Johnson County: a Geographic Study Representative of the Western Plains Region of Missouri.

Courtney C. Aldrich Jr
Louisiana State University and Agricultural & Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_disstheses

Recommended Citation
https://digitalcommons.lsu.edu/gradschool_disstheses/118

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Historical Dissertations and Theses by an authorized administrator of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
JOHNSON COUNTY: A GEOGRAPHIC STUDY REPRESENTATIVE OF THE WESTERN PLAINS REGION OF MISSOURI

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in The Department of Geography and Anthropology

by

Courtney C. Aldrich, Jr.
B. A., Louisiana State University, 1934
M. S., Louisiana State University, 1940
August, 1955
ACKNOWLEDGMENT

Many persons have contributed substantially to the production and completion of this dissertation. To all of them, I am deeply grateful.

Special thanks are due to Miss Sarah Guitar of the State Historical Society staff, and to Mr. William Stanton, Librarian at Central Missouri State College, for their expert help in finding source materials. To Mr. Stanton I am also indebted for his excellent help in photography.

To Professors Fred B. Kniffen and Robert C. West of Louisiana State University, sincere thanks are extended for their constructive criticisms and suggestions during the preparation of the paper. I am particularly obligated to Professor Kniffen for his inspiration, and for the primary drive needed to get the work underway.

Finally, special thanks are due to my father and mother, Mr. and Mrs. Courtney C. Aldrich Sr., for their support and encouragement; and to my wife, Glorye June Aldrich, and to my mother-in-law, Mrs. Belva L. Cook, for their faithful and constant assistance and encouragement in this total effort.

Baton Rouge, Louisiana
July, 1955

Courtney C. Aldrich Jr.
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>vii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xi</td>
</tr>
<tr>
<td>FRONTISPIECES</td>
<td>xiv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I  OVERVIEW OF SETTING</td>
<td>4</td>
</tr>
<tr>
<td>Position</td>
<td>7</td>
</tr>
<tr>
<td>Surface configuration</td>
<td>9</td>
</tr>
<tr>
<td>II THE PHYSICAL PATTERN</td>
<td>14</td>
</tr>
<tr>
<td>Origin of the area</td>
<td></td>
</tr>
<tr>
<td>Bedrock and structure</td>
<td></td>
</tr>
<tr>
<td>Climate</td>
<td></td>
</tr>
<tr>
<td>Material resources</td>
<td></td>
</tr>
<tr>
<td>Native vegetation</td>
<td></td>
</tr>
<tr>
<td>Surface drainage</td>
<td></td>
</tr>
<tr>
<td>Ground waters</td>
<td></td>
</tr>
<tr>
<td>Soils</td>
<td></td>
</tr>
<tr>
<td>Minerals</td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td></td>
</tr>
<tr>
<td>Limestone</td>
<td></td>
</tr>
<tr>
<td>Clay and Shale</td>
<td></td>
</tr>
<tr>
<td>Sand and gravel</td>
<td></td>
</tr>
<tr>
<td>Sandstone</td>
<td></td>
</tr>
<tr>
<td>Other minerals</td>
<td></td>
</tr>
<tr>
<td>III SETTLEMENT AND DEVELOPMENT</td>
<td>69</td>
</tr>
<tr>
<td>General occupancy of the western prairies</td>
<td></td>
</tr>
<tr>
<td>Early settlement in Johnson County</td>
<td></td>
</tr>
<tr>
<td>Areas of settlement</td>
<td></td>
</tr>
</tbody>
</table>
Chapter

Land entries and the public domain
Prairie and timber lands
The early population
Origin of the immigrant stock
Character of the settlers
Population tendencies
Town development
Early economies
Field crops
Livestock
Horticulture
Trends in development
Other productive enterprise
Early travel
Early roads
Coming of the railroads

IV RECENT ECONOMY AND LAND USE ................................. 147

Present landscape
Agriculture
Agricultural land use
Character of farms
Types of farming
Crops produced
Animal industry
Value of farms and buildings
Farm tenure
Conservation
The town pattern
Distribution and population
Functional characteristics
Warrensburg
Other economic elements
Trade and commerce
Manufacturing
Mine and forest products
The grain elevator
Knob Noster State Park

