrial areas. Residential areas, in turn, might be divided into single-family, two-family, and multi-family dwelling areas; no such division is made, however, in this report.

In Fig. 48 may be seen the locations of the principal buildings (barns, sheds, etc. not included) in the incorporated communities of the county.

Residential Areas

Fig. 49 shows areas in residential use. The percentage of developed area occupied by residences varies from 16.1 in Udell to 47.3 in Moulton, with a mean average of 31.0 per cent for all incorporated towns in the county. The Iowa average is 51.2 per cent, and the U. S. average is 39.3 per cent.

The average lot space per person is about twice as great in the towns of Appanoose County as in the country as a whole.

Commercial Areas

The commercial areas in the Appanoose County incorporated towns are shown in Fig. 50. The ratio of commercial area to population varies from 0.27 acres per 100 persons in Numa and 0.30 acres per 100 persons in Centerville, to 1.22 in Unionville. The mean average of the 11 towns is 0.62 acres per 100 persons, compared to a state average of 0.79 and a U. S. average of 0.18. This striking comparison shows cause for every zoning and planning commission in the state to examine carefully the relations among areas zoned for business, for residential and for other uses.

A preferred method of showing the extent of commercial land use is in terms of lineal feet of store frontage per 100 persons. The mean average for the 11 Appanoose County incorporated towns is 78.7 feet of commercial frontage per 100 persons (varying from 40.1 feet per 100 persons in Numa to 171.4 in Unionville). This mean average is about one fourth higher than in other U. S. Cities surveyed. The latter, however, were all larger than the cities in Appanoose County. Figures for other cities of sizes comparable to those in Appanoose County are not available. The commercial or business areas are in a great majority of cases vastly greater than present or future needs warrant. The serious condition resulting from this situation is one of the major causes of blighted and slum areas.

Industrial Areas

No effort was made to distinguish between light and heavy industrial uses in preparing Fig. 51. Railroad areas are included. In terms of industrial area per 100 persons, Udell is high with 16.2 acres, and Centerville low with 1.2 acres. The mean average for the 11 towns is 5.7 acres per 100 persons.

The mean average percentage of developed area in industrial and railroad

STREET JOGS

The upper view shows a pleasant residential neighborhood. While it is not necessary that residential streets be made into speedways, convenience and safety would have been furthered by a better street alignment at this location. This jog, like many others, apparently resulted from failure to relate a new subdivision to the older parts of the town.

The lower picture shows a grade crossing in south Centerville. The fact that the roadway slopes rapidly downward on each side of the crossing makes it difficult for a stranger to decide which way to turn as he approaches the crossing.

use is 25.3 for the 11 towns, as compared with the Iowa average of 9.0 per cent and the U.S. average of 11.4 per cent. Corresponding percentages for Udell and Centerville are 43.6 and 10.6 respectively.

Several of these towns have two or more railroads converging within their limits, and several have extensive railroad yards and mine properties. If the areas devoted to railroad and unused mine properties were excluded, the industrial areas would be comparatively small in most towns except Centerville.

Streets

Streets provide access to property and thus make it usable. The percentage of total developed area in streets varies from 33.9 in Unionville to 46.3 in Exline, the mean average for the 11 towns in Appanoose County being 38.4 per cent. The Iowa average is 26.3 per cent and the U.S. average is 33.6 per cent.

Expressed in street area per 100 persons, the variation is from 4 acres in Centerville to 13.3 in Udell, and the mean average is 7.7 acres per 100 persons, as compared to 5.5 for Iowa and 2.8 for the U.S.

In terms of street mileage per 100 persons, Centerville is low with 0.8 and Udell high with 2.6.

Figures 52 and 53 show pertinent features of the street systems in the incorporated towns of Appanoose County. Numerous jogs and dead ends are not only inconveniences but also contributing causes of accidents.

Parks and Playgrounds

In park and playground area, only Centerville approaches the desired amount in proportion to population. In the following figures, the newly acquired Belle Wooden tract has been disregarded because of its undeveloped status.

CLEAN-UP CAMPAIGNS

These scenes illustrate the need for neighborhood and city-wide clean-up campaigns. The pride of a citizen in his community should take the form of efforts to eliminate rubbish from his own yard and -- through group action and pressure of example -- from his neighbor's.

Only five towns in the county have any park or playground area except school grounds. These towns and their respective acreages of park and playground per 100 persons are as follows:

Centerville	0.325
Mystic	0.159
Exline	0.119
Moulton	0.110
Numa	0.076
Mean average for 5 cities	0.158
Iowa average	0.630
U.S. Average	0.479
U.S. Norm*	1.000

* A hypothetical standard, usually expressed as 10 acres per 1000 persons.

A city should have not only adequate play space, but also appropriate facilities for play -- athletic fields, equipment, etc. The problem of limited playground space is perhaps less serious in a small community because of the nearness of open fields; and if a certain amount of equipment is available, so that an active recreation program can be carried on, the lack of large playgrounds will be less severely felt.

Again, even a very large park or playground, unless it has been properly developed and has certain equipment, may fail to serve all the purposes required of a recreation area. In this regard it should be emphasized that mere size is not an indication of the true usefulness of a park, for in many cities there are large areas dedicated to recreation but so far from most of the people as to be of little value to them.

A thousand acres on the edge of a city may be considerably less useful for many types of active recreation than a half dozen 10-acre parks and playgrounds distributed within the city limits.

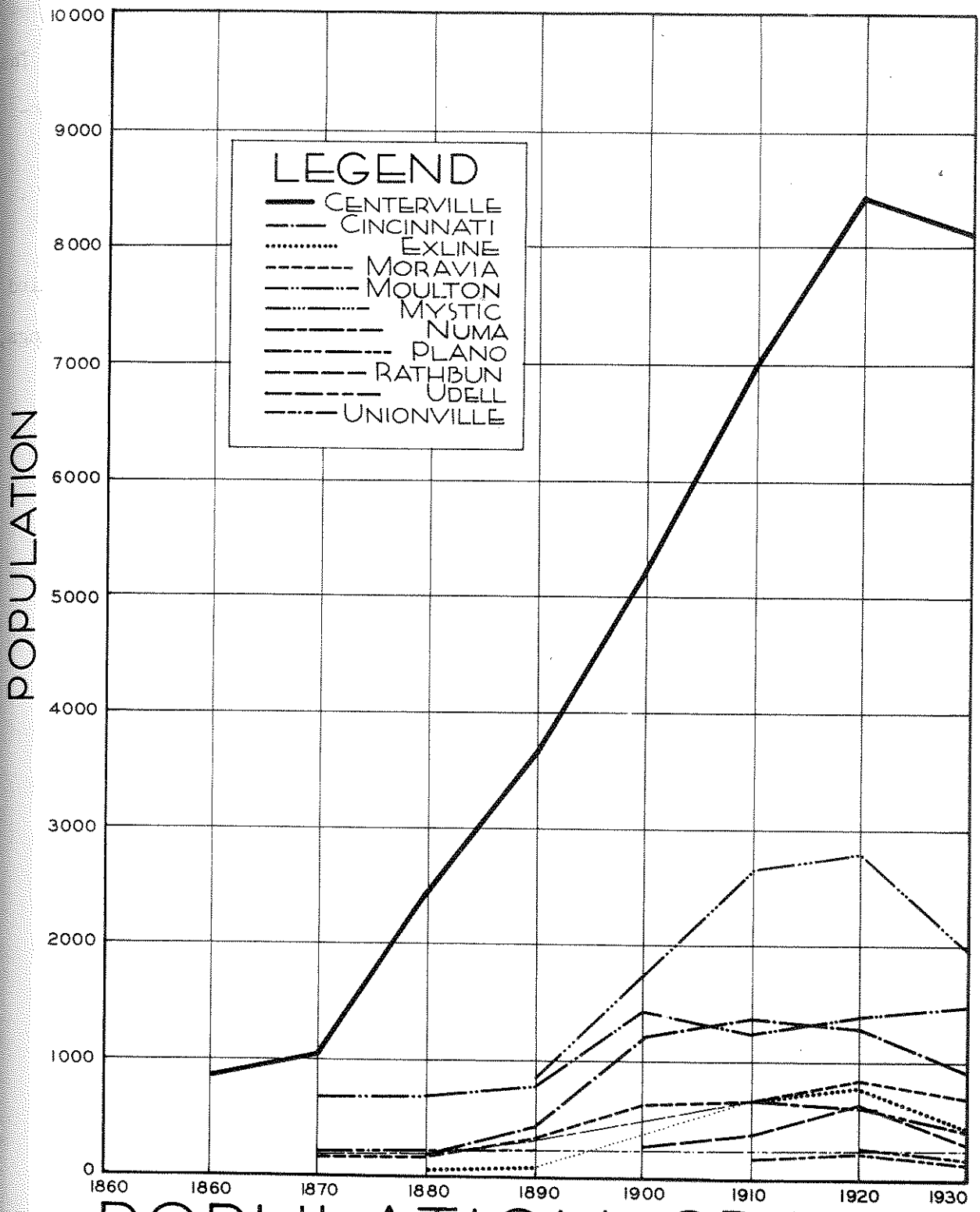
Public and Semi-Public Areas

The areas devoted to city property, cemeteries, churches, schools, parks and playgrounds, are classified in this report as public and semi-public areas.

Expressed in percentage of total developed area, public and semi-public property varies from 1.3 per cent in Rathbun to 12.3 per cent in Centerville. The mean average for the 11 towns is 4.2 per cent, as compared to the Iowa average of 5.4 per cent and the U.S. average of 7.6 per cent.

School Systems

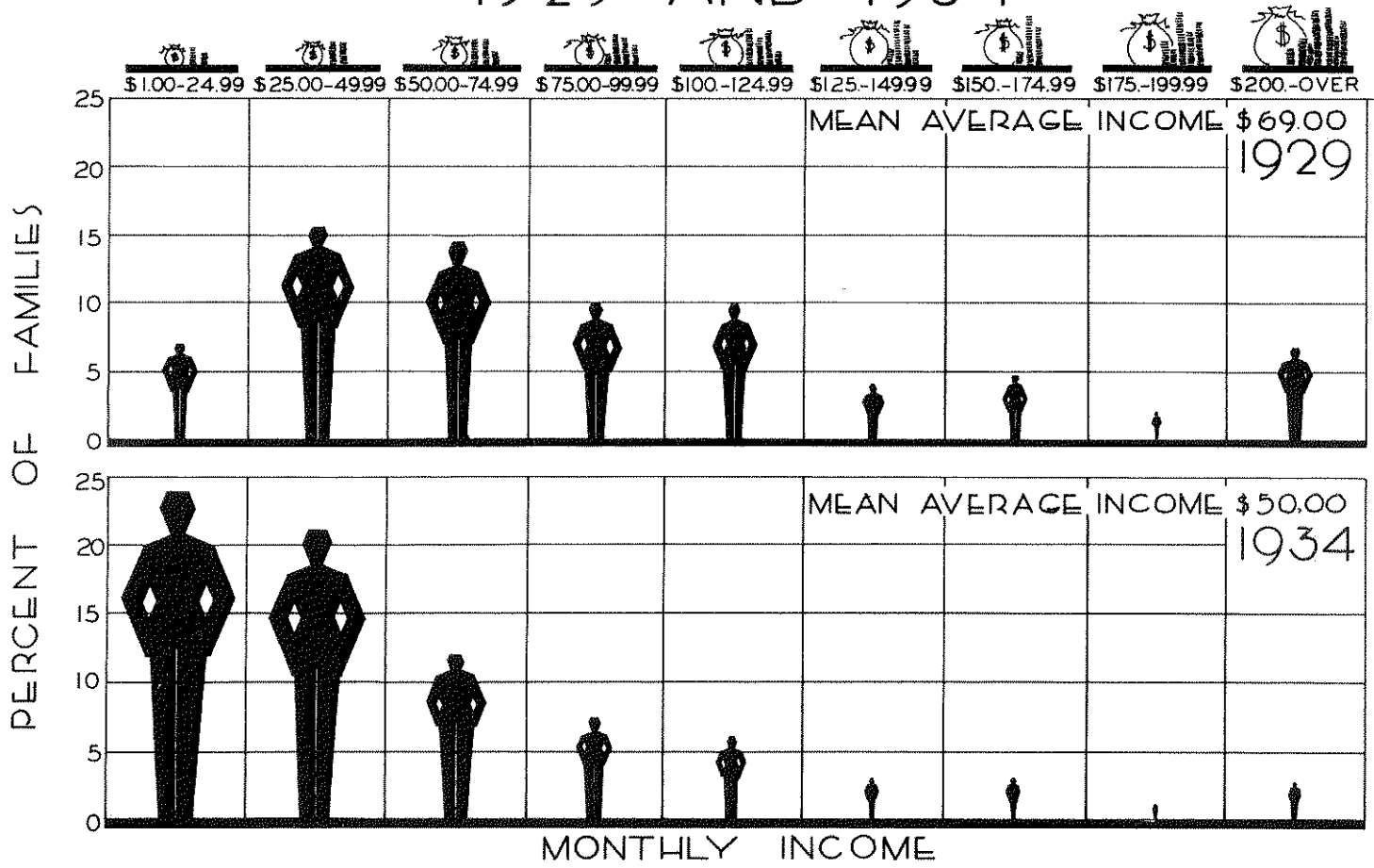
School locations and their relation to pupil distribution may be studied in Fig. 54. No attempt is made herein to evaluate municipal school buildings, or suggest geographic reorganization of school systems.



POPULATION GROWTH
INCORPORATED TOWNS
APPANOOSE COUNTY
1860-1930

FIG. 38

COMPARISON OF INCOMES
1929 AND 1934



CENTERVILLE IOWA

FIG. 39

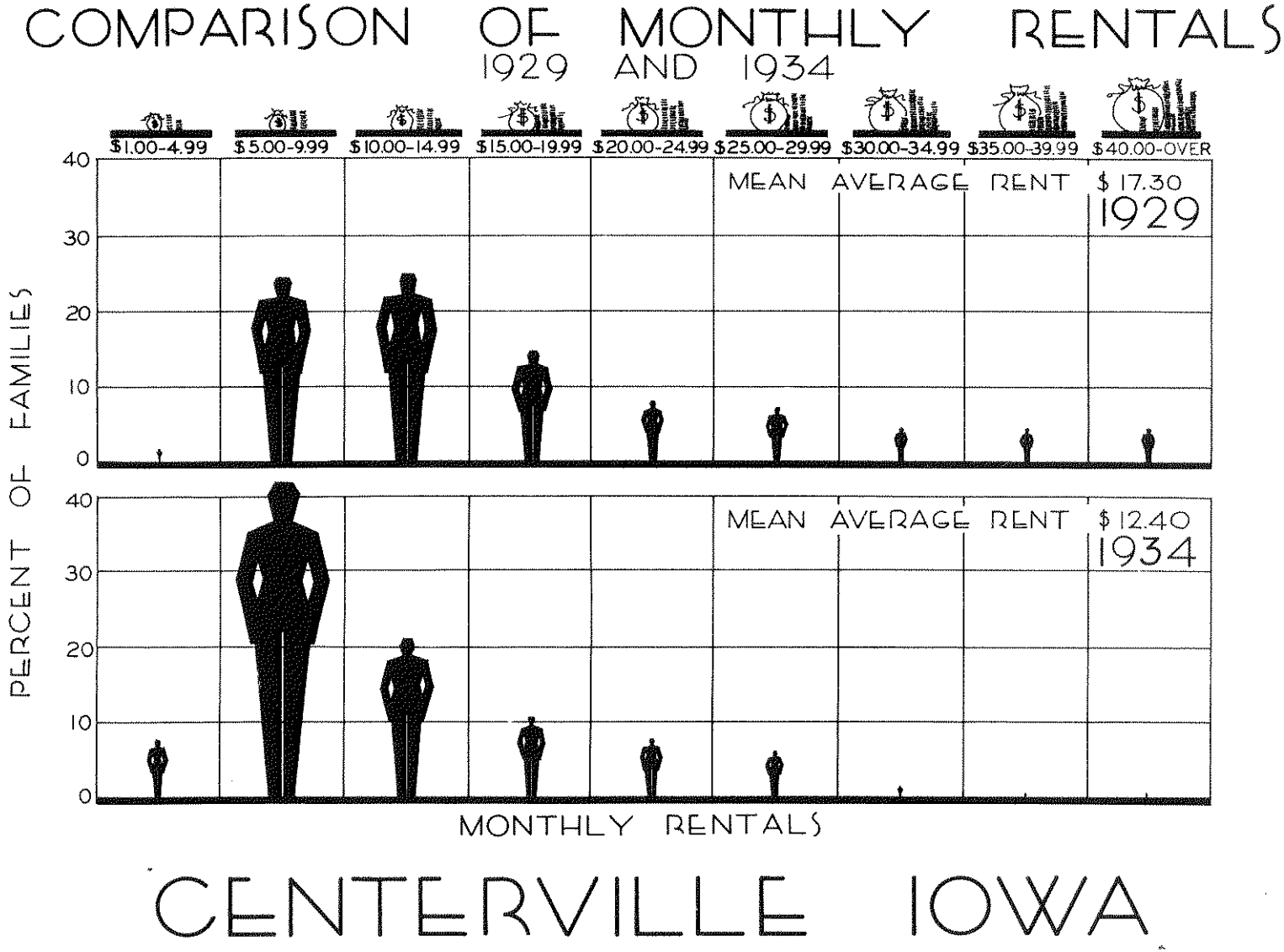
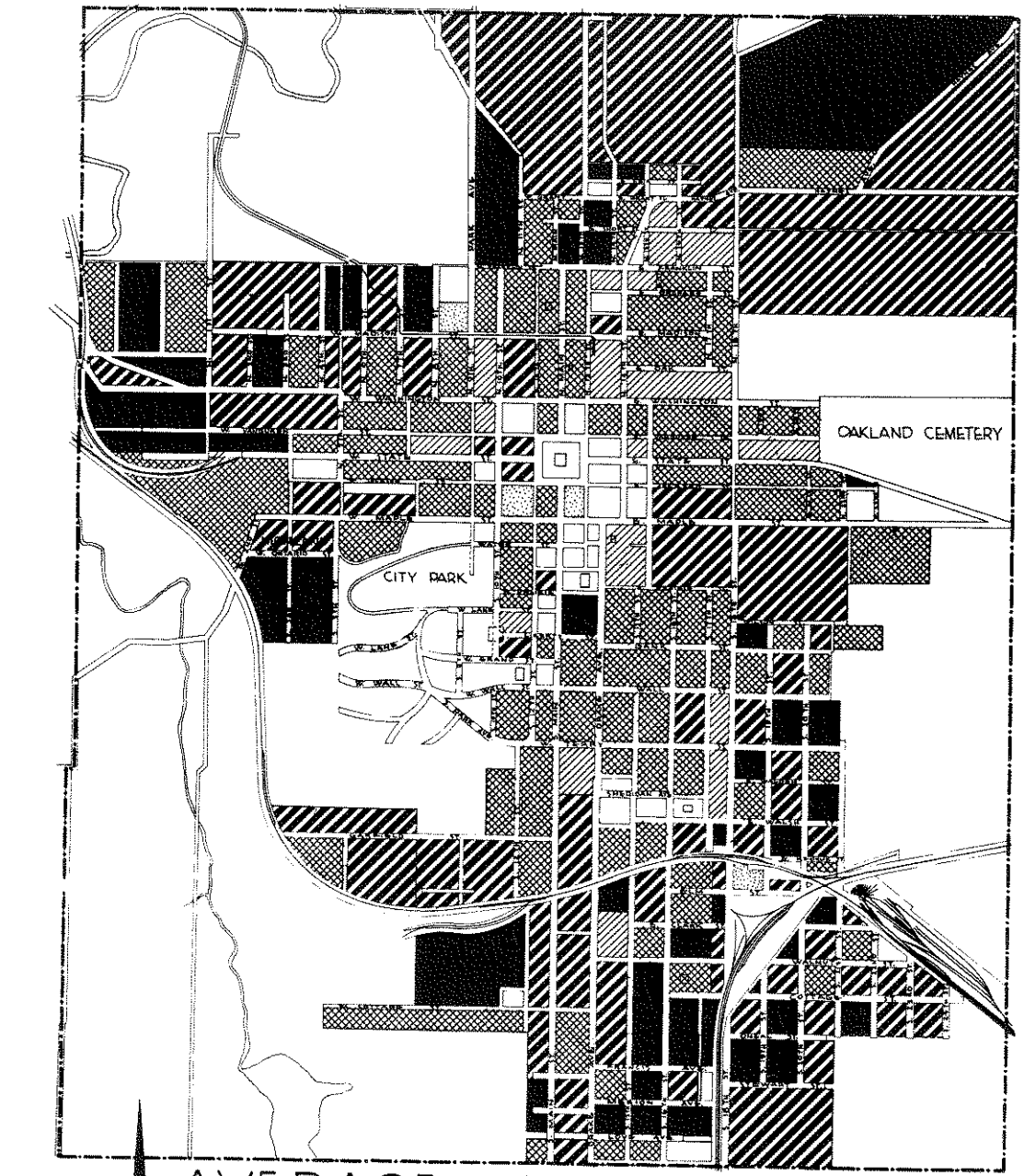

COMPARISON OF MONTHLY RENTALS
1929 AND 1934
$1.00-4.99
$5.00-9.99
$10.00-14.99
$15.00-19.99
$20.00-24.99
$25.00-29.99
$30.00-34.99
$35.00-39.99
$40.00-OVER
MEAN AVERAGE RENT $17.30
1929
MEAN AVERAGE RENT $12.40
1934
PERCENT OF FAMILIES
40
30
20
10
0
MONTHLY RENTALS
CENTERVILLE IOWA

FIG. 40



AVERAGE MONTHLY INCOMES

I. S. P. B. SURVEY 1934

UNDER $25

$25 - $49.99

$50 - $99.99

$100 - $149.99

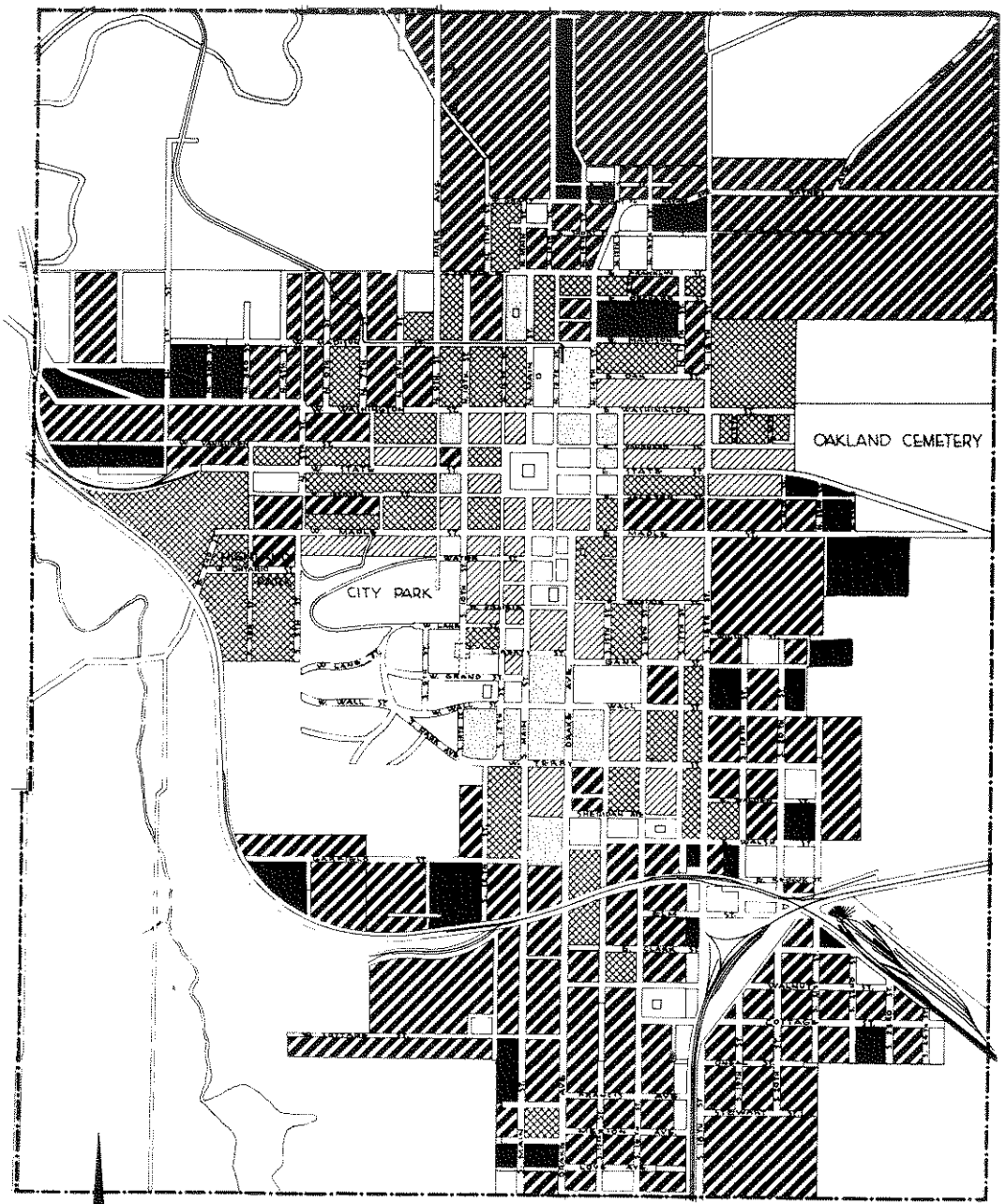
$150 & OVER

500' 0 500' 1000' 2000'

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 41



AVERAGE RENTALS PER MONTH

DATA FROM I. S. P. B. SURVEY

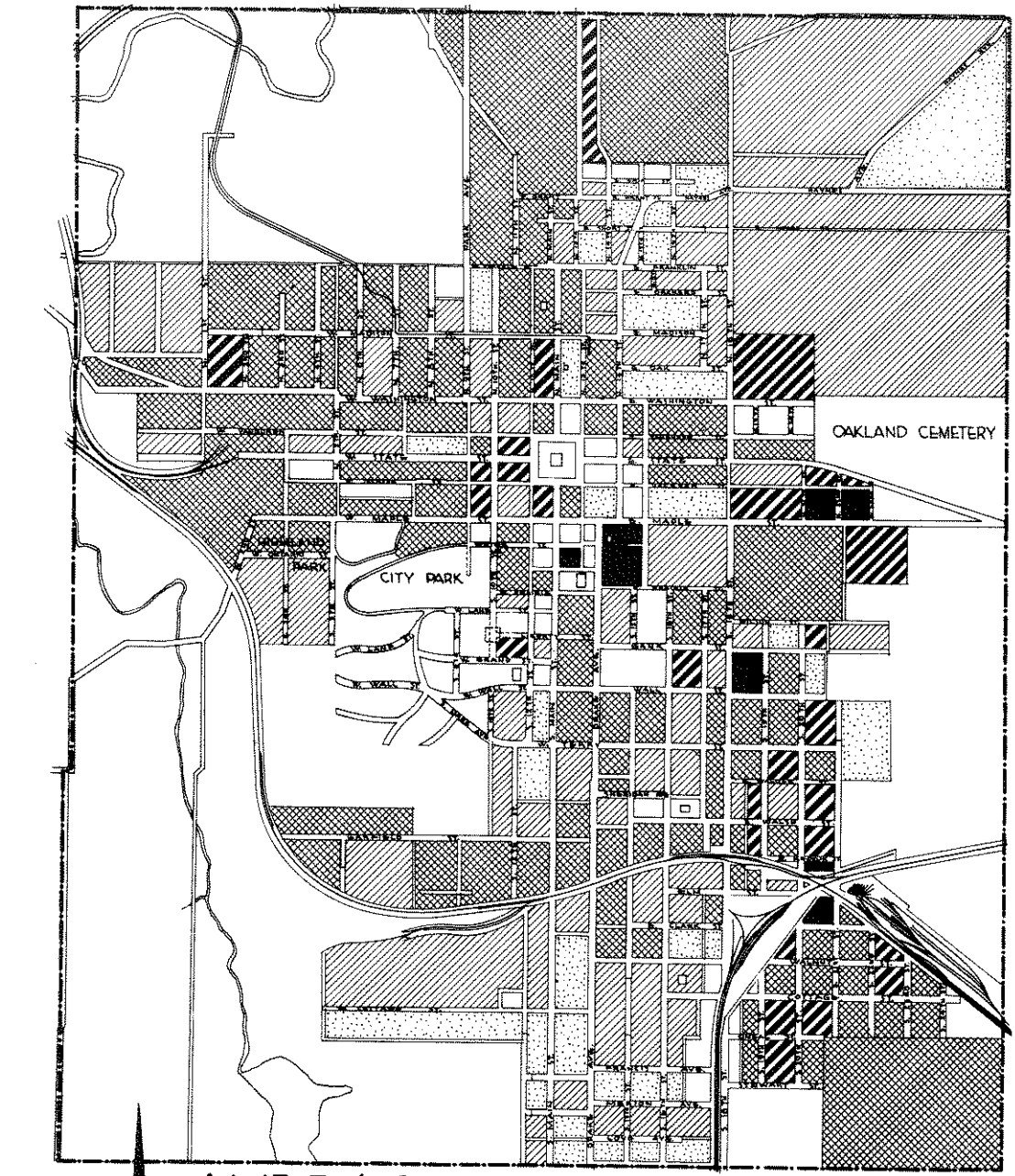
$5.00 ¢ UNDER
$5.01 – $10.00
$10.01 – $15.00
$15.01 – $20.00
$20.01 ¢ OVER

1934

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 42



AVERAGE AGE OF DWELLINGS

OVER 50 YRS.
41-50
31-40
21-30
11-20
10 YRS. & UNDER

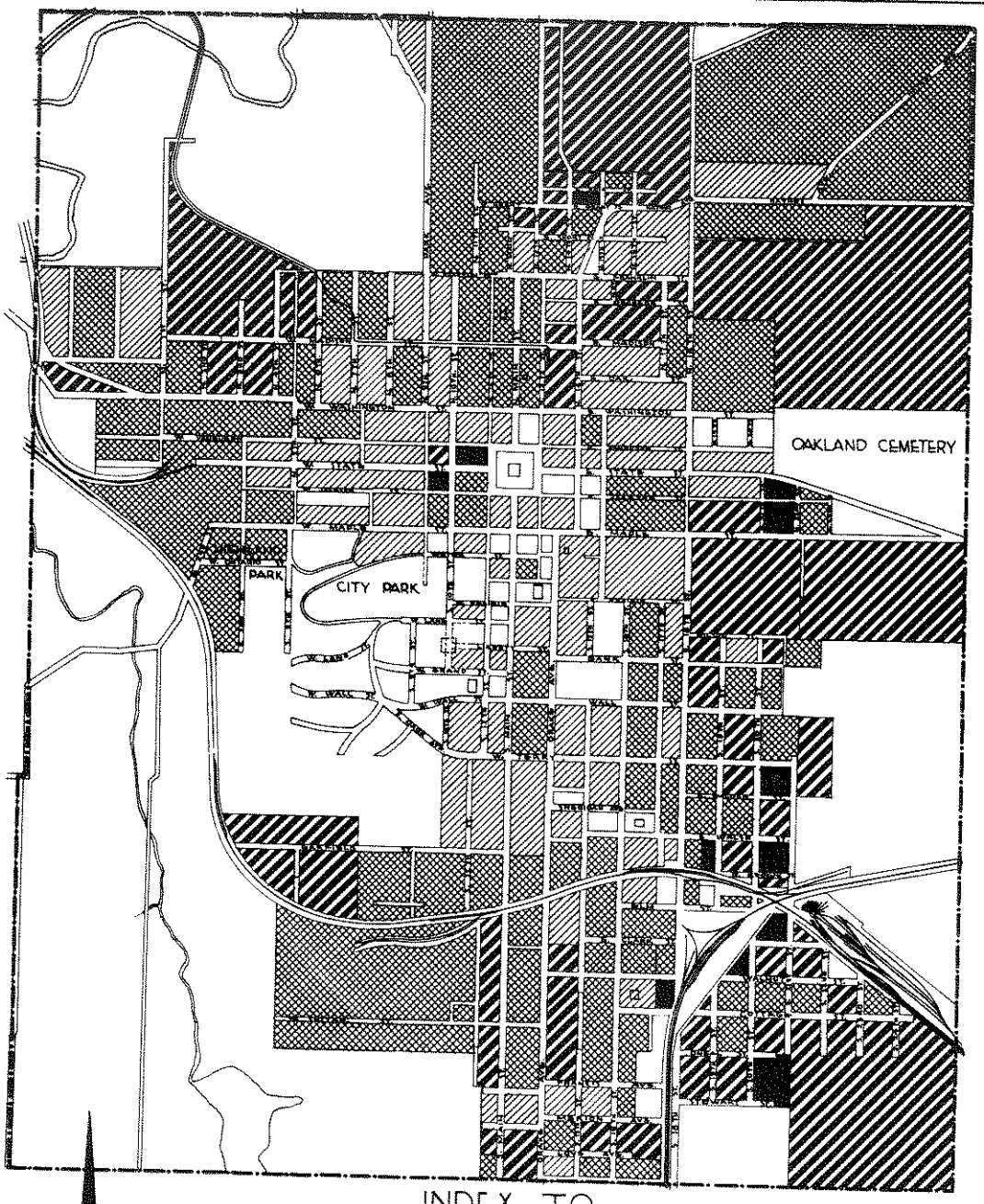
500' 0 500' 1000' 1000'

1934

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 43



INDEX TO

DWELLING CONDITIONS

1-1.75 UNFIT TO POOR

1.76-2.50 MAJOR REPAIRS NEEDED

2.51-3.25 MINOR REPAIRS NEEDED

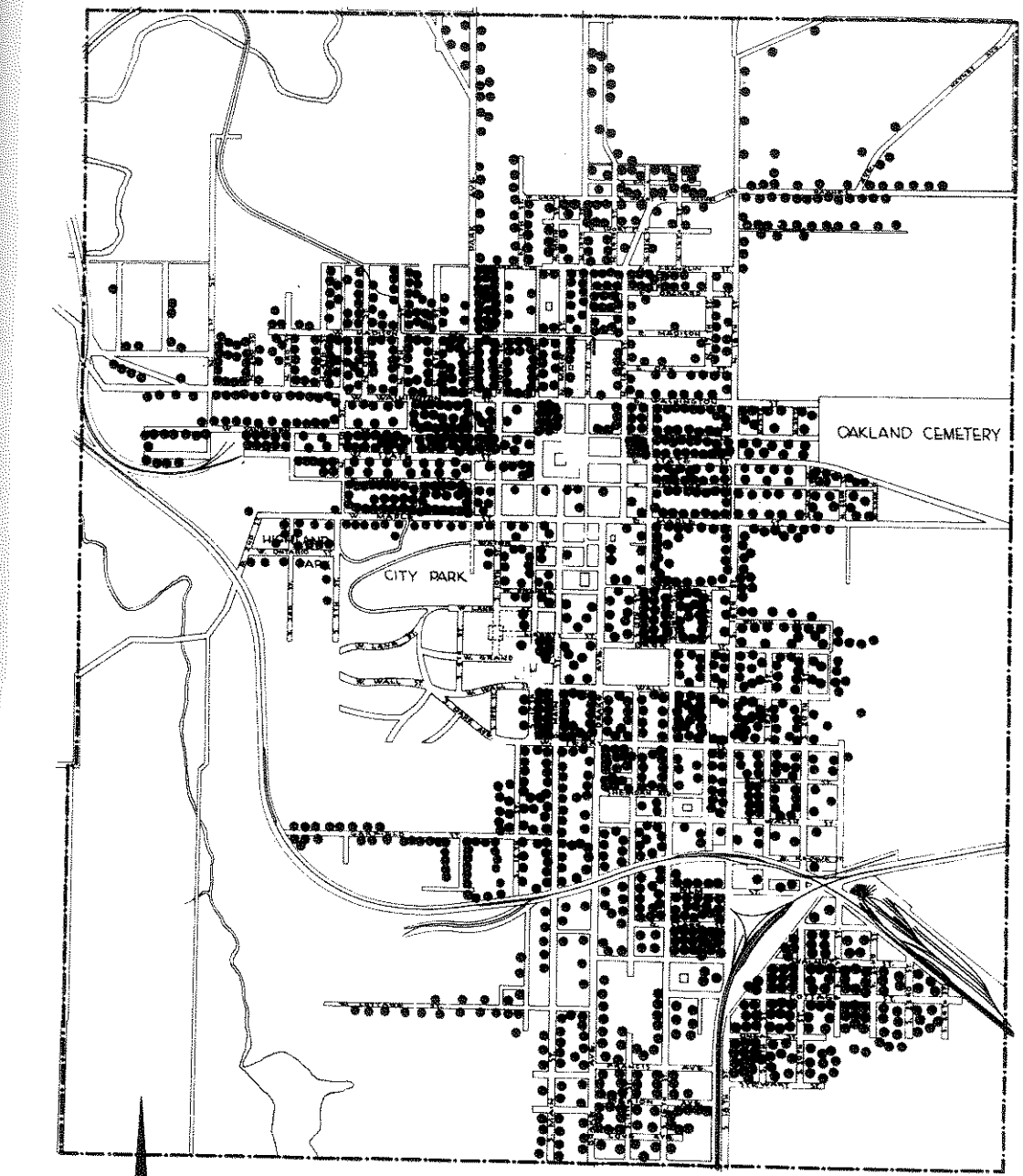
3.26-4 FAIR TO GOOD

1934

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 44



FAMILIES INCLUDED IN SURVEY

● REPRESENTS ONE FAMILY

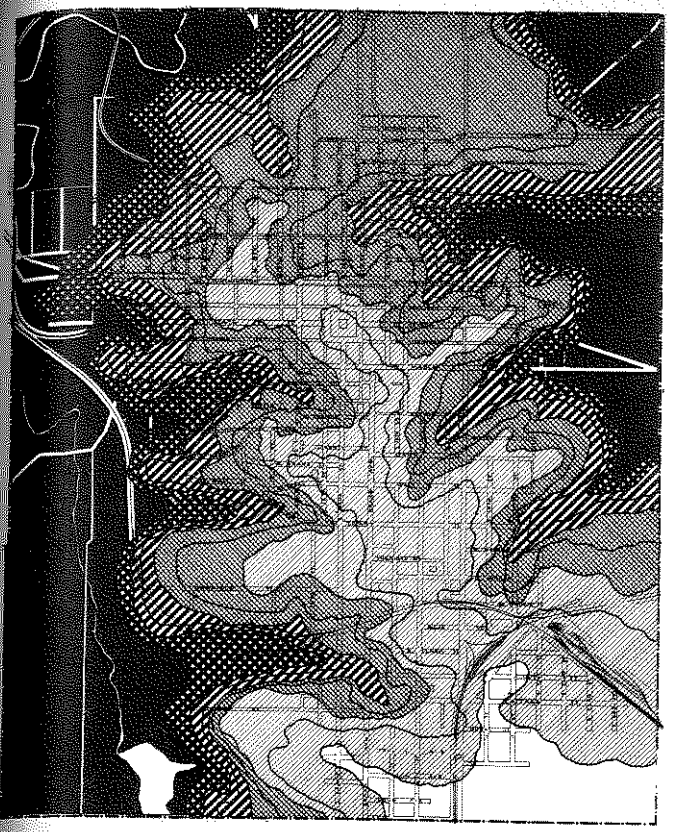
500' 0 500' 1000' 2000'