V CONCLUSION ......................................................... 239

BIBLIOGRAPHY ....................................................... 242
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Log Record of Shaft Bore near Montserrat</td>
<td>21</td>
</tr>
<tr>
<td>II.</td>
<td>Log Record of Shaft Bore near Holden</td>
<td>22</td>
</tr>
<tr>
<td>III.</td>
<td>Log Record of Shaft Bore near Sutherland</td>
<td>22</td>
</tr>
<tr>
<td>IV.</td>
<td>Population of County and Warrensburg</td>
<td>103</td>
</tr>
<tr>
<td>V.</td>
<td>Assessment Figures for Johnson County</td>
<td>132</td>
</tr>
<tr>
<td>VI.</td>
<td>Representative Crop Rotation Plan for a Johnson County Farm</td>
<td>178</td>
</tr>
<tr>
<td>VII.</td>
<td>Leading Field Crops of Johnson County</td>
<td>179</td>
</tr>
<tr>
<td>VIII.</td>
<td>Plan for Land Use, Cropping System and Conservation Practices</td>
<td>209</td>
</tr>
<tr>
<td>IX.</td>
<td>Functions and Services of Johnson County Settlements</td>
<td>219</td>
</tr>
</tbody>
</table>
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Physiographic Divisions of Missouri</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Regional Position of Johnson County</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Township Organizations of Johnson County</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Missouri: Chief Pennsylvanian Outcrops</td>
<td>15</td>
</tr>
<tr>
<td>5.</td>
<td>Johnson County: Chief Pennsylvanian Outcrops</td>
<td>19</td>
</tr>
<tr>
<td>6.</td>
<td>Warrensburg: Rainfall-Temperature Graph</td>
<td>27</td>
</tr>
<tr>
<td>7.</td>
<td>Johnson County: Timber and Prairie Land about 1870</td>
<td>31</td>
</tr>
<tr>
<td>8.</td>
<td>Johnson County: Generalized Soil Types</td>
<td>48</td>
</tr>
<tr>
<td>9.</td>
<td>Johnson County: Soil Erosion</td>
<td>53</td>
</tr>
<tr>
<td>10.</td>
<td>Cross-Section of Shaft at Montserrat</td>
<td>57</td>
</tr>
<tr>
<td>11.</td>
<td>Cross-Section along the Missouri Pacific Railroad from Warrensburg to Knob Noster</td>
<td>60</td>
</tr>
<tr>
<td>12.</td>
<td>Johnson County: Township Division in 1834</td>
<td>79</td>
</tr>
<tr>
<td>13.</td>
<td>Johnson County: Earliest Settlements</td>
<td>86</td>
</tr>
<tr>
<td>14.</td>
<td>Land Entry Record for 1830</td>
<td>89</td>
</tr>
<tr>
<td>15.</td>
<td>Land Entry Record for 1835</td>
<td>90</td>
</tr>
<tr>
<td>16.</td>
<td>Land Entry Record for 1840</td>
<td>91</td>
</tr>
<tr>
<td>17.</td>
<td>Land Entry Record for 1845</td>
<td>92</td>
</tr>
<tr>
<td>18.</td>
<td>Land Entry Record for 1850</td>
<td>93</td>
</tr>
<tr>
<td>19.</td>
<td>Land Entry Record for 1855</td>
<td>94</td>
</tr>
<tr>
<td>20.</td>
<td>Land Entry Record for 1860</td>
<td>95</td>
</tr>
<tr>
<td>21.</td>
<td>Early and Present Towns Based on Origin</td>
<td>106</td>
</tr>
<tr>
<td>22.</td>
<td>Early Shovel Plow</td>
<td>114</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>23.</td>
<td>Mold-board Turning Plow</td>
<td>114</td>
</tr>
<tr>
<td>24.</td>
<td>Common Farm Layout of Former Times</td>
<td>152</td>
</tr>
<tr>
<td>25.</td>
<td>Modern Farm Layout</td>
<td>152</td>
</tr>
<tr>
<td>26.</td>
<td>Missouri: Types of Farming Areas</td>
<td>160</td>
</tr>
<tr>
<td>27.</td>