1934

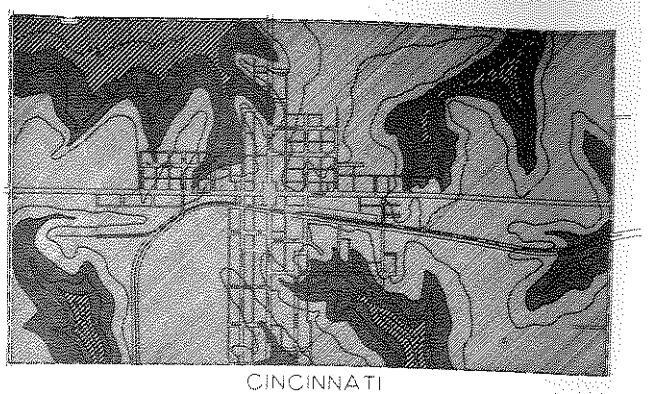
IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

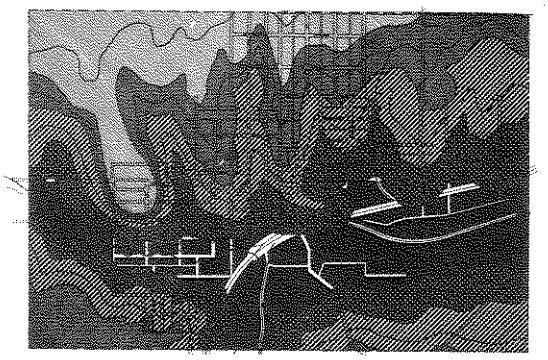
FIG. 45



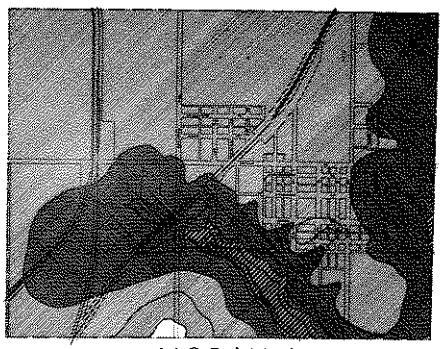
CENTERVILLE



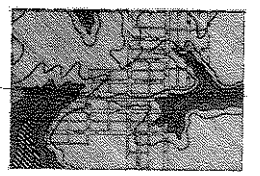
CINCINNATI



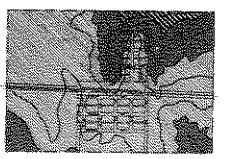
MYSTIC



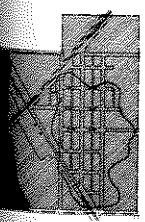
MORAVIA



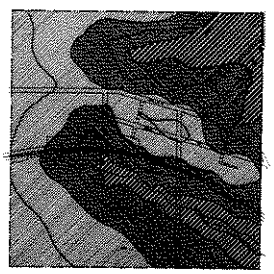
EXLINE



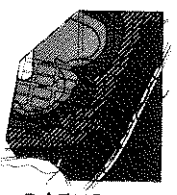
PLANO



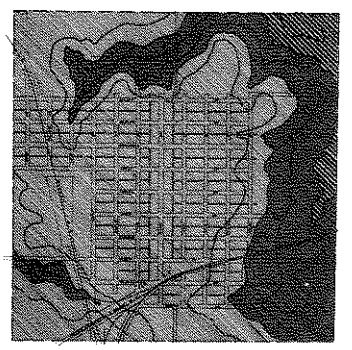
UDELL



UNIONVILLE



RATHBUN



MOULTON

NUMA

INCORPORATED AREAS

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

RECONNAISSANCE

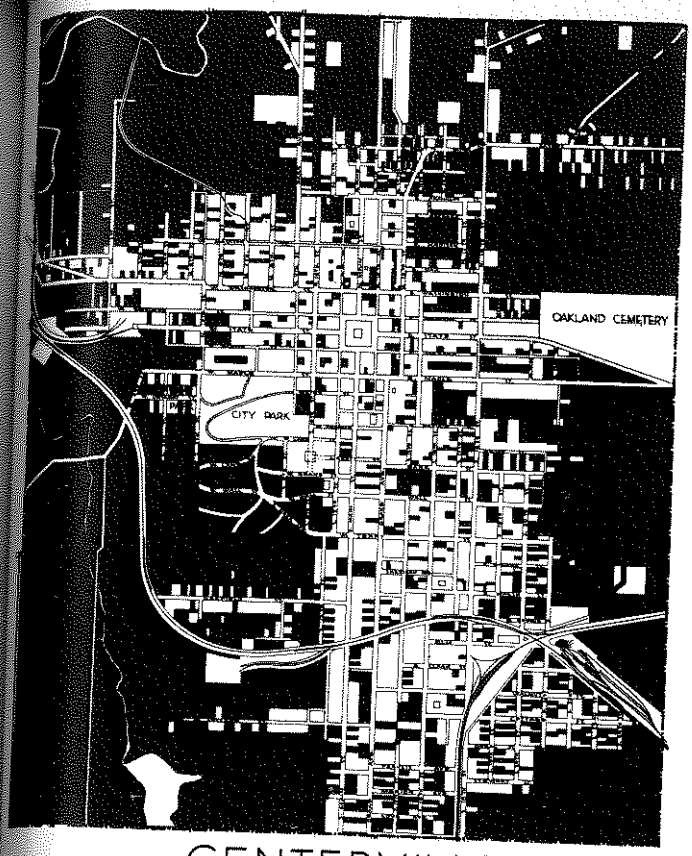
TOPOGRAPHY

1935

LEGEND

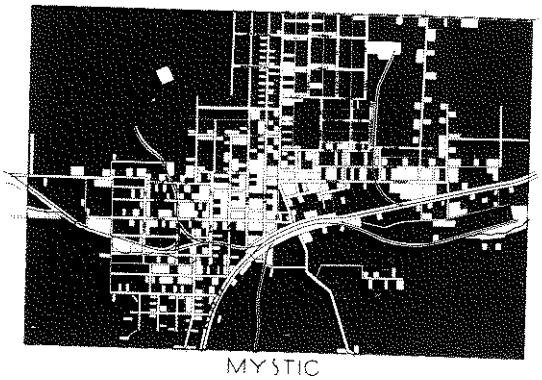
UNDER 130'
130' - 150'
150' - 170'
170' - 190'
190' - 210'
OVER 210'

FIG. 46

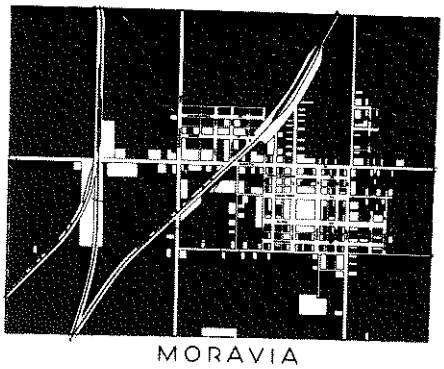


CENTERVILLE

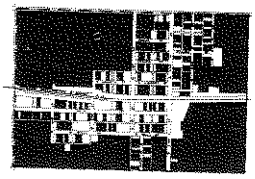
CINCINNATI



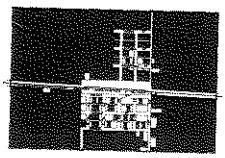
MYSTIC



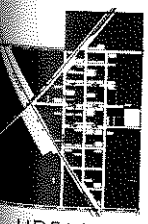
MORAVIA



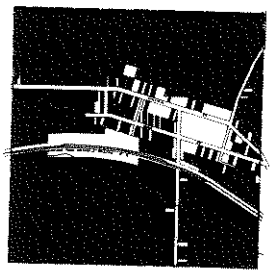
EXLINE



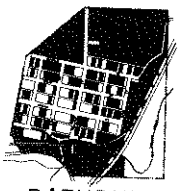
PLANO



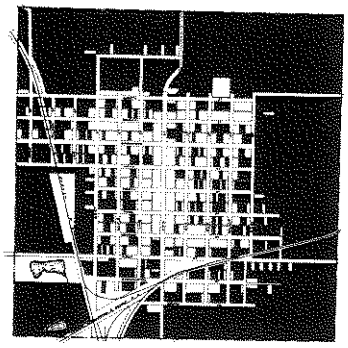
UDELL



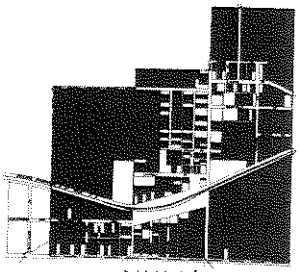
UNIONVILLE



RATHBUN



MOULTON

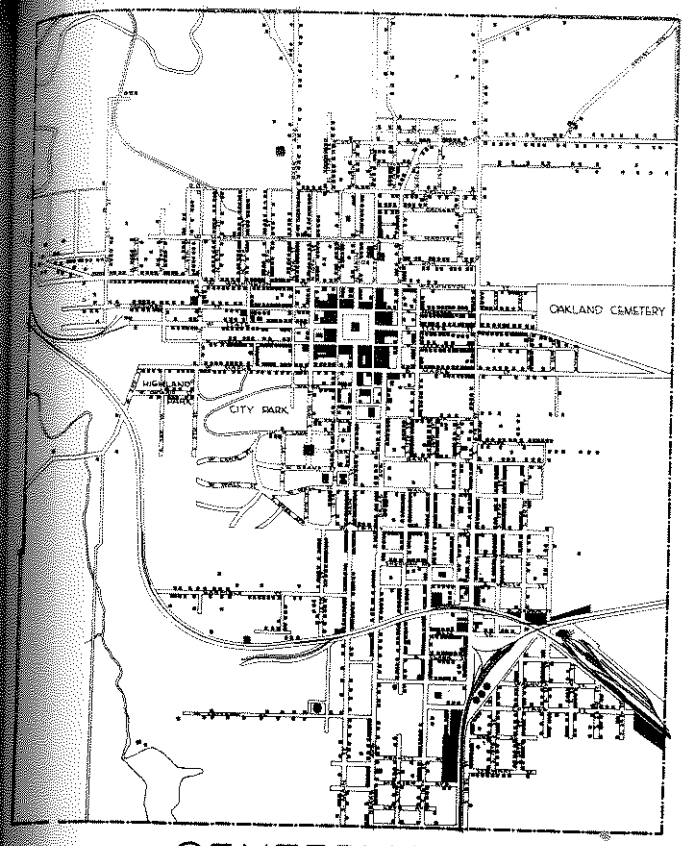


NUMA

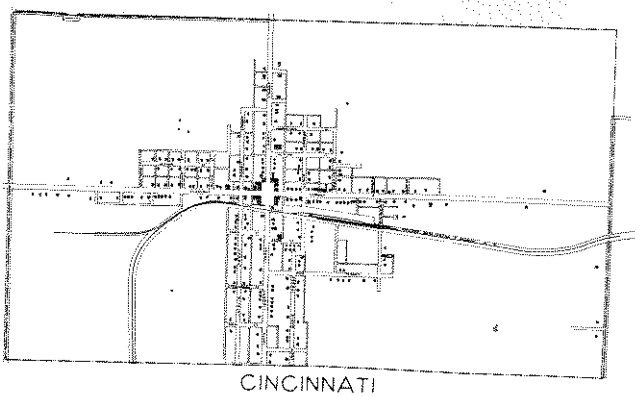
INCORPORATED AREAS
IOWA STATE PLANNING BOARD
APPANOOSE COUNTY

VACANT AREAS
INCLUDING
UNDEVELOPED URBAN LAND
1935

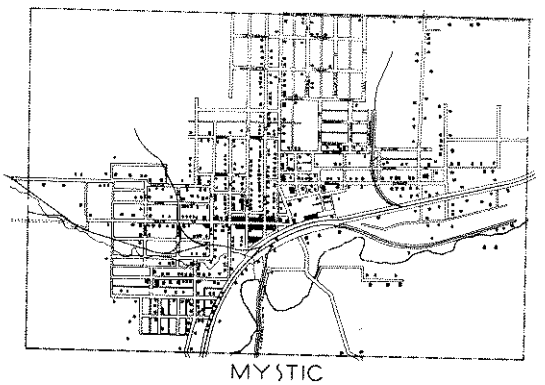
FIG. 47



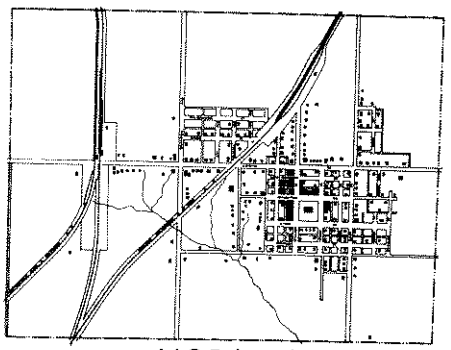
CENTERVILLE



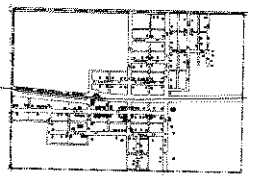
CINCINNATI



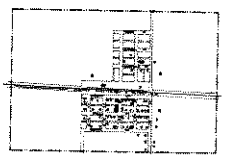
MYSTIC



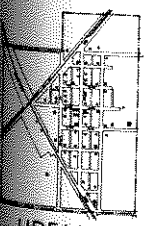
MORAVIA



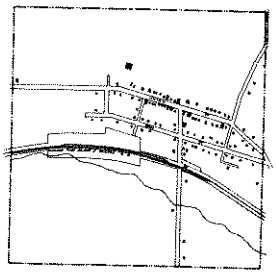
EXLINE



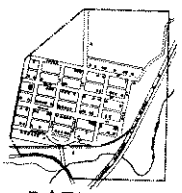
PLANO



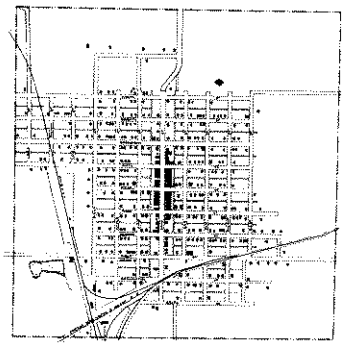
UDELL



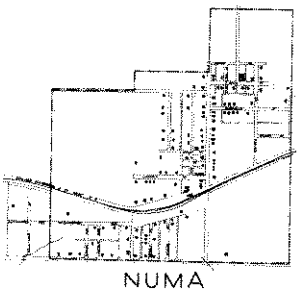
UNIONVILLE



RATHBUN



MOULTON

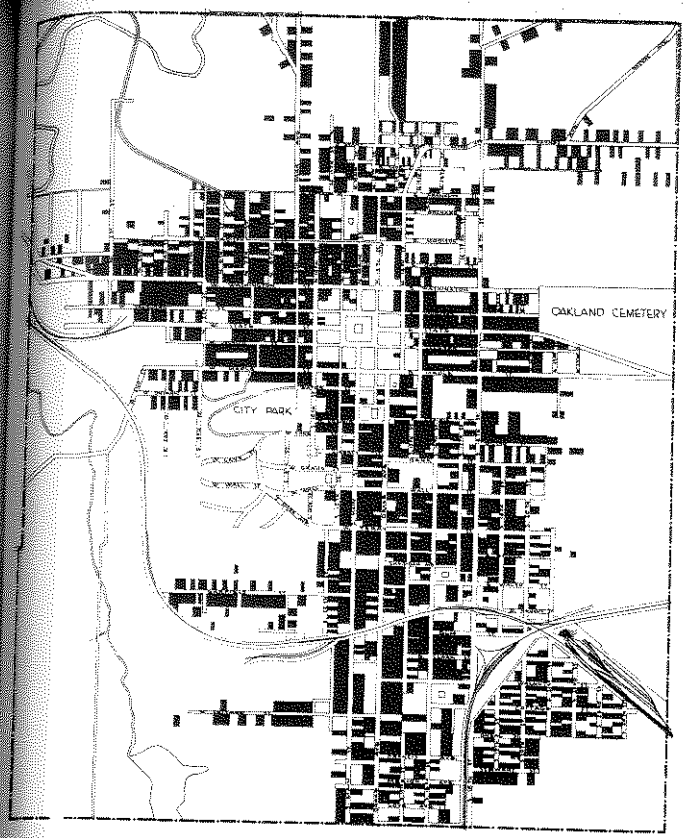


NUMA

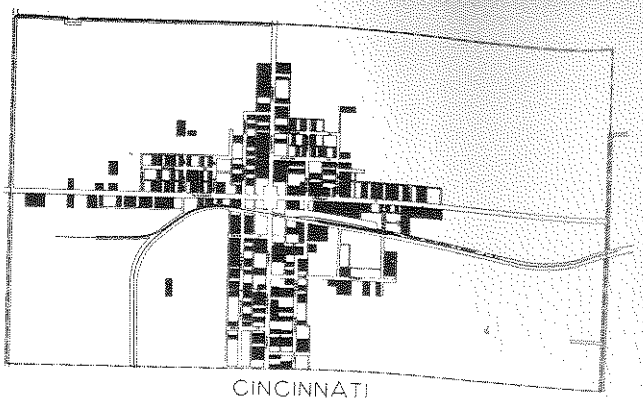
INCORPORATED AREAS
IOWA STATE PLANNING BOARD
APPANOOSE COUNTY

PRINCIPAL BUILDINGS
INCLUDING
PRINCIPAL RESIDENTIAL,
COMMERCIAL, INDUSTRIAL, & PUBLIC
& SEMI-PUBLIC BUILDINGS
1935

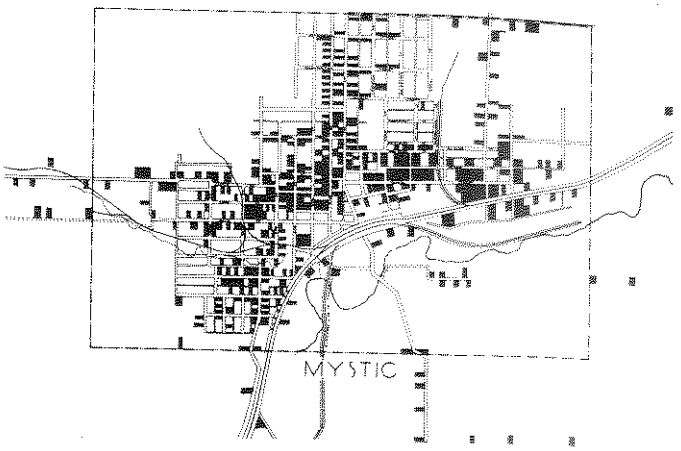
FIG. 48



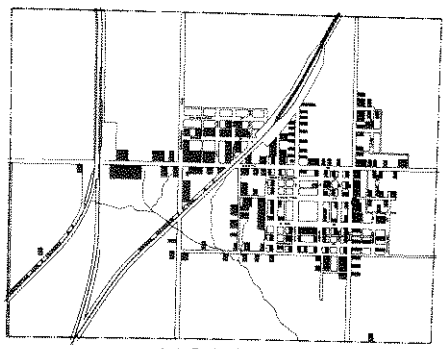
CENTERVILLE



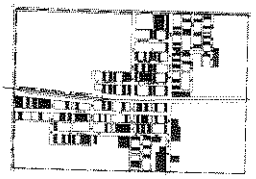
CINCINNATI



MYSTIC

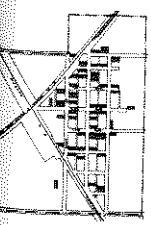


MORAVIA

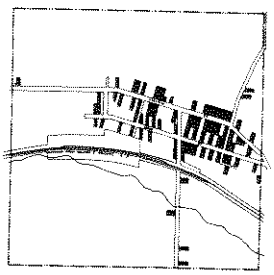


EXLINE

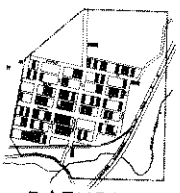
PLANO



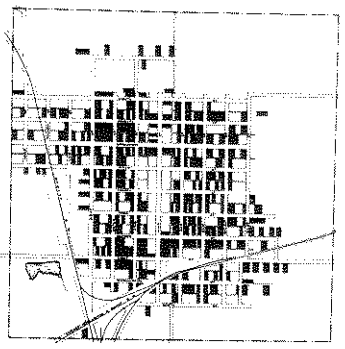
UDELL



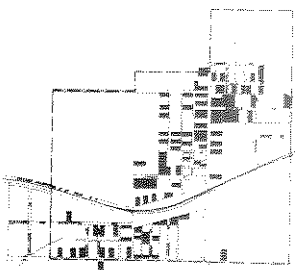
UNIONVILLE



RATHBUN



MOULTON

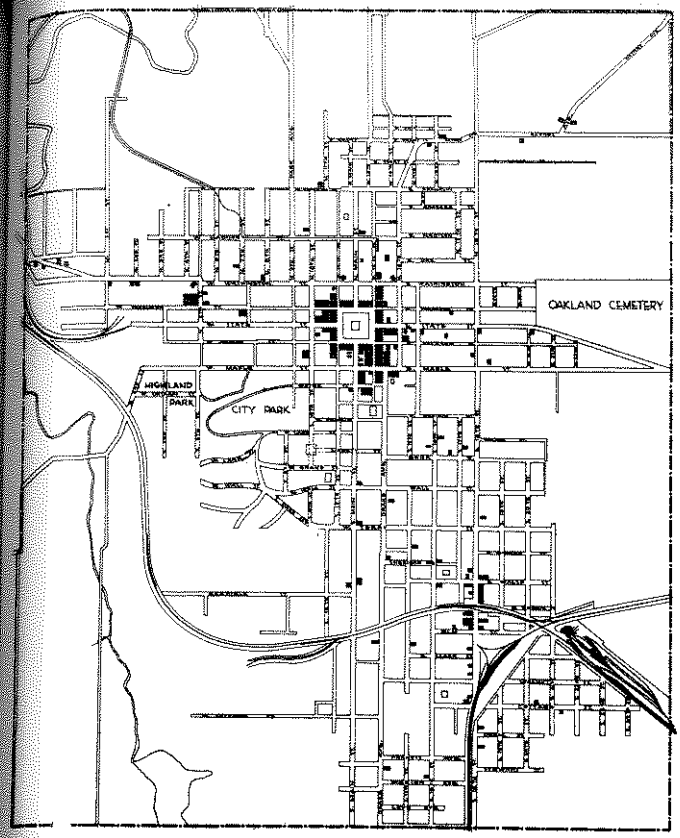


NUMA

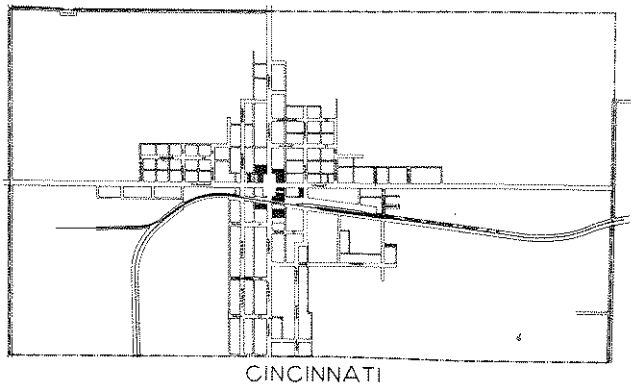
INCORPORATED AREAS
IOWA STATE PLANNING BOARD
APPANOOSE COUNTY

DWELLING AREAS
INCLUDING
LAND OCCUPIED BY SINGLE FAMILY, TWO FAMILY, & MULTI-FAMILY DWELLING STRUCTURES
1935

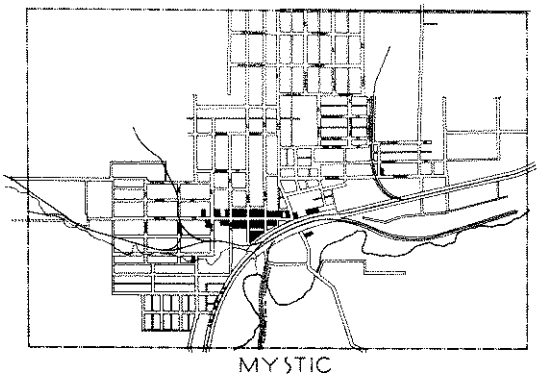
FIG. 49



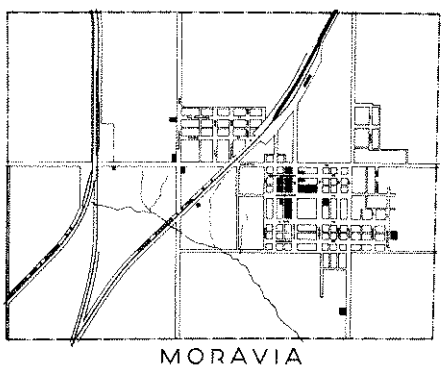
CENTERVILLE



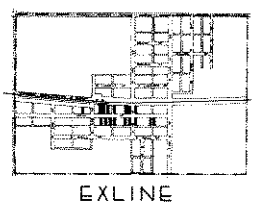
CINCINNATI



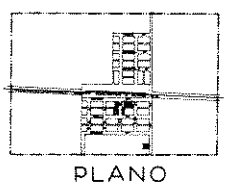
MYSTIC



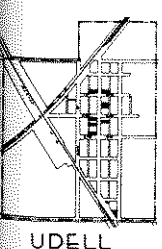
MORAVIA



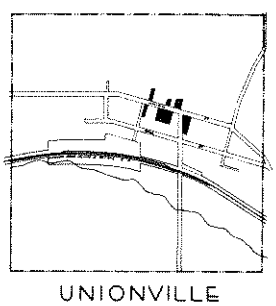
EXLINE



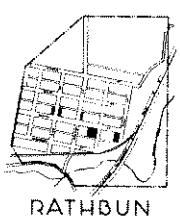
PLANO



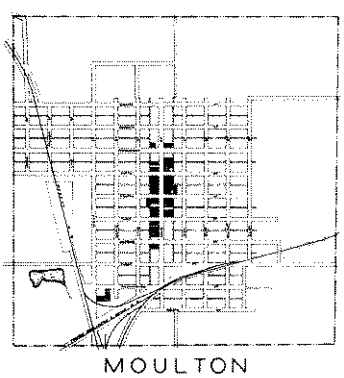
UDELL



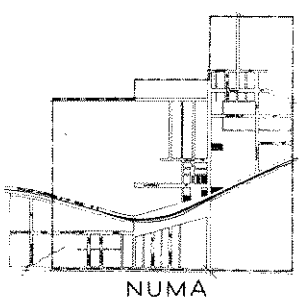
UNIONVILLE



RATHBUN



MOULTON

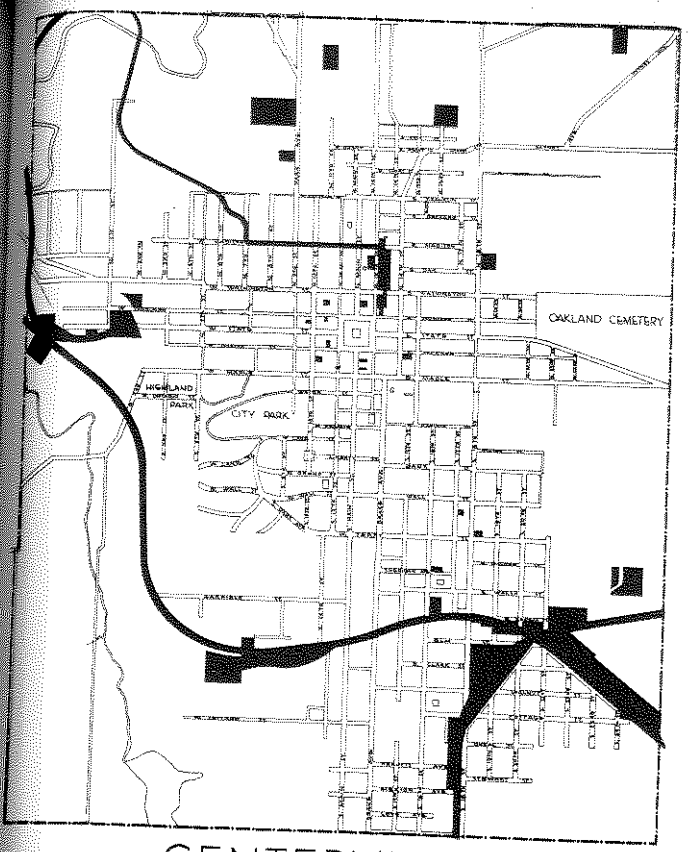


NUMA

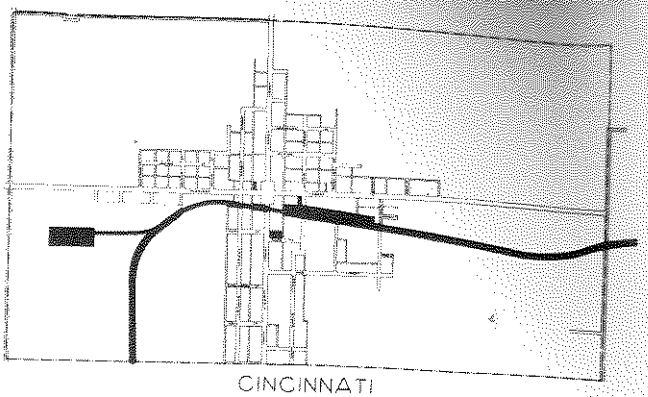
INCORPORATED AREAS
IOWA STATE PLANNING BOARD
APPANOOSE COUNTY

COMMERCIAL AREAS
INCLUDING
LAND OCCUPIED BY
RETAIL BUSINESS
1935

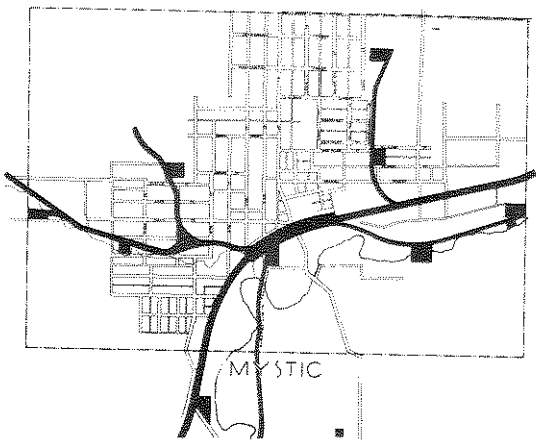
FIG. 50



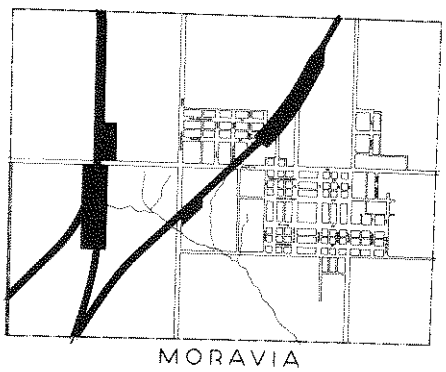
CENTERVILLE



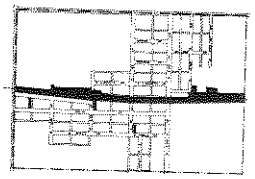
CINCINNATI



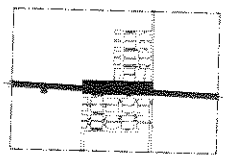
MYSTIC



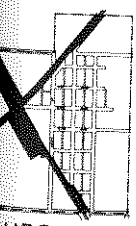
MORAVIA



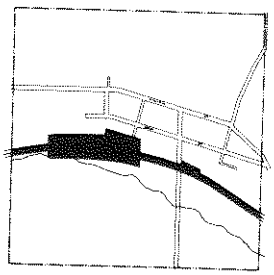
EXLINE