<td>Graph of Land Use in Johnson County</td>
<td>162</td>
</tr>
<tr>
<td>28.</td>
<td>Crop Land, 1950, Per Cent of Farm Land</td>
<td>164</td>
</tr>
<tr>
<td>29.</td>
<td>Land in Pasture, 1950, Per Cent of Farm Land</td>
<td>166</td>
</tr>
<tr>
<td>30.</td>
<td>Farm Woodland, 1950, Per Cent of Farm Land</td>
<td>168</td>
</tr>
<tr>
<td>31.</td>
<td>Johnson County: Distribution of Corn</td>
<td>181</td>
</tr>
<tr>
<td>32.</td>
<td>Johnson County: Distribution of Oats</td>
<td>183</td>
</tr>
<tr>
<td>33.</td>
<td>Johnson County: Distribution of Wheat</td>
<td>185</td>
</tr>
<tr>
<td>34.</td>
<td>Number of Swine by Townships, 1950</td>
<td>191</td>
</tr>
<tr>
<td>35.</td>
<td>Number of Cattle by Townships, 1950</td>
<td>192</td>
</tr>
<tr>
<td>36.</td>
<td>Number of Dairy Cattle by Townships, 1950</td>
<td>194</td>
</tr>
<tr>
<td>37.</td>
<td>Number of Sheep by Townships, 1950</td>
<td>195</td>
</tr>
<tr>
<td>38.</td>
<td>Number of Poultry by Townships, 1950</td>
<td>199</td>
</tr>
<tr>
<td>39.</td>
<td>Value of Farm Land and Buildings, 1950</td>
<td>202</td>
</tr>
<tr>
<td>40.</td>
<td>Johnson County: Functions and Services of Settlements</td>
<td>220</td>
</tr>
<tr>
<td>41.</td>
<td>Town Plan of Fayetteville</td>
<td>222</td>
</tr>
<tr>
<td>42.</td>
<td>Town Plan of Magnolia</td>
<td>223</td>
</tr>
<tr>
<td>43.</td>
<td>Warrensburg: Business and Industry</td>
<td>228</td>
</tr>
</tbody>
</table>
# LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Plate</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia.</td>
<td>Airview of Johnson County Landscape</td>
<td>xiv</td>
</tr>
<tr>
<td>Ib.</td>
<td>Airview of Johnson County Farm Buildings</td>
<td>xv</td>
</tr>
<tr>
<td>II.</td>
<td>Symmetrical Knob North of Knob Noster</td>
<td>12</td>
</tr>
<tr>
<td>III.</td>
<td>Asymmetrical Knob North of Knob Noster</td>
<td>12</td>
</tr>
<tr>
<td>IV.</td>
<td>Snow Fence in Centerview Township</td>
<td>28</td>
</tr>
<tr>
<td>V.</td>
<td>Clear Creek South of Knob Noster</td>
<td>38</td>
</tr>
<tr>
<td>VI.</td>
<td>Post Oak Creek West of Warrensburg</td>
<td>39</td>
</tr>
<tr>
<td>VII.</td>
<td>Farm Pond in Columbus Township</td>
<td>44</td>
</tr>
<tr>
<td>VIII.</td>
<td>Farm Pond in Columbus Township</td>
<td>44</td>
</tr>
<tr>
<td>IX.</td>
<td>Farm Pond in Centerview Township</td>
<td>45</td>
</tr>
<tr>
<td>X.</td>
<td>Old Strip Pit One Mile Northwest of Sutherland</td>
<td>59</td>
</tr>
<tr>
<td>XI.</td>
<td>Old Clay Pit at Knob Noster</td>
<td>63</td>
</tr>
<tr>
<td>XII.</td>
<td>Sandstone Quarry North of Warrensburg at the Turn of the Century</td>
<td>66</td>
</tr>
<tr>
<td>XIII.</td>
<td>Same Quarry at the Present Time</td>
<td>66</td>
</tr>
<tr>
<td>XIV.</td>
<td>Looking North to the Present Settlement of Columbus</td>
<td>75</td>
</tr>
<tr>
<td>XV.</td>
<td>Part of Old Columbus Cemetery</td>
<td>76</td>
</tr>
<tr>
<td>XVI.</td>
<td>Grave of First Settler in Johnson County</td>
<td>76</td>
</tr>
<tr>
<td>XVII.</td>
<td>First House Built in Johnson County</td>
<td>80</td>
</tr>
<tr>
<td>XVIII.</td>
<td>Early Log House in Missouri</td>
<td>111</td>
</tr>
<tr>
<td>Plate</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>XIX.</td>