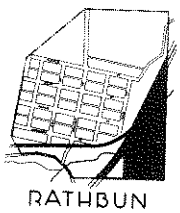
PLANO



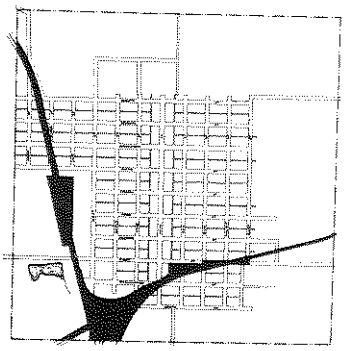
UDELL



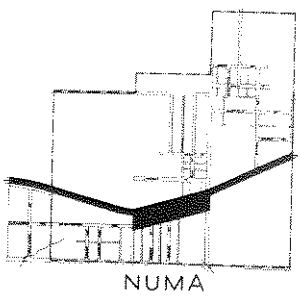
UNIONVILLE



RATHBUN



MOULTON



NUMA

INCORPORATED AREAS

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

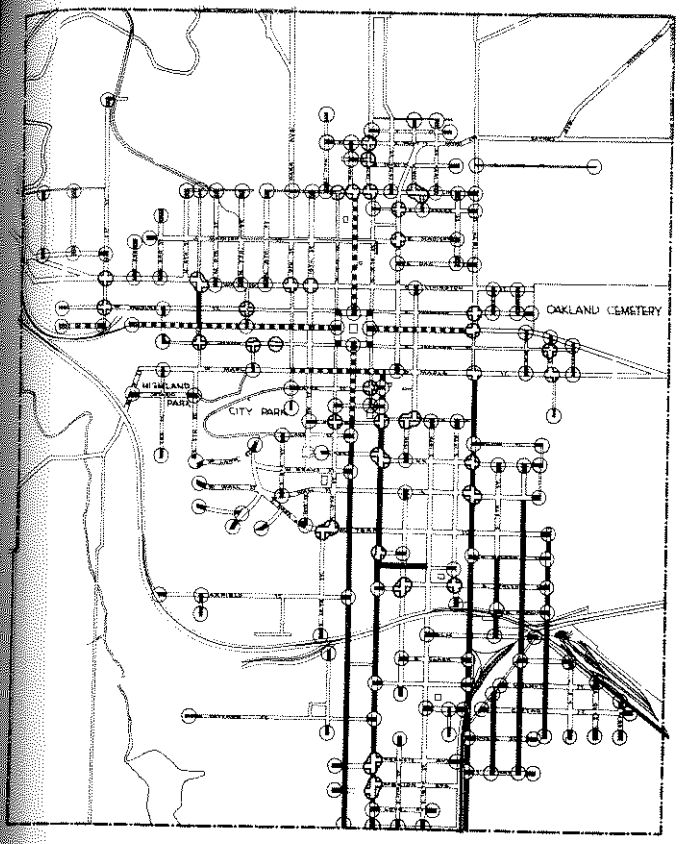
INDUSTRIAL AREAS

INCLUDING

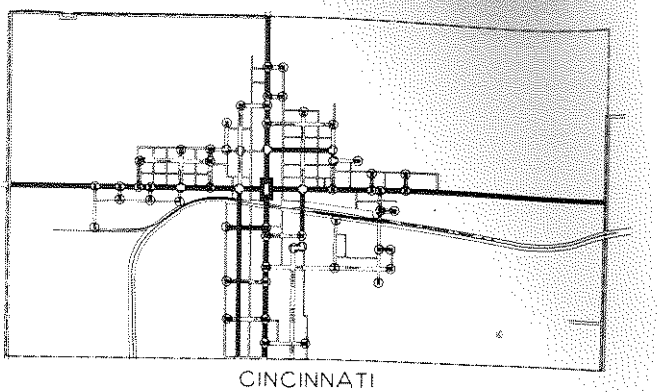
LAND OCCUPIED BY LIGHT, HEAVY, & RAILROAD INDUSTRY

1935

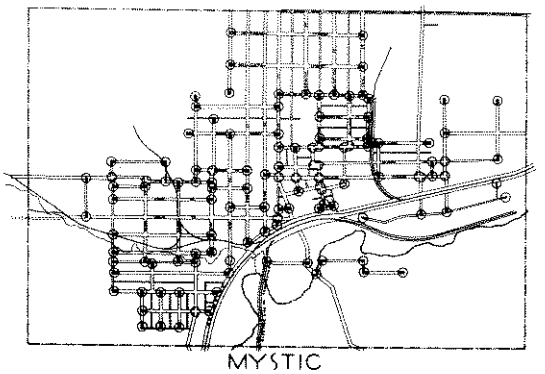
FIG. 51



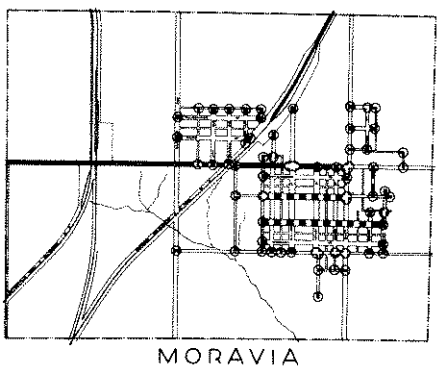
CENTERVILLE



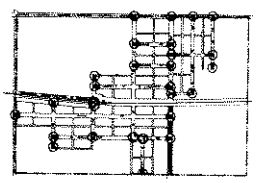
CINCINNATI



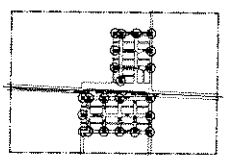
MYSTIC



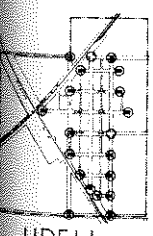
MORAVIA



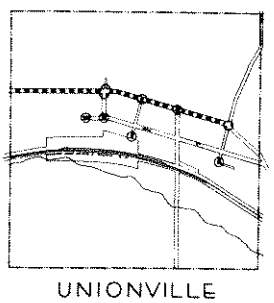
EXLINE



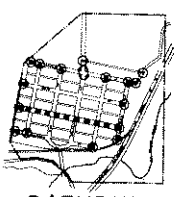
PLANO



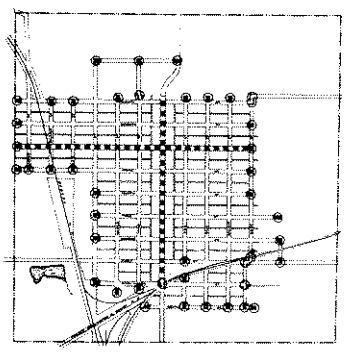
UDELL



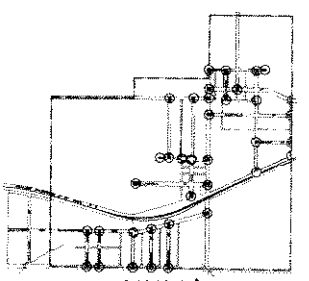
UNIONVILLE



RATHBUN



MOULTON



NUMA

INCORPORATED AREAS

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

STREET SYSTEMS

SHOWING

WIDTHS, JOGS, & DEAD-ENDS

1935

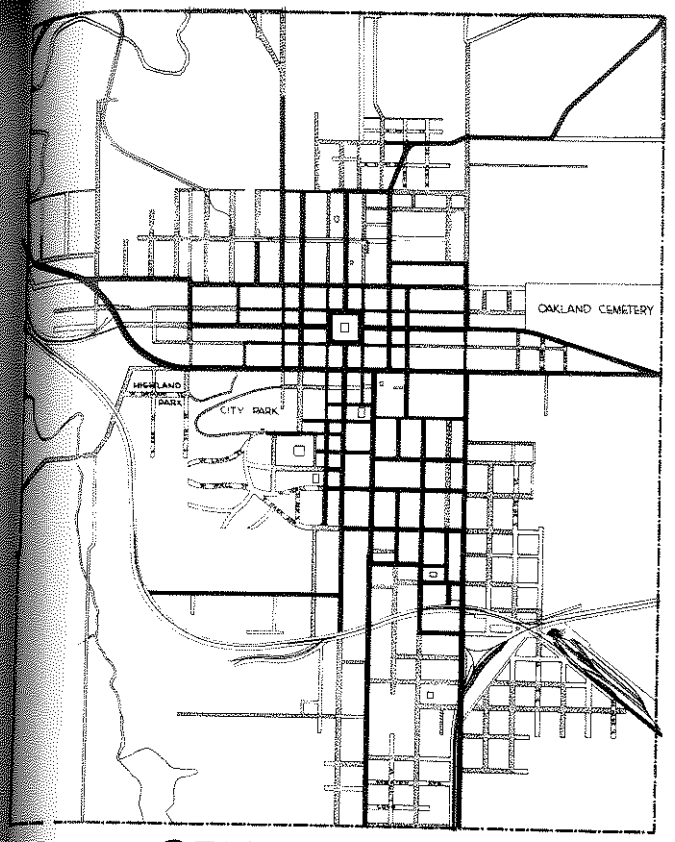
LEGEND

LESS THAN 66' WIDE — MORE THAN 66' WIDE

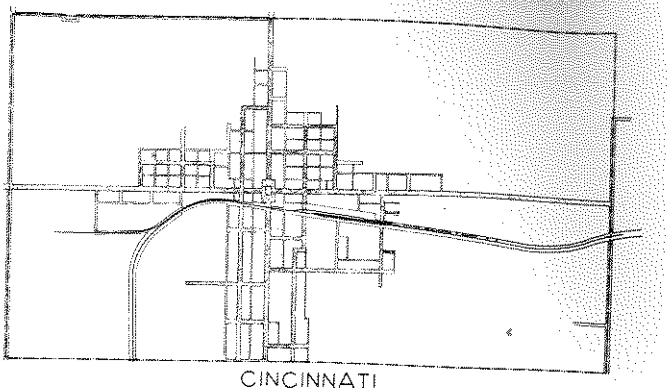
66' WIDE

DEAD-ENDS — JOGS

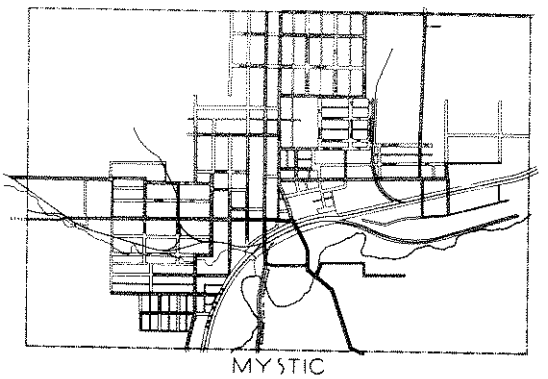
FIG. 52



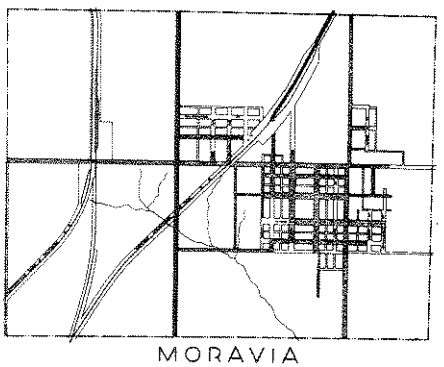
CENTERVILLE



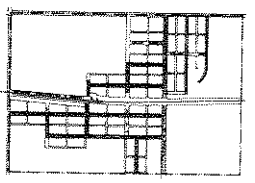
CINCINNATI



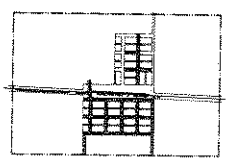
MYSTIC



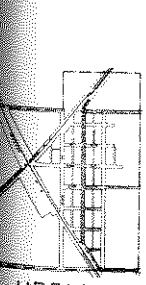
MORAVIA



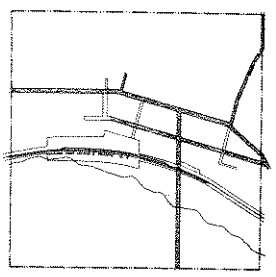
EXLINE



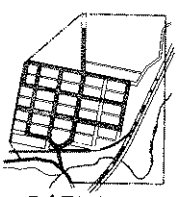
PLANO



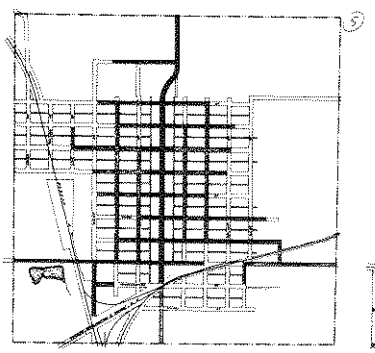
UDELL



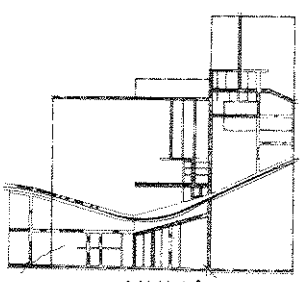
UNIONVILLE



RATHBUN



MOULTON



NUMA

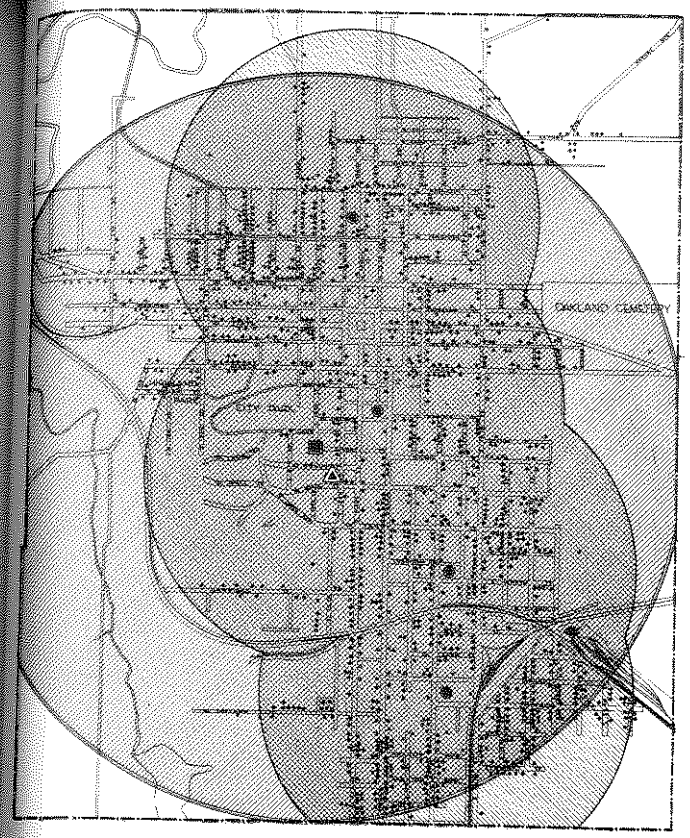
INCORPORATED AREAS
IOWA STATE PLANNING BOARD
APPANOOSE COUNTY

STREET SYSTEMS
SHOWING
TYPES OF ROADWAY SURFACING
1935

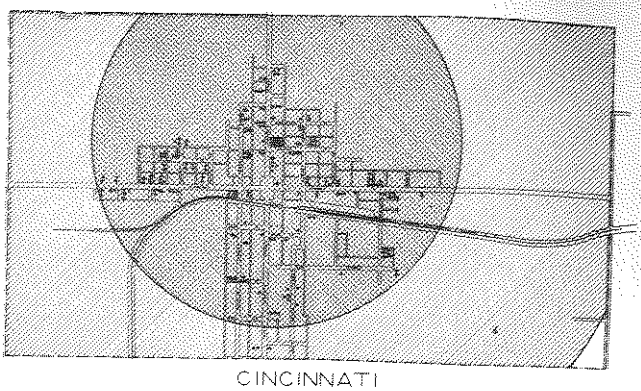
LEGEND

CONCRETE, BRICK, BITUMINOUS, ETC.
SHALE, GRAVEL, OR STONE
UNSURFACED

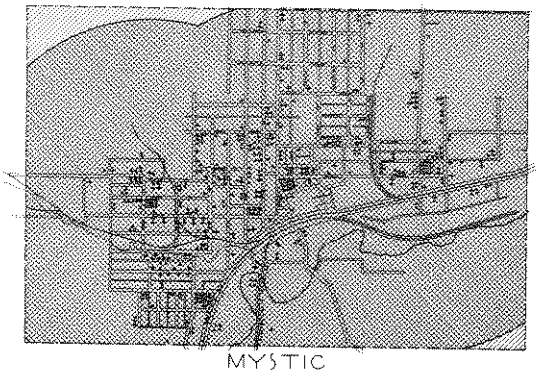
FIG. 53



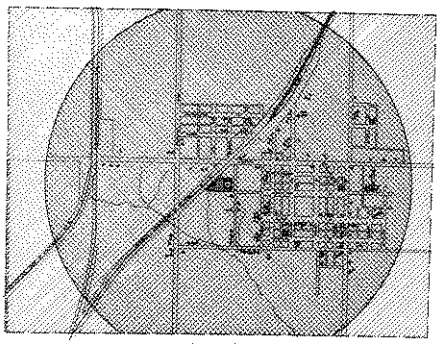
CENTERVILLE



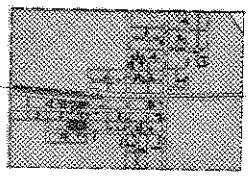
CINCINNATI



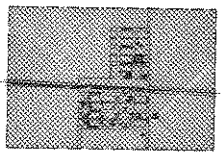
MYSTIC



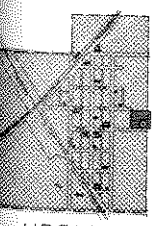
MORAVIA



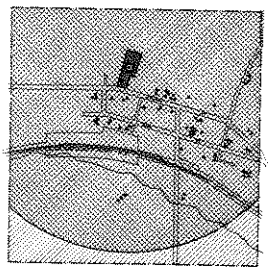
EXLINE



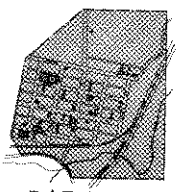
PLANO



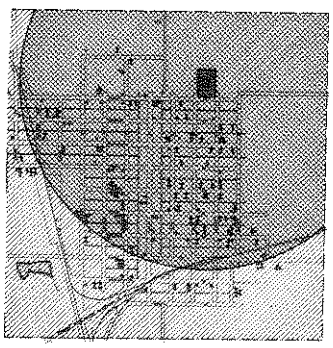
UDELL



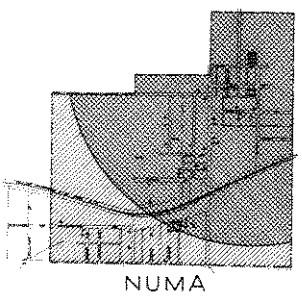
UNIONVILLE



RATHBUN



MOULTON



NUMA

INCORPORATED AREAS

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

SCHOOL SYSTEM

SHOWING

LOCATION OF SCHOOLS, DISTRIBUTION OF PUPILS, & AREAS OF INFLUENCE

1935

LEGEND

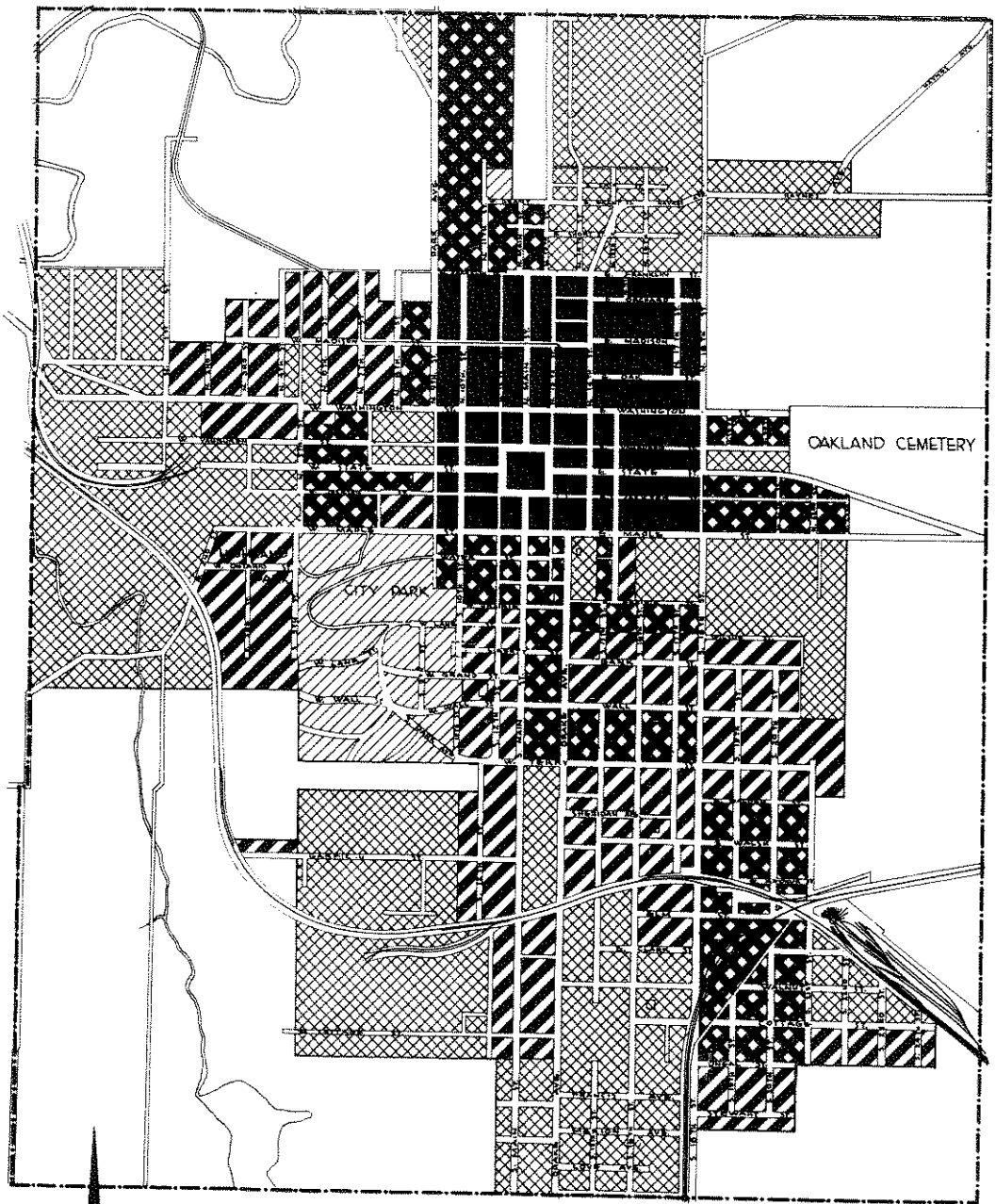
SCHOOLS

- HIGH SCHOOL
- GRADE SCHOOL
- COMBINED HIGH & GRADE
- HOME ADDRESS OF ONE PUPIL

AREAS OF INFLUENCE

- HIGH SCHOOL (1 MI. RADIUS)
- GRADE (· · ·)

FIG. 54



CITY DEVELOPMENT

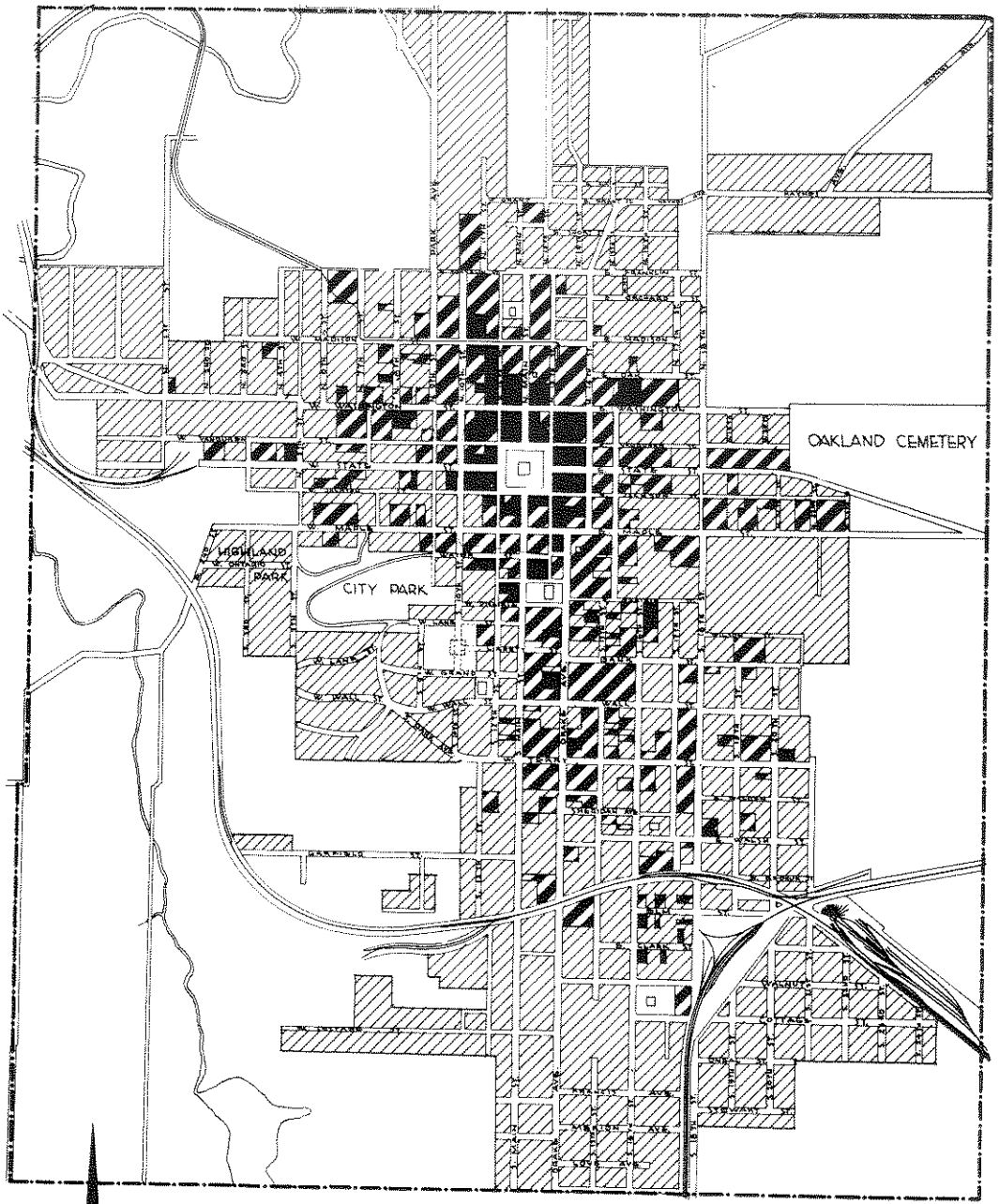
BY ADDITIONS AND SUBDIVISIONS

ORIGINAL TOWN
1856-1872
1872-1893
1893-1914
AFTER 1914

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG.55



AVERAGE ASSESSED VALUATION

OVER $3000 PER UNIT

$1000 - $3000 " "

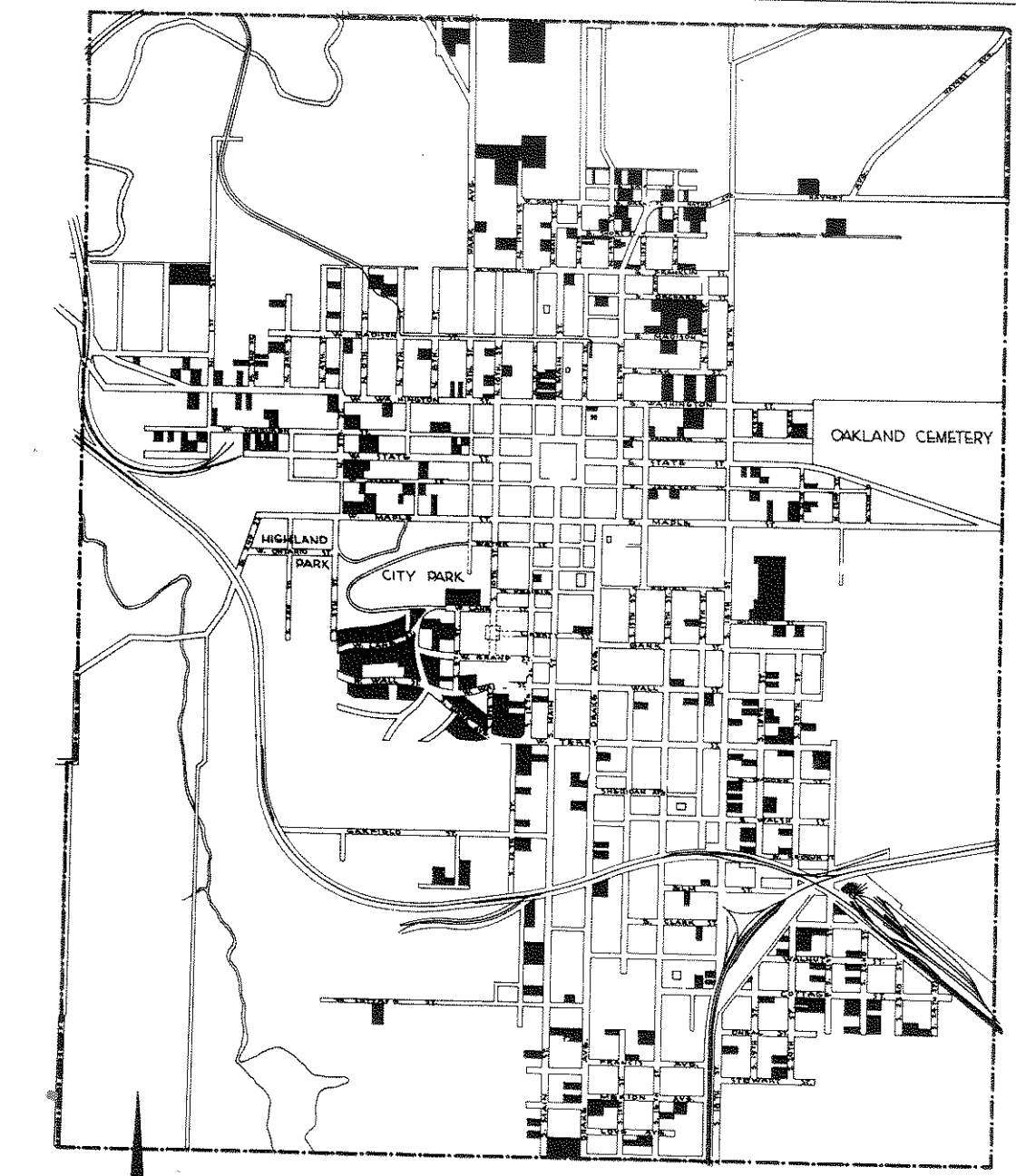
UNDER $1000 " "

1934

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 56



TAX DELINQUENT PROPERTY

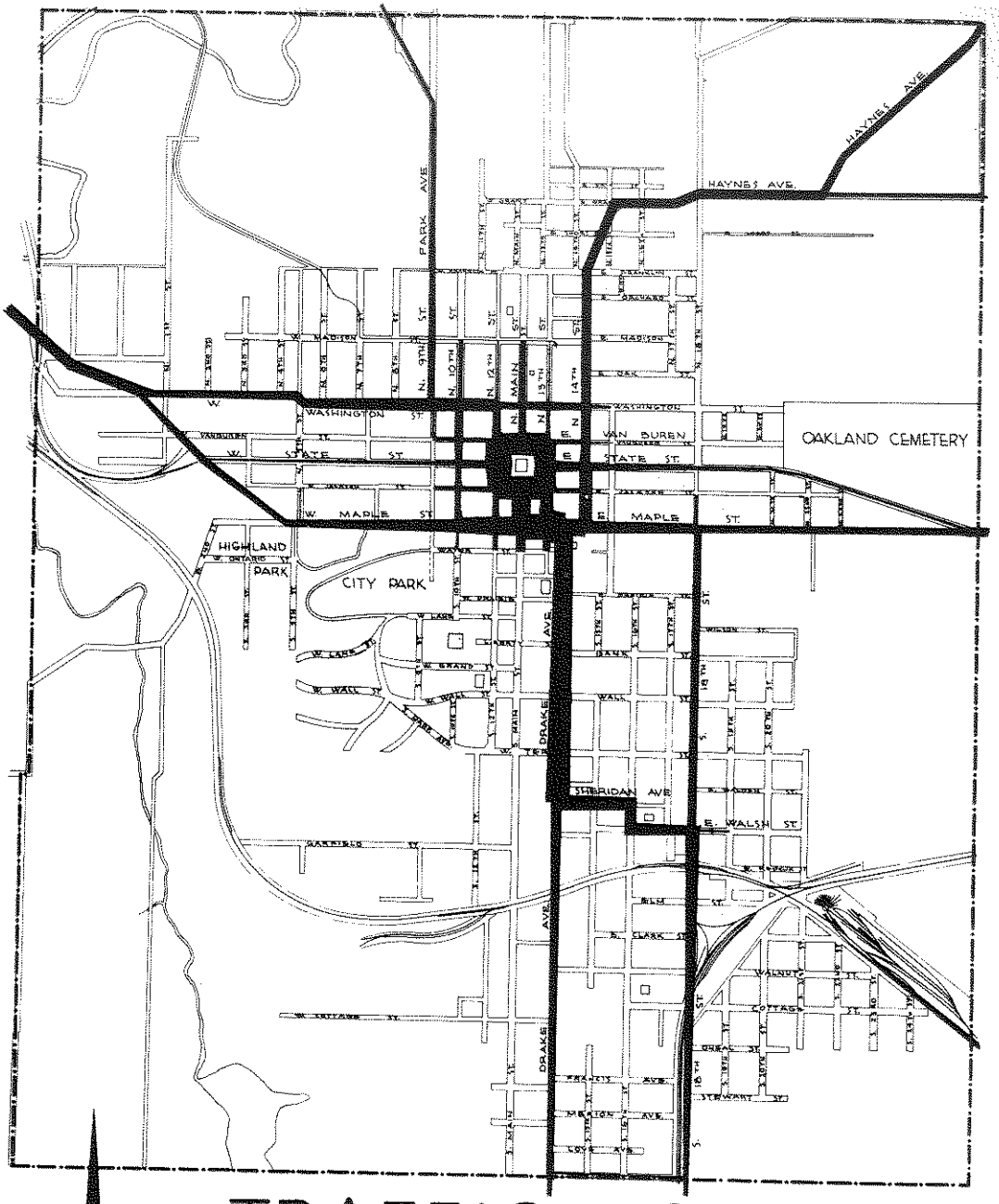
PROPERTIES ON WHICH TAXES HAVE BEEN DELINQUENT FOR TWO OR MORE YEARS

1934

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 57



TRAFFIC VOLUMES ON MAJOR STREETS

SEPT.-OCT., 1935

WIDTH OF LINE INDICATES THE CALCULATED 24 HOUR AVERAGE WEEK DAY TOTAL TRAFFIC.

IOWA STATE PLANNING BOARD

CENTERVILLE IOWA

FIG. 58

SUGGESTIONS TO COMMUNITIES

Community Self Analysis

Each community in Appanoose County should be analyzed by its citizens to determine its probably future size, economic activities and status. If a period of growth may be logically forecast, plans should be laid for wise growth. If the prospects are rather that population and business will remain static or decline, preparation should be made accordingly for such developments -- cultural, recreational and otherwise -- as are possible and desirable.

The appearance of any community, whether it be growing or shrinking, is important. The elimination of dilapidated structures, the clearing of junk piles and weed jungles -- these things and countless more will improve a town and will cost but little.

Studies of city development and such economic factors as property values, tax delinquencies, etc. are helpful, especially when the information is shown in graphic form. (See Figures 55, 56, and 57.)

Street Systems*

The preparation of anything in the way of an adequate, efficient and economical city street system requires a more detailed analysis than can be included in this report. Each village, town and city must be studied in detail. An intimate knowledge of the nature and use of certain well-defined areas in them must be gained, the volume and nature of traffic on the streets now in service and those that might be placed in service for better traffic circulation must be made available, and information as to the probable future growth or shifts in population must be obtained, as well as many other important factors. (Refer back to Fig. 38.)

---

* By Mark Morris, Research Engineer, Iowa Highway Commission.

"STRAIGHT AND NARROW"

The upper picture shows a common result of ignoring natural topography in laying out streets. The street is steep and narrow. It adheres to a gridiron street pattern at the expense of easy gradient and direct contact between residential and commercial areas.

The lower view shows a narrow street without grass parking between sidewalks and pavement. The roadway itself is not unduly narrow, although if automobiles were parked on both sides there would be room for but one lane of moving vehicles. As the entire development from building line to building line enters into the "street picture" the shallow front yards add to the impression of narrowness.

At best, in this report only a general statement of improvements for the street systems of the towns of this county can be given.

In general, the streets are of sufficient width for the volume of traffic passing over them. Many of them are, however, inadequately surfaced. (Refer back to Figures 52 and 53.) For the most part a low cost type of surfacing would be adequate, as except in the principal streams of traffic movement the volume of traffic is small. These exceptions are confined to the main streets of the small places and a considerable portion of the street system of Centerville.

Insofar as the traffic itself is concerned, the three principal items for consideration are freedom of circulation, abundance of car parking space, and economy of distance in passing to and from origin and destination.

The street system of the City of Centerville is used here to illustrate a method of approach to the study of street system requirements.

First of the factors for consideration is the distribution of the activities of the population. Certain areas of any city, even one that has just grown up without attention to zoning, are given over by tradition and circumstances to certain purposes, such as residential, commercial, industrial, some times educational and recreational. A map of the city showing these must be prepared and competent authority consulted as to the advisability of continuing the present situation, or of gradually improving it to the advantage of freedom of circulation, of sanitation, of appearance, and of living and working conditions generally. (Refer back to Figures 46 to 51 inclusive.)

The next factor for consideration is the volume and nature of the traffic on each member of the present street system. Knowing this, a quite accurate estimate of that to be served by street relocations or improvements may be made. Also, the effect of rearranging use areas or zones of the city may be

predicted and adequate street roadway service provided. In Fig. 58, the volume of traffic on the major streets of Centerville is shown in a flow map. This method of presentation of traffic volume data permits a comprehensive view of the traffic movement with a minimum of effort. It can be seen at once which streets carry the major portion of the total traffic moving in the city. Points of congestion are readily viewed, as well as the sections of streets having the greatest volume of traffic.

The maximum volume shown here is well within the capacity of a two-lane highway, working efficiently. Due to slow and interrupted movements, a four-lane roadway would be advisable for the major thoroughfares, particularly through the business district and its immediate vicinity. Fig. 59 shows suggested cross-sections for different types of streets. Comparison of the suggested facilities with those now available along the major lines of travel within the city will reveal the extent and nature of the improvements to be made to raise the whole to these standards.

Particularly should attention be directed at an early date to the elimination of the situation produced by the narrow street entrances to the city square and the central business district in Centerville.

One of the factors of special interest in street design for the cities and towns of this county, and of others in which these places are largely accessories of a rural community, is that concerned with parking provisions. In strictly urban communities the parking problem is of somewhat different nature as there is no possibility of storing cars enough on the business streets to transport all the people entering, leaving and occupying the business places. In the smaller cities and towns, with one- or two-story business buildings, there is such a possibility, and in these places the traditional use of the street for vehicular storage will persist for many years. In fact,

where this service is unavailable, the tendency is to patronize places where it can be obtained. This results in the spreading of the business district and a loss of business to established places in the original downtown district. Hence, for many years, in the small cities and towns and the rural communities some consideration must be given to vehicular storage on the streets. In Fig. 60, Methods of Parking, various methods of storing vehicles on the street are shown. The general result to be obtained by each is indicated.

The major street plan should be based on future as well as present needs. Population increases and shifts have great influence on this plan. Industrial development and topographic features must be given consideration. Much of the suggested street system for Centerville shown in Fig. 61 is in excess of present needs, but those of the future should be given much consideration, for it is difficult and costly to revise the street system after an area has been built up for any purpose.

Inasmuch as the method of financing city streets is established by statute, little can be offered on this subject other than the suggestion for study of the relative use and benefits of each of the members of the street system with the view of offering constructive criticism which will eventually lead to revision of the present laws. Particular attention should be given the matter of financing the major street system. (In this regard it may be mentioned that the elimination of certain unnecessary cross streets in residential areas may prove a saving of both money and space.)

Parks and Playgrounds

The comparative inadequacy of facilities for active recreation in the communities of Appanoose County was stressed earlier in the report. It is recommended that a study of population groups, of active recreational facilities

now available and of those needed for different age groups (see Fig. 62) be made in each community.

A suggested system of parks and playgrounds for Centerville, with a parkway system designed to integrate the recreation areas and complement the major traffic streets, is shown in Fig. 63.

A large tract of rolling ground in the northwest corner of Centerville, recently donated to the city for park purposes, is to be developed as Belle Wooden Park. In Fig. 64 a suggested plan for this development is presented. It is not recommended that the city plunge itself into debt for the immediate acquisition and construction of all the features shown in Figures 63 and 64, but that advantage be taken of emergency employment funds, as well as the regular city budget, for the advancement of these or other technically planned programs. As the city budget allows future expenditures for park development, it is hoped that such investments will be made in accordance with orderly plans.

The time to plan is always now. The time to build may be soon or far away, but a plan makes it possible either to go ahead on short notice or to educate and strengthen public opinion over a longer period of time (and, incidentally, sometimes to shorten this period because of public demand).

Zoning and Planning

Urban zoning for public control of private land, and town planning for wise future development of public areas and functions, are simpler problems in the communities of Appanoose County than in large cities. For example, whereas a metropolis might zone its areas to regulate not only the types of use -- residential commercial, industrial, etc. -- but also the heights of buildings, and their bulk in relation to lot areas, a town in Appanoose County probably need concern itself with zoning only the types of use. Although they are less complex, however, zoning and planning problems in this county are no

less interesting, important and real.

Because of its size, a special zoning and planning study of Centerville has been made. Principles involved in this study apply also to other communities.

In the preparation of a zone plan, it is important to consider many pertinent factors. Such questions as "How has the city developed? Where are property values highest and lowest?" and others are answered perhaps best in graphic form. Figures 55, 56, and 57 showed city development, property valuations and tax delinquencies for Centerville. Figures 46 to 51, it may be recalled, also showed relevant planning facts for all the incorporated towns of Appanoose County.

With these maps and other information before us, a tentative zone plan for Centerville may be prepared. We must consider, yet not be too limited by, what has been the past division of land uses in the city. We must also look for a measure of guidance in the experience of other cities, yet realize that Centerville -- like every town -- has many individual characteristics.

In Fig. 58 is shown a tentative zone plan for Centerville. This map is based upon extensive studies of the city, and has been influenced by the opinions and criticism of local citizens. It will not be accepted by all as a perfect zone plan, nor is it claimed to be such. It is suggested in the hope that it may be a basis for further study and an encouraging factor in the zoning of Centerville.

One case in which laymen, especially property owners, tend to disagree with city planners is in regard to areas zoned for commerce. Almost invariably the layman, if he happens to own property which he hopes to sell to a chain store or to a gasoline company, or on which he desires to erect a business establishment of his own, will argue for an unrestricted zoning of the

area including his property. Obviously there must be provision for commercial land use in a zone plan, but - less obviously, though equally truly - there must be a limit to such use. Otherwise there is no zoning, i.e., no public control over private land use.

The city planner can be wrong, of course, but he has the advantage of knowing that experience shows that there are certain limits to the need for commercial property. In the case of industrial property, there is more individuality among cities. No easy rules can be established to determine a proper limit to the extent of industrial land use.

Fig. 58 may not be the zone plan desired by the people of Centerville. In any event, it is hoped that some zone plan will be adopted, based on logical considerations and free from petty and selfish motives, and that such a plan will be enforced by an enlightened public opinion as well as by a progressive municipal administration.

Urban zoning and urban planning are complements. The first is necessary in order to control private property development so as to protect the social and economic interests of all. The second is necessary in order to guide public development so as to protect these same interests.

There need be nothing in the phrase "City Planning" to make the taxpayer tremble. City planning does not necessarily mean spending more. It means planning before spending.* A master plan for the next fifty years does not mean crowding the burden of a half century of construction into the next few years. It means looking ahead so that advantage may be taken of such things as opportunities to acquire desired land cheaply, or to effect great advances in street construction through emergency labor programs.

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*As an example of economy in planning a street system or layout in advance and in accordance with actual needs, Redburn, N.J. - a planned development -- has only 20.3% of its area in streets in contrast to the usual 30 to 35%.

Centerville is already fortunate in having a large public square -- the court house site. Less fortunate is the city in the approaches to this square. Looking forward to a time when the combined effects of zoning, obsolescence of present commercial structures, and urban growth may render both possible and desirable the replanning of downtown Centerville, we may prepare a tentative plan for a civic center.

In Fig. 66 is shown such a plan. The advantages of a civic center are many, both social and economic. Besides improving the appearance of the entire commercial section, a well planned civic center development will increase greatly the value of commercial frontage adjacent to the public areas.

It may be said that some present store frontage would be eliminated under the plan in Fig. 66. To this it may be answered that more would be created than destroyed. It is possible, however, that to leave open the square south of the court house would be economically undesirable, even under future conditions. In this case, a commercial development could be allowed in this square which would fit into the general civic center scheme, if properly designed and controlled as to building heights and architectural homogeneity.

The municipal building in Centerville needs to be replaced within the very near future. Regardless of whether the plan in Fig. 66 can or ought to be adopted, at least some comprehensive plan for the redevelopment of Centerville's civic buildings should be chosen. The selected plan should seek to locate such buildings as the city hall, auditorium, and whatever else may be contemplated for future construction, according to a harmonious plan. All too often the tendency is to seek a vacant lot here or there, erect the public building on whatever land is thus acquired, and disregard the ultimate effect.

APPANOOSE COUNTY COURT HOUSE

Unusually large is the court house square in Centerville. Leading to it from each of the four cardinal directions is a broad street, tree lined, with the tower of the court house itself as a terminal feature. If these four streets were the main approaches to Centerville's business section instead of the tortuous entries through the narrow streets leading from the corners of the square, traffic flow would be much easier.

OFFSET STREETS

These two views, the upper looking east from the city hall and the lower looking south from the east side of the court house square, emphasize the offset streets through which traffic filters into the Centerville business section from the four corners of the square. Traffic would probably be facilitated by restricting or eliminating parking on one side (the side farthest from the court house) of each of the eight streets entering these four corners.


BOB ELGI

In conclusion, let it be emphasized again that the purpose of city planning is not to increase but to lessen the tax burden, when computed over a period of years. This is achieved by planning and building for the future, in accordance with a logical program of expenditure.

TABLE 18
CENTERVILLE "ZONE PLAN"

Land Use Comparisons

	Per Cent Tot. City Area				Acres Per 100 Persons				Acres
	Centerville Zone Plan	Exist-ing	Iowa Av.	U.S. Av.	Centerville Zone Plan	Exist-ing	Iowa Av.	U.S. Av.	Zone Plan
Residential Area					*				
Total	57.6	14.2	24.9	23.8	17.84	4.39	11.0	3.16	1452.4
"A" Residence	49.4				15.30				1245.1
"B" Residence	8.2				2.54				207.3
Commercial Area	1.1	1.0	2.3	1.4	0.34	0.30	0.79	0.18	27.9
Industrial Area		**				**			
Total	6.8	3.8	1.1	3.7	2.10	1.18	0.55	0.45	170.3
Light Industry	2.2				0.68				55.1
Heavy Industry	4.6				1.42				115.2
Railroad Property	3.2	**	3.1	3.2	0.99	**	1.54	0.46	80.4
Streets	12.7	12.7	12.9	20.2	3.95	3.95	5.53	2.82	322.0
Parks & Blvds.	3.8	1.1	1.3	4.0	1.19	0.33	0.63	0.48	96.6
Public & Semi-public									
Total***		4.5	2.4	4.5		1.38	1.12	0.62	
City Property	0.1				0.04				3.1
Cemetery	1.6				0.50				40.8
Lake & Reservoir	0.7				0.23				18.9
Vacant**	0.0	62.7	52.0	39.2	0.00	19.69	27.69	6.80	0.0
**									
Agricultural Land	12.4				3.78				307.6

* Figures in this column represent acres in various land use classifications (according to the "ZONE PLAN") per 100 persons of present population. Obviously these figures would all be reduced by an increase in population, which is apt to occur during the life of any zone plan.

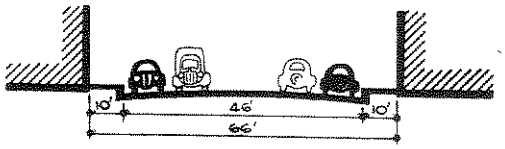
** Light and heavy industry and railroad area are combined in these columns.