<td>Hedge Fence in Madison Township</td>
<td>118</td>
</tr>
<tr>
<td>XX.</td>
<td>Hedge Fence in Madison Township</td>
<td>118</td>
</tr>
<tr>
<td>XXI.</td>
<td>Bridge Over the North Fork of Blackwater River</td>
<td>140</td>
</tr>
<tr>
<td>XXII.</td>
<td>Bridge Over the North Fork of Blackwater River</td>
<td>140</td>
</tr>
<tr>
<td>XXIII.</td>
<td>Airview - Centerview Township</td>
<td>148</td>
</tr>
<tr>
<td>XXIV.</td>
<td>Windmill in Use for Pumping Water, near Centerview</td>
<td>149</td>
</tr>
<tr>
<td>XXV.</td>
<td>Barn in Northern Johnson County</td>
<td>150</td>
</tr>
<tr>
<td>XXVI.</td>
<td>Barns in Northern Johnson County</td>
<td>150</td>
</tr>
<tr>
<td>XXVII.</td>
<td>Machine Shed and Barn</td>
<td>153</td>
</tr>
<tr>
<td>XXVIII.</td>
<td>Landscape in Columbus Township</td>
<td>153</td>
</tr>
<tr>
<td>XXIX.</td>
<td>Gasoline Pump in Farmyard</td>
<td>154</td>
</tr>
<tr>
<td>XXX.</td>
<td>Modern Poultry House</td>
<td>154</td>
</tr>
<tr>
<td>XXXI.</td>
<td>Representative Silo in Southeastern part of County</td>
<td>155</td>
</tr>
<tr>
<td>XXXII.</td>
<td>Typical Rural Electric Substation</td>
<td>158</td>
</tr>
<tr>
<td>XXXIII.</td>
<td>Abandoned Schoolhouse</td>
<td>158</td>
</tr>
<tr>
<td>XXXIV.</td>
<td>Representative Old House West of Warrensburg</td>
<td>171</td>
</tr>
<tr>
<td>XXXV.</td>
<td>Similar Type with Addition at the Back</td>
<td>171</td>
</tr>
<tr>
<td>XXXVI.</td>
<td>Newer Type Farm Home in Jefferson Township</td>
<td>172</td>
</tr>
<tr>
<td>XXXVII.</td>
<td>Pretentious Farm Buildings in Western Johnson County</td>
<td>196</td>
</tr>
<tr>
<td>XXXVIII.</td>
<td>Common Highway Scene in Western Johnson County</td>
<td>196</td>
</tr>
<tr>
<td>Plate</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>XXXIX</td>
<td>Dairy Barn and Milk House in Madison Township</td>
<td>197</td>
</tr>
<tr>
<td>XL</td>
<td>Corn Shocks in a Field in January</td>
<td>197</td>
</tr>
<tr>
<td>XLI</td>
<td>Soil Erosion in the Northwestern Part of the County</td>
<td>206</td>
</tr>
<tr>
<td>XLIIP</td>
<td>Soil Erosion Work</td>
<td>207</td>
</tr>
<tr>
<td>XLIIP</td>
<td>Modernized Farm Layout Showing Courtyard Arrangement</td>
<td>211</td>
</tr>
<tr>
<td>XLIIV</td>
<td>View of Main Street, Centerview</td>
<td>215</td>
</tr>
<tr>
<td>XLIIX</td>
<td>Looking Eastward from Centerview along the Missouri Pacific Railroad</td>
<td>215</td>
</tr>
<tr>
<td>XLVI</td>
<td>Representative County School in Use in Southeastern Part of County</td>
<td>217</td>
</tr>
<tr>
<td>XLVII</td>
<td>Town of Centerview, Looking North</td>
<td>224</td>
</tr>
<tr>
<td>XLVIII</td>
<td>Town of Magnolia, Looking Northeast</td>
<td>225</td>
</tr>
<tr>
<td>XLIX</td>
<td>Town of Chilhowee, Looking Northeast</td>
<td>226</td>
</tr>
<tr>
<td>LI</td>
<td>Strip Mining Operations in Jefferson Township</td>
<td>233</td>
</tr>
<tr>
<td>LI</td>
<td>Strip Mining Operations in Jefferson Township</td>
<td>233</td>
</tr>
<tr>
<td>LI</td>
<td>Roop Limestone Quarry South of Warrensburg</td>
<td>234</td>
</tr>
<tr>
<td>LI</td>
<td>Grain Elevator at Chilhowee on the Rock Island Railroad</td>
<td>236</td>
</tr>
<tr>
<td>LI</td>
<td>The Innes Elevator at Warrensburg</td>
<td>236</td>
</tr>
</tbody>
</table>
ABSTRACT

This is a physical, cultural and economic study of a political unit that is typical or representative of a much larger area - the Scarped Plains region of western and southwestern Missouri.

Investigation for this study began with a physical analysis of the area, establishing a background of environment that would serve as a stage for the cultural impress. An insight into settlement patterns followed, involving the backgrounds and character of the settlers, and relating the physical setting to the story of human occupance.

In order to complete these steps, it was necessary to examine voluminous survey field notes, thousands of original land-entry records, and other early county records which have been preserved to the present time. Some of the results were tabulated cartographically, and an insight was gained of the area before 1860 that is not obtainable from any published works. A study of the growth and development of the county in the last half of the nineteenth century followed, with particular attention being paid to an evaluation of the changing economy. The dynamic character of the cultural landscape was noted, and the appearance and evolution of various cultural elements established more firmly the relationship
of the county to a much larger area.

Finally, a cultural and physical study of Johnson County at the present time was made, including characteristics of the population, town patterns, land use and other significant cultural features of the landscape. A field investigation of services and functions of settlements was made, which helped in an economic evaluation of the area in recent times.

In light of the physical setting and the study of a century and a quarter of white settlement in Johnson County, it is concluded that pre-eminence was attained in the last quarter of the nineteenth century that represented the peak economic development of the county. It appears that population loss and economic decline will be continued, a pattern that is characteristic of all the region of southwest Missouri not embracing a large urban development.

The above conclusion is based on the limited inherent qualities of the physical environment, and on the continuance of a cultural trend evidenced in larger geographic regions of which the county is merely a small part. Limited opportunity to earn a living has made for a steady exodus of people from the area. It is also concluded that the county's economic future is dependent on a more general agricultural pattern, with a broad program of conservation absolutely essential. The study
of Johnson County for over a hundred years reveals a most dynamic character of the cultural landscape, even though the area lies in a larger region of relative cultural and physical homogeneity.
Plate Ia. Airview of Johnson County Landscape
Plate Ib. Airview of Johnson County Farm Buildings
INTRODUCTION

This dissertation deals with Johnson County, Missouri. It is an attempt to describe the physical and cultural elements of the landscape, and to relate human activity with the natural setting. Dominant themes in the study are the range and character of the resources with their utilization, and the bases for the texture of the cultural and economic fibres of the area. Then, too, it represents an effort to describe and interpret the functional patterns in this midwestern county. There is no intent to build a case for any particular element of the environment. A study of a confined area should be content to ferret out explanations for the pattern of living, producing factual material to aid in an adjudgment. This involves a comprehensive and systematic analysis of the area, investigating the past as well as the present.