*** Total public and semi-public property includes, of course, more than municipal, cemetery, and lake and reservoir property. It is not the purpose of a zone plan to control public property, however, but to regulate the use of private property.

** Not in urban use.
**

MINOR THOROUGHFARES

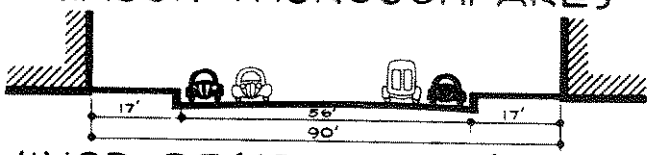
ONLY PARALLEL PARKING SHOULD BE PERMITTED ON THESE STREETS



TWO LINES OF PARKED CARS – THREE LINES OF MOVING CARS

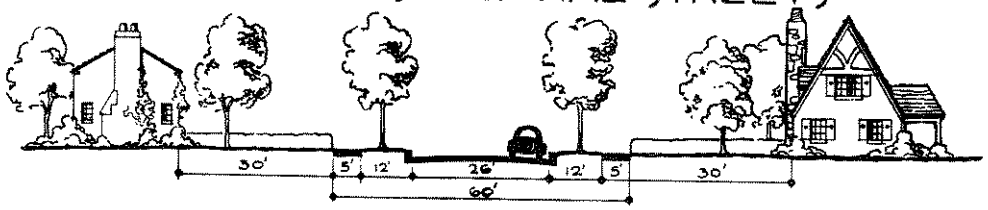
MAJOR THOROUGHFARES

45° ANGLE PARKING REDUCES THE MOVING LINES OF TRAFFIC TO TWO

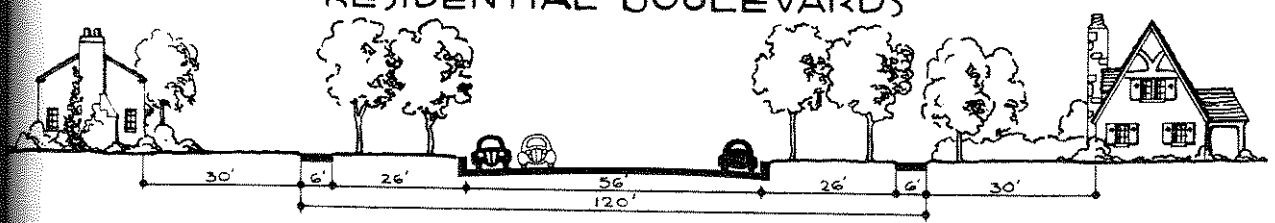


TWO LINES OF PARKED CARS – FOUR LINES OF MOVING CARS

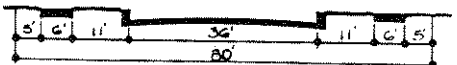
MINOR RESIDENTIAL STREETS



RESIDENTIAL BOULEVARDS

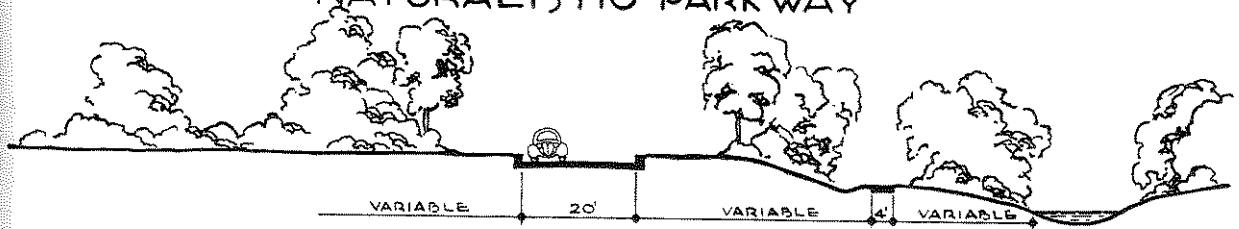


FOUR LINES



MINIMUM WIDTH

NATURALISTIC PARKWAY

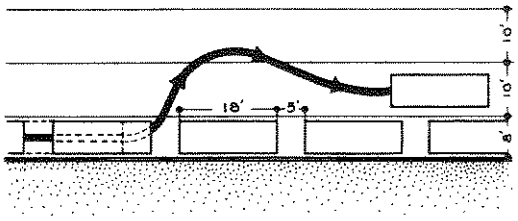


SUGGESTED DEVELOPMENT OF MAJOR & MINOR STREETS

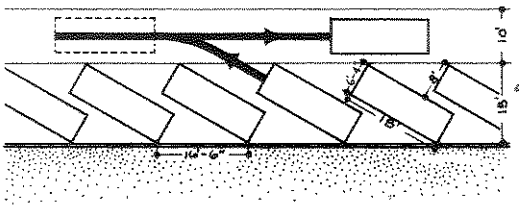
IOWA STATE PLANNING BOARD

FIG. 59

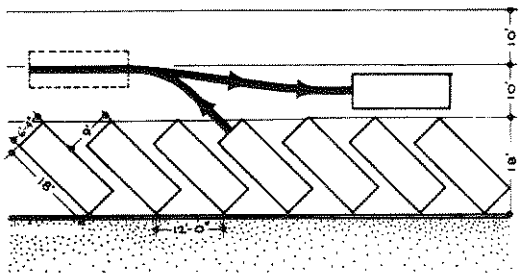
METHODS OF PARKING



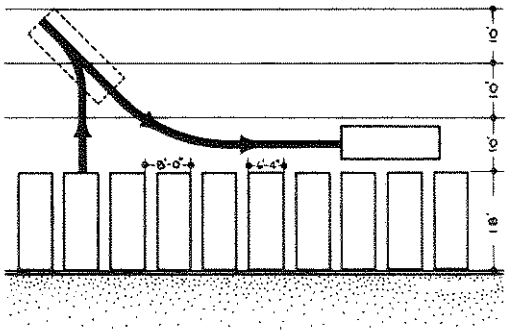
PARALLEL PARKING



ANGULAR PARKING - 30°



ANGULAR PARKING 45°



RIGHT ANGLE PARKING

SPACE REQUIREMENTS FOR VARIOUS METHODS OF PARKING

METHOD	CURB LENGTH	WIDTH
PARALLEL	23'-0"	8'-0"
ANGULAR - 30°	16'-6"	15'-0"
ANGULAR - 45°	12'-0"	18'-0"
RIGHT ANGLE	18'-0"	8'-0"

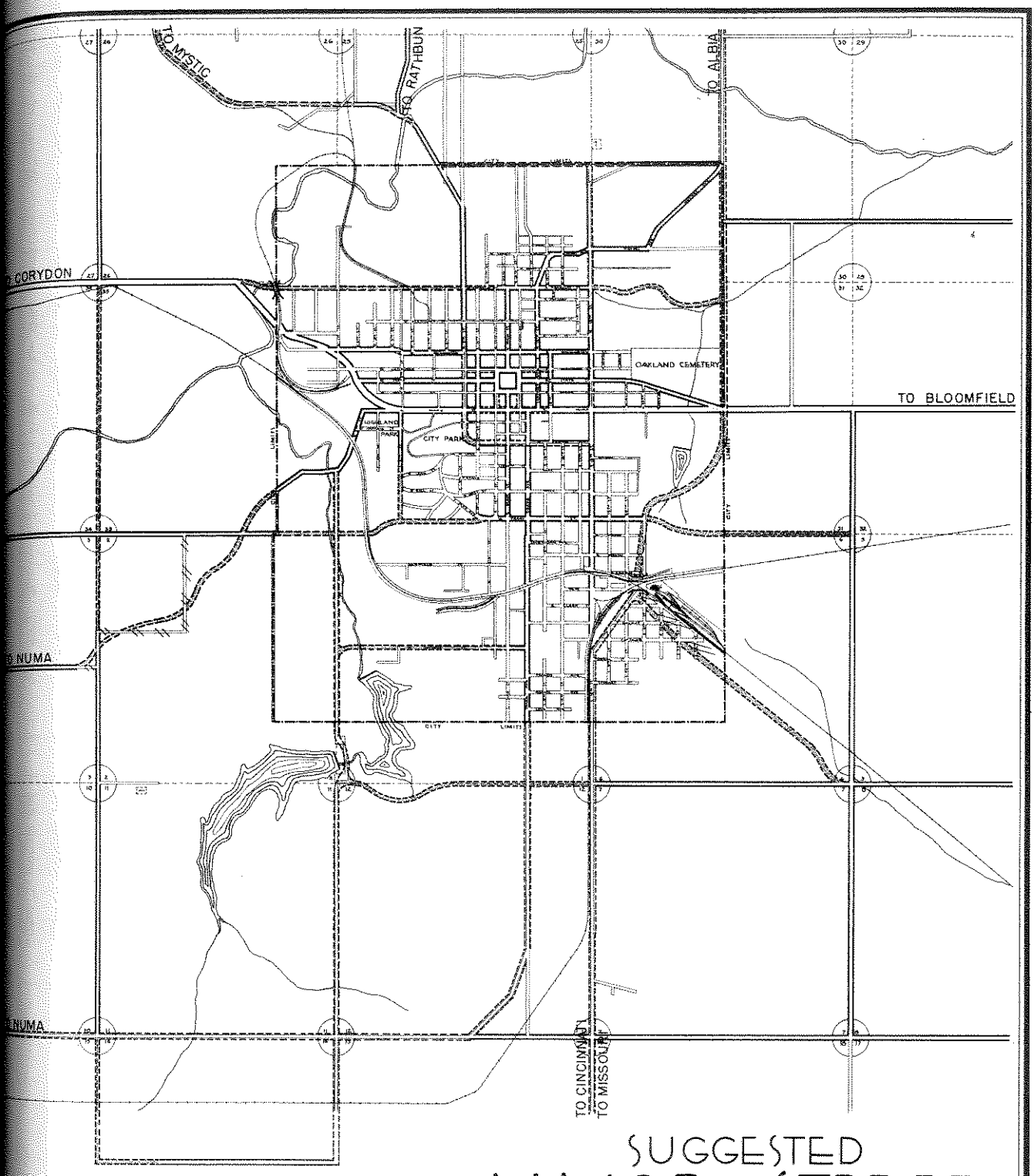
NUMBER OF CARS PER 100 FEET

PARALLEL	30°	45°	90°
4.4	6.0	8.3	12.5

METHODS OF PARKING AND THEIR DIMENSIONAL REQUIREMENTS

IOWA STATE PLANNING BOARD

FIG. 60



AIRPORT

CENTERVILLE
IOWA

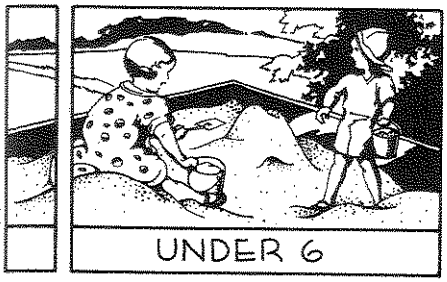
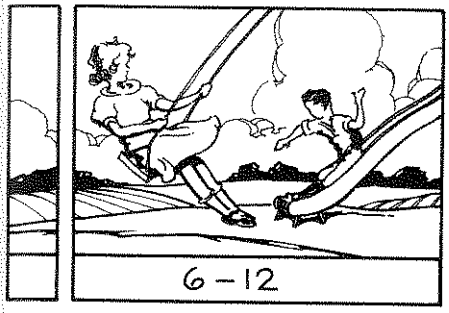
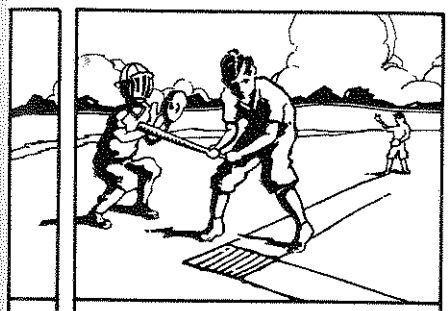
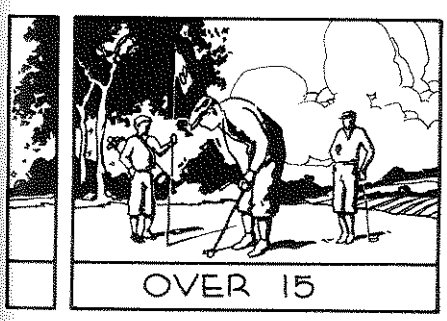
IOWA STATE PLANNING BOARD

SUGGESTED MAJOR STREET PLAN

LEGEND

- MAJOR STREET
- WIDENING OF EXISTING STREET
- MINOR STREET
- POSSIBLE ROUTE TO BE CONSIDERED IN EVENT OF LARGE POPULATION INCREASE
- STREET TO BE REMOVED

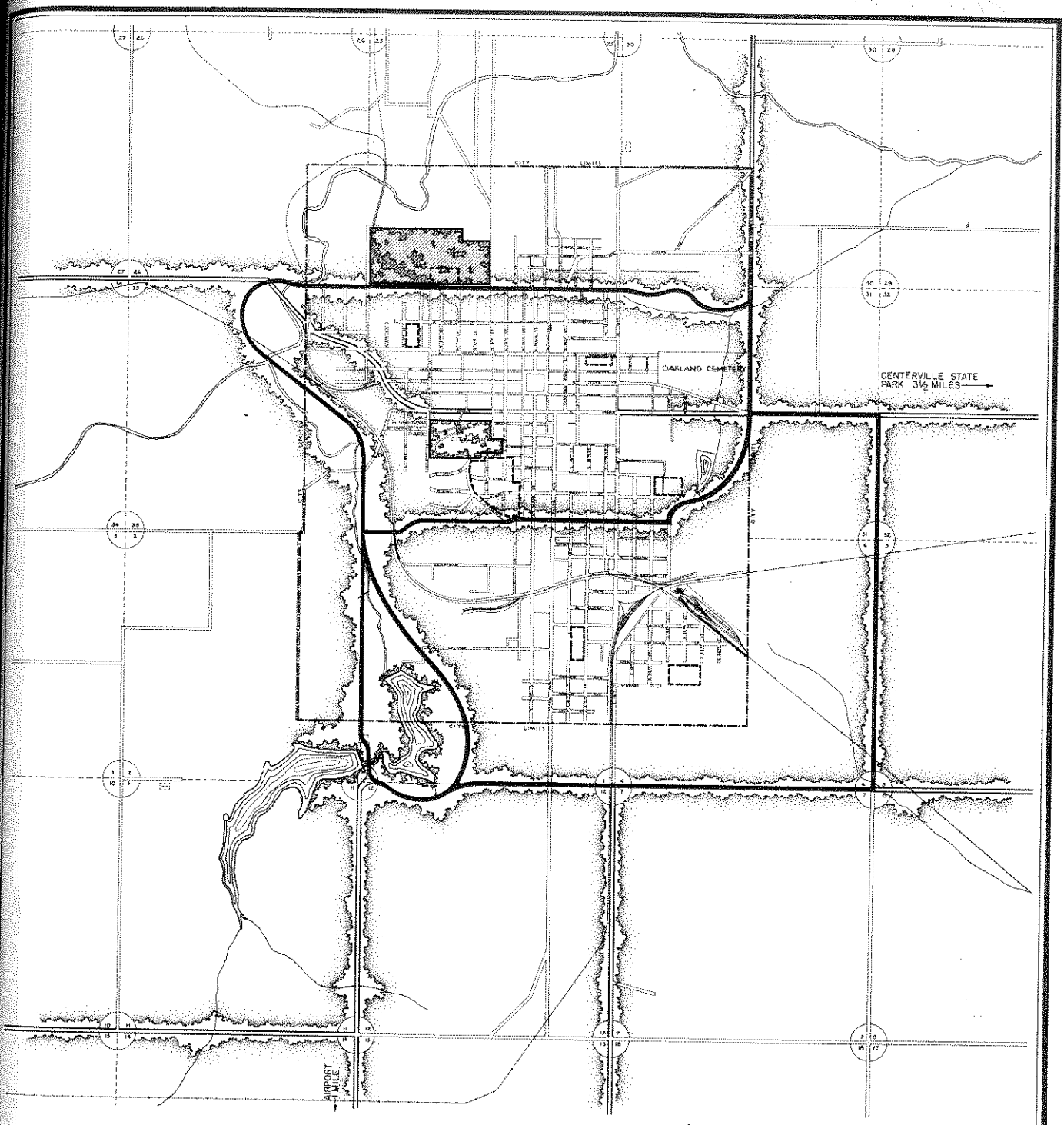
FIG. 61

AGE GROUPS	RECREATION FACILITIES	
 UNDER 6	Play and Recreation chiefly in or near the home.	Home grounds Interior Block Playgrounds Nearby Children's Playgrounds
 6 - 12	Recreation responsibility centers in educational agencies, boys & girls clubs	Home Grounds Interior Block Playgrounds Play Areas in Parks Swimming Pools Boy and Girl Scout Camps.
 12 - 15	Recreational facilities supplied by public parks, camps and reservations.	Playfields Swimming Pools Golf Courses Neighborhood Parks Large Parks Community Centers
 OVER 15		

CLASSIFICATION OF RECREATION FACILITIES ACCORDING TO AGE GROUPS

IOWA STATE PLANNING BOARD

FIG. 62



CENTERVILLE
IOWA

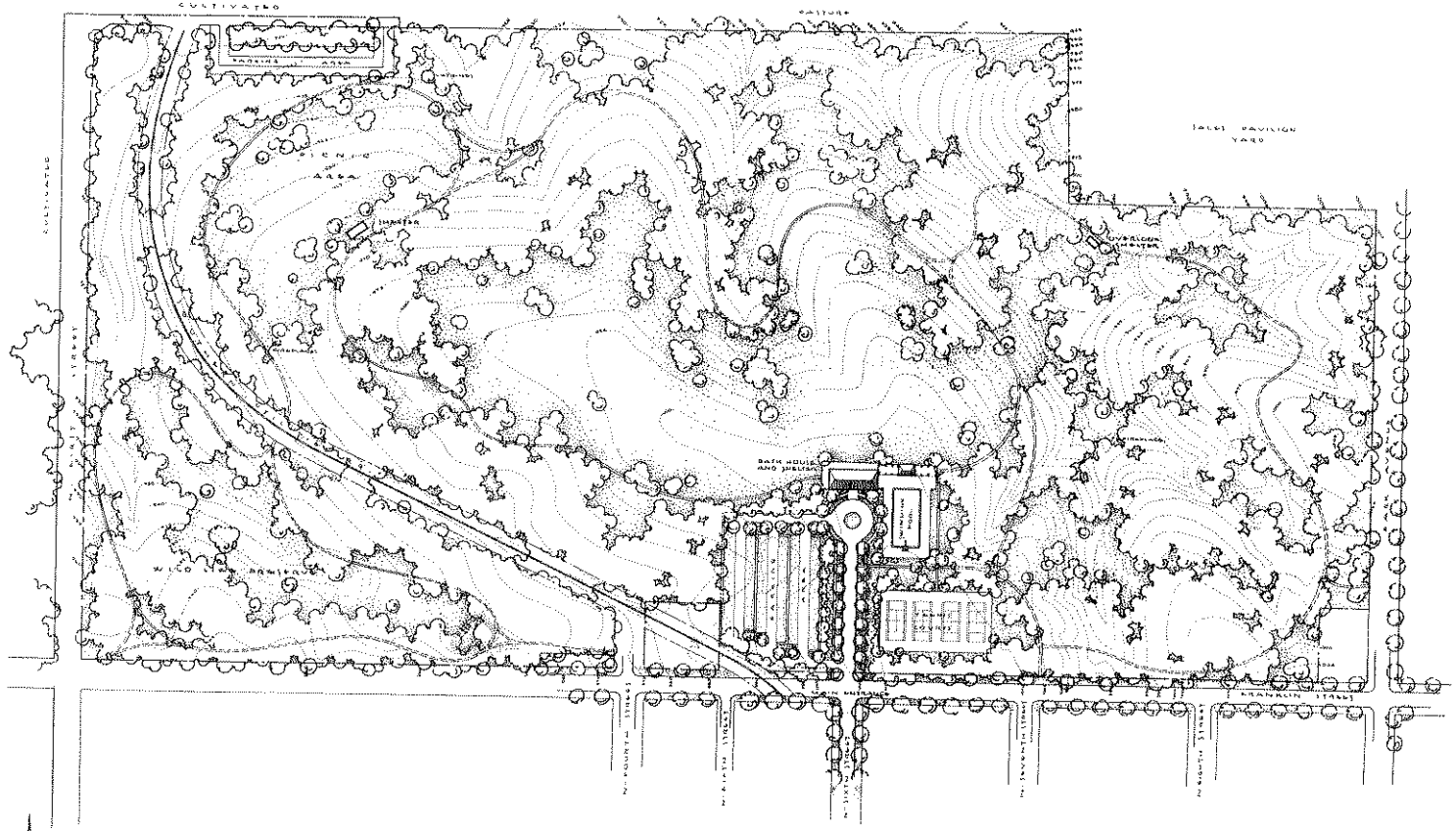
IOWA STATE PLANNING BOARD

SUGGESTED
PARKS, PARKWAYS & PLAYGROUNDS

LEGEND

- SUGGESTED CITY PARKWAY
- SUGGESTED STATE OR COUNTY PARKWAY
- EXISTING PARK
- PROPOSED PARK
- SUGGESTED PLAYGROUND

FIG. 63



PROPOSED GENERAL LANDSCAPE PLAN

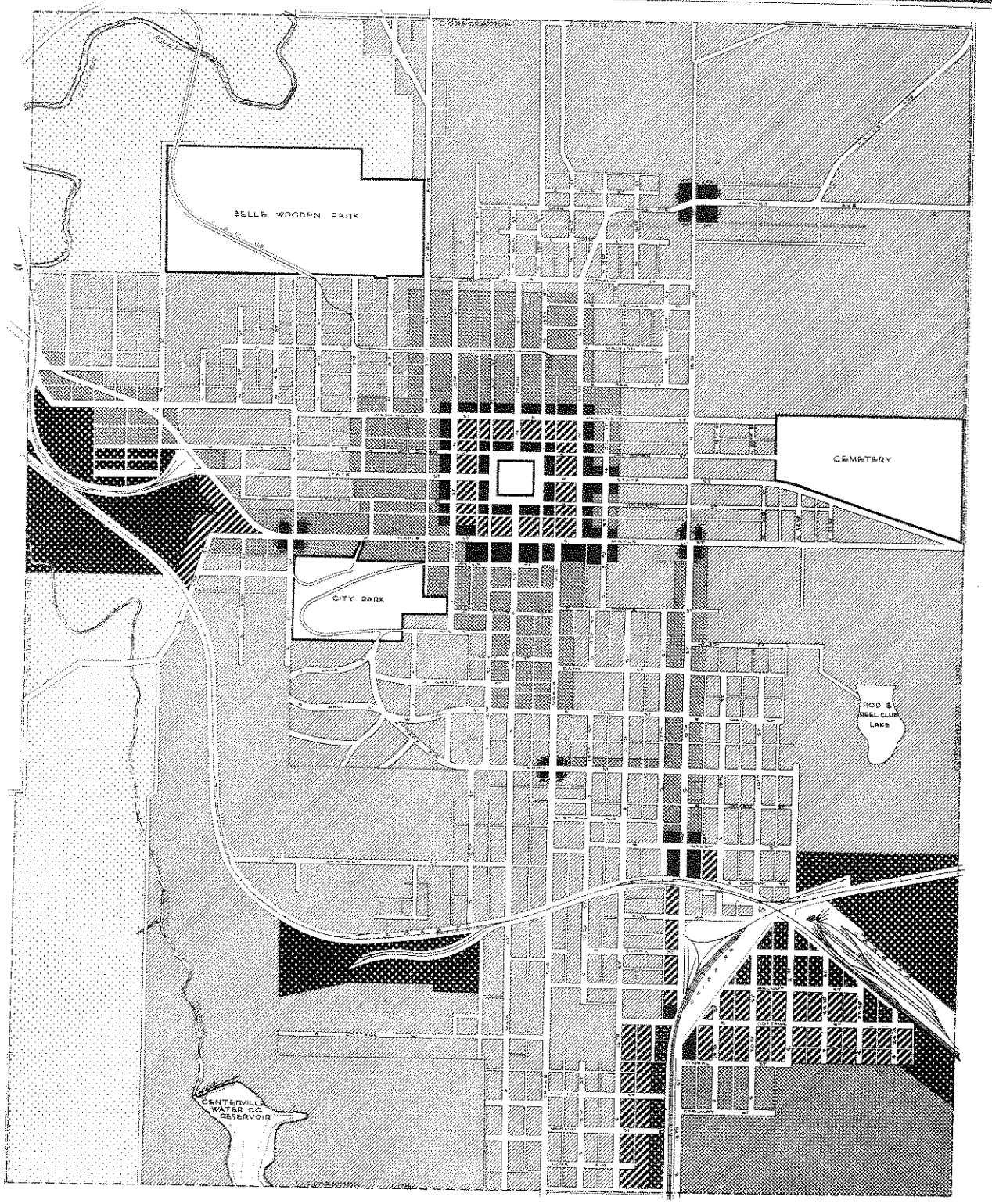
BELLE WOODEN PARK

CENTERVILLE - IOWA

IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 64



CENTERVILLE A ZONE PLAN

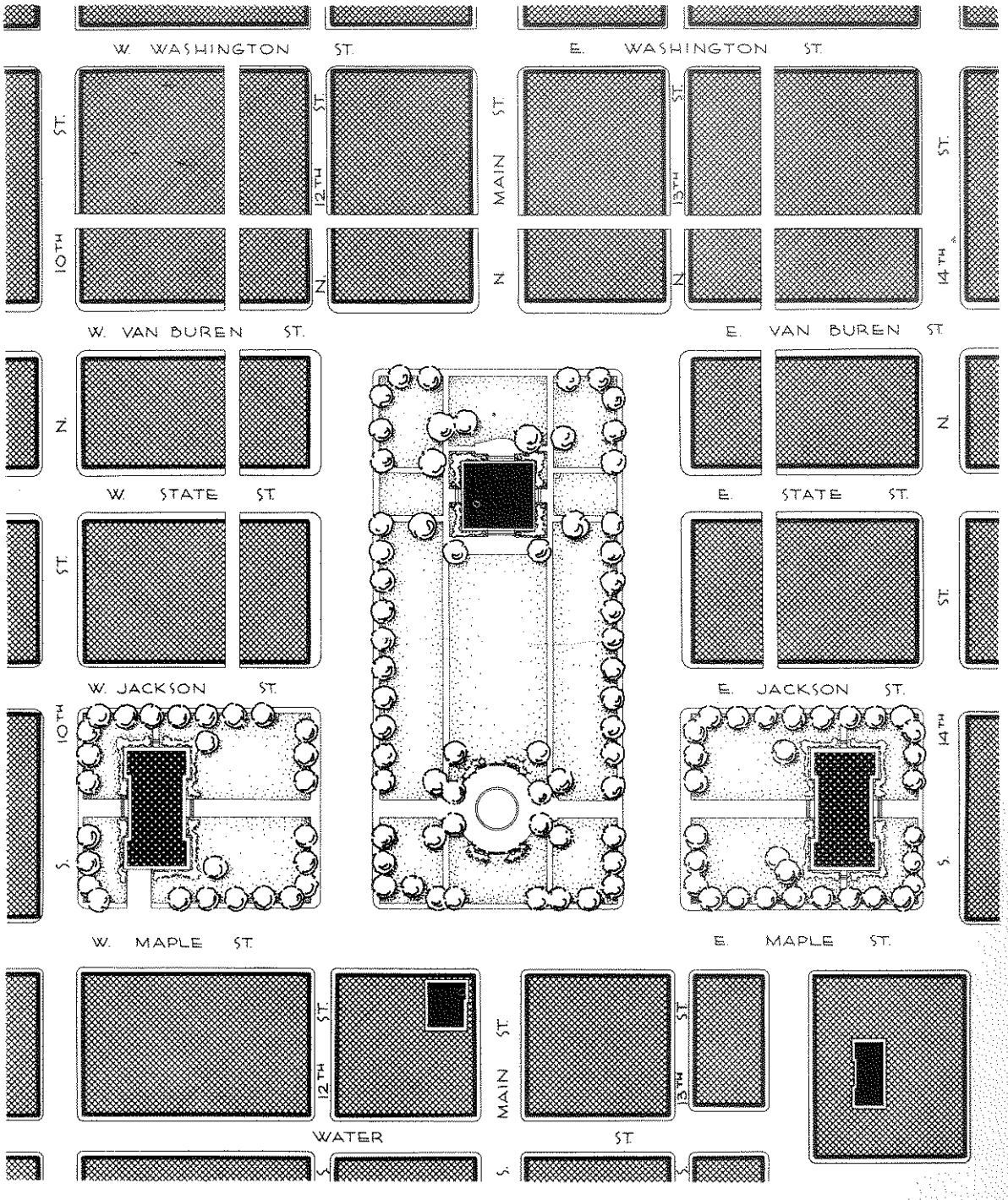
IOWA

IOWA STATE PLANNING BOARD

LEGEND

- COMMERCIAL
- "B" RESIDENTIAL
- LIGHT INDUSTRY
- "A" RESIDENTIAL
- AGRICULTURE
- HEAVY INDUSTRY
- PUBLIC PROPERTY, PARKS, CEMETERIES, ETC.

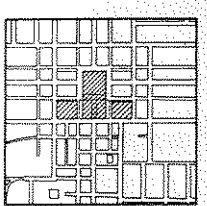
FIG. 65



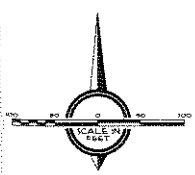
LEGEND

- EXISTING PUBLIC BUILDING
- SUGGESTED PUBLIC BUILDING
- EXISTING PUBLIC & PRIVATE PROPERTY

A SUGGESTED CIVIC CENTER FOR CENTERVILLE, IOWA



KEY MAP



IOWA STATE PLANNING BOARD

APPANOOSE COUNTY

FIG. 66

C O N C L U S I O N S

Need For County Planning

Although public officials determine and direct most programs of public improvement, the real man-power of our country is represented by civic organizations and groups of laymen working in cooperation with those officials. In the last few years many groups of citizens have become deeply interested in planning, but most of them have found the field new and strange. Because they have not known how to organize to attain the desired objectives, visible results often have been discouraging.

Nevertheless, a program of public improvement can proceed only as rapidly as it is supported and encouraged by public opinion; and the voice of the people is apt to be heard more continuously and effectively through civic organizations than at the polls.

A county plan is not a device for increasing the rates of taxation and expenditure, but a guide to the allocation of funds which, with or without a plan, are going to be expended in the process of developing the county. Because public money is going to be spent, however wisely or carelessly, and because the long-time welfare of all should be placed above the immediate desire of the individual, a planning program is essential. And because the long-time welfare of all requires continuous attention and support, it is recommended that a lay planning group be organized in Appanoose County to provide the continuity lacking in official tenure.

Public and Official Support for County Planning

The support of public opinion and of county officials is essential to the

success of any county planning program. The public should be informed of every stage of progress and of future plans; and county officials and technical appointees, not only because they have experience and training which qualify them for important participation in county planning, but also because they are directly concerned with the administration of any county plans which may be adopted, should be continuously consulted.

Local Leadership in Organizing for County Planning

Local leadership is a prime necessity in successful county planning. It is suggested that some group of interested citizens in Appanoose County -- perhaps a civic organization, women's club, commercial club, church organization, American Legion, Kiwanis, Rotary, Lions, or similar group (or combination of groups acting jointly) -- take the initiative to the extent of sponsoring an organization meeting. No arbitrary procedure is herein suggested for calling or conducting the meeting, the details of which may be arranged by the local sponsoring body.

An organization meeting ordinarily should be held at the county seat or other convenient location, and should be open to the general public. All civic and service groups in the county should be invited to attend. At an organization meeting, the general objectives of county planning and the purpose of the meeting should be stated.

It may be desirable to have representatives from other planning agencies -- state, county or municipal -- on hand to relate practical experiences and aid in the explanation of a planning program. Graphic material in the form of such maps and charts as are included in the present report may be found very helpful in emphasizing the procedure and purpose of county planning.

The citizen group, service club or other sponsoring agency should provide continuity to the county planning movement until an unofficial county planning

council has been selected. (After the Iowa Legislature has passed an official county planning enabling act, of course, a sponsoring group should work directly for the appointment of an official county planning commission by whatever appointing agency the law designates.)

If a representative attendance is present at the first organization meeting called by the sponsor, the unofficial county planning council may be chosen then. If for any reason it seems preferable to postpone selection of the planning council until a later meeting, such action is at the option of the sponsor. Unnecessary delay, however, should be avoided, and the county planning council should be selected as soon as conditions warrant.

Unofficial County Planning Council

In Iowa it is possible for municipalities to appoint official planning and zoning commissions (which in some cases have identical membership), but there is at present (1936) no legislation to provide for official county planning bodies. Nevertheless it is entirely possible for an unofficial county planning group to be appointed or selected, and for such a group to carry forward a program which can be as comprehensive as the vision and energy of the group members.

An unofficial county planning committee or council in Appanoose County should seek to do these two things: promote a comprehensive county planning program, and urge the enacting of enabling legislation to permit the establishment of official county planning bodies.

The method of choosing members for the unofficial county planning council should be carefully determined. Consideration should be given to such alternatives as: (1) electing members at an organization meeting, or (2) requesting the county board of supervisors to appoint the council; (3) choosing all

members on a county-wide basis, or (4) limiting membership to a certain maximum for any one town or township; (5) selecting a large number of members (who may be divided into sub-committees, and who may elect a smaller number of executive officers from their ranks), or (6) selecting a small number of members (who may head various sub-committees on which outside or non-council members also serve); (7) choosing members representing various subject fields -- education, public health, etc. (see "Suggested County Planning Projects" for suggested subject classification), or (8) choosing members chiefly on a basis of breadth of interest and ability, depending on outside technical advisors to supply any special knowledge or talent required.

Whatever method is followed, the unofficial county planning council should be composed of men and women who are qualified, by reason of unselfish interest and intelligent enthusiasm, to serve the public and aid the county officials in determining and analyzing basic facts and in applying the planning process to future programs of public improvement. Insofar as possible, the council should include persons interested in the broad aspects of comprehensive county planning, yet capable of carrying out specific assignments.

As suggested previously, it is desirable to consider the administrative and technical officers of the county when choosing the members of a county planning council -- not necessarily to have such officers on the council, but to keep in mind their planning experience and executive authority. The council should represent the lay citizens, but it also must be able to cooperate with the officials elected by those citizens.

If other unofficial county committees -- agricultural committee, conservation committee, public safety committee, etc. -- have already been organized in Appanoose County, it is important that any conflict be avoided

between their work and that of the county planning council. This may be accomplished by a merger, by a mutual exchange of representatives, by a duplication of membership (the existing committee being made a special sub-committee of the county planning council), or by other means determined by those concerned.

Unless the council is very large, a chairman and secretary probably will be the only officers required. It will be found possible perhaps to obtain the part time services of the secretary of the sponsoring agency, chamber of commerce, etc. If a large council is chosen, the election of an executive committee may promote efficiency. All such details, however, should be decided upon locally.

Official County Planning Commission

As soon as enabling legislation has been passed, the county board of supervisors (or whatever agency is authorized to exercise the appointive power) should be urged to appoint an official county planning commission. Either the unofficial planning council or a group of interested laymen should sponsor this movement.

Members of the official county planning commission should be chosen with the same care required in the selection of an unofficial planning council. The actual procedure in appointing this commission will be guided by the act providing for its official creation. It will be well for the commission to include in its membership some of the men and women who have served on the unofficial county planning council.

An official county planning commission will probably take over the major phases of any program conducted by an unofficial council. The latter, however, need not disband, but may continue to serve the people and the new

official commission in an advisory capacity, filling what might otherwise be a gap between a small official group and the lay public.

Sub-Committee Organization

While it is highly important that a county planning group act as a unit, it may be found advantageous to organize sub-committees to work on specific projects. The entire county planning council or commission, or the executive officers in case such are chosen, may act on matters of general concern such as publicity, cooperation with other agencies, etc., although in some cases it may be desirable to create special committees to take charge of these important details.

The number of sub-committees and the nature of their work are to be determined according to local needs. Projects should include matters of interest to both rural and urban groups. The classification under "Suggested County Planning Projects" indicates a division into twelve projects or sub-committees. Other combinations or additions may be required for Appanoose County, according to local conditions and problems.

General Procedure in County Planning

Any county planning group, unofficial or official, must follow the general procedure of:

First -- Finding the facts about existing conditions and trends in the county.

Second -- Analyzing the facts and establishing a program of objectives.

Third -- Making plans for county development over a period of years, in harmony with smaller community and larger regional plans.

Fourth -- Organizing public and official forces to carry out the plans.

Throughout all these steps, the planning body must both seek and merit the confidence of the general public and its elected officers. Appropriate

measures should be followed to keep all aware of plans and progress. If other agencies are already conducting valuable programs, these should be neither discouraged nor duplicated, but brought into harmony with the work of the county planning agency.

Suggested County Planning Projects

The important physical and social characteristics of a county, excluding certain features which are highly important but not readily adaptable to public planning, may generally be grouped under these headings:

1. Natural Characteristics
2. Rural Land Use
3. Urban Land Use
4. Population and Social Trends
5. Education
6. Public Health and Safety
7. Recreation
8. Transportation
9. Electrification and Communication
10. Industry and Employment
11. Public Works
12. Government and Finance

It may be desirable to include other headings (for example, Flood Control). For the most part, however, these twelve classifications will suffice. It should be noted that they are not mutually exclusive in their subject fields; for instance, a county park program would concern both the committee on Recreation and the committee on Rural Land Use, and possibly others. The committees on Public Works and Industry will have some matters to consider in

common, and so on.

Under these twelve headings, or whatever project and sub-committee organization is decided upon, the work of an Appanoose County Planning Council may proceed.

Much of the first or fact finding work has been performed in the preparation of the present report. This first phase, however, is by no means completed. Much information can be added on soil resources and other topics (Tables 3 and 4 may be revised in conformity with newer recommendations of the Land Use Committee, the Agricultural Extension Service and the Experiment Station at Iowa State College), while social and economic data are constantly changing and require continuous recording.

Although this report contains some interpretative analyses and specific plans, for the most part the tasks of analyzing facts and establishing objectives, making plans and carrying them out, await local interest, organization and effort.

Need for Community Planning

The present report has been devoted primarily to Appanoose County itself rather than to its several political subdivisions. Nevertheless the communities within the county deserve mention, not only because of their relation to county planning, but also as units in their own right.

Under Part II it was suggested that each community analyze its present status and probable future. Some communities, under the leadership of the Extension Service, have found the "community check sheet" a useful aid, first in stimulating interest in community self analysis, and second in measuring the progress of community improvement under the impetus of group action.

It is recommended that all the communities of Appanoose County conduct self analyses, either using the community check sheet or employing such other method as they may choose. The City of Centerville should organize a zoning commission, make the necessary studies and enact a comprehensive zoning ordinance. It should also organize a city planning commission, which may or may not be identical in membership with the zoning commission.

The other municipalities of Appanoose County are less in need of comprehensive zoning than is Centerville, but the importance of their problems warrants the same degree of civic interest.

Summary

It is recommended that:

1. An unofficial county planning council be formed in Appanoose County, to serve until legislation provides for the appointment of official commissions.

2. An official county planning commission be formed in Appanoose County after the passage of a state enabling act by the Iowa Legislature.

3. All communities of Appanoose County analyze their present conditions and trends, with a view toward preparing and carrying out programs of civic improvement.

4. The City of Centerville organize a zoning commission and a planning commission (the latter possibly including the same membership as the former), and take the necessary steps toward enacting a comprehensive zoning ordinance and adopting a master plan.

I N D E X