There is a paucity of studies in Missouri that deal with the gross physical, cultural, and economic structures of a particular part of the state. Over the years, several studies have reported on the history of Johnson County, but all are unsystematic and provincial to the point of being extremely unreliable. On the other hand, a number of competent scholars have reported on various elements of the physical environment. To the author's best knowledge, there has been no attempt to examine the aggregate characteristics
of a single one of the one hundred and fourteen counties of the state. Certainly, there has been no report of that nature on Johnson County or the larger region of which it is a part.

The county typifies the larger Scarped Plains region of western Missouri in which it lies. It is located centrally among the counties lying wholly or in part in the region, and exhibits all the chief characteristics, as well as most of the minor features of the aggregation of counties making up the larger area. More specifically, the following points are significant in considering Johnson County as typical of the larger region of western Missouri: (1) there are only very minor differences in the physical landscape over the different counties involved; (2) climatic differences between extreme parts of the region are slight; (3) the marks of man's occupancy and utilization of the land are similar over the whole region; and (4) reflecting the moderate fertility of the soils, all of the counties in the region are intermediate in wealth and agricultural productivity between areas in the Ozarks and the glaciated areas in the northern part of the state.

Throughout the settlement and development of the county, agriculture has been the dominant activity. However, land use patterns have changed, and at times other human activities have made notable contributions to the total economy. It seems evident that a host of factors and forces have
operated during the evolution of the area, and an inquiry into their entity and interplay is necessary in establishing fundamental principles. Accordingly, the general objectives of this study might be stated as follows:

1. To describe the physical character of the county;
2. To examine the early settlement of the area in the light of the physical pattern;
3. To inquire into the development and evolution of economic activities;
4. To describe the present rural economy and landscape;
5. To examine other recent economic activity including present-day urban patterns.

These objectives partly constitute an outline of the study, except that the chapters overlap some objectives, the result of arbitrarily dividing the topic into parts that appeared to follow one another logically.
CHAPTER I

OVERVIEW OF SETTING

Geographical diversity is comparatively much more marked in Missouri than in most of the other states. Three strongly contrasting areas may be noted, two of which have been subject to some subdivision (Fig. 1). The southeastern portion is the most homogeneous, being part of an alluvial plain of the Mississippi River. The Ozark section is by far the most varied, and includes the greatest dissection as well as the most diverse surface materials. Northern and western Missouri form a geographic unit of upland plains. Usually, northern and western subdivisions are noted, and sometimes are referred to as a northern glaciated plains region and a western non-glaciated plains region.¹

This western portion, of which Johnson County is typical, was early called the Scarped, or Osage Plains. It includes parts of Barton, Cedar, Henry, Pettis, and Saline counties; and all of Jackson, Lafayette, Johnson, Bates, and Vernon counties. The general monotony of the flat prairies is present, but is broken by low rounded hills, with rather steep slopes toward the Ozark dome and

¹James E. Collier, Geography of the Northern Ozark Border Region in Missouri (Columbia: Curators of the University of Missouri, 1953), p. 9.
MISSOURI PHYSIOGRAPHIC DIVISIONS

LIMIT OF GLACIAL DRIFT

SCALE OF MILES

0 25 50

Figure 1 (after Branson)
very gradual ones away from it. The sameness is not the flatness of the plains to the west, but rather a monotony in the regular undulations. One might say the region has a neutral intermediate quality, lying between the rougher Ozark section to the east, and the flatter Great Plains section to the west. The regularity of the rolling prairie is broken by the dissected areas around streams, the rounded prominences due to differential erosion, and several low escarpments facing. The valleys are wide but not deep, the local relief rarely being over one hundred feet. The flat character of the surface, coupled occasionally with particularly impervious clay subsoils, has produced some marshy and poorly-drained areas. However, these swampy sections account for only about one per cent of the total area of the region. In general, the surface of the Osage Plain has a well-rounded appearance, for even the most dissected parts lack any pronounced angularity. The Missouri River marks approximately the much eroded edge of the glacial drift, which is the northern limit of the section. The eastern boundary against the Ozark plateau is essentially at the edge of the Pennsylvanian rocks where they overlap the low Ozark dome.

Generally, the soils developed on the rocks of the coal measures are poor to good. Just as the northern border
region of the Ozarks has greater agricultural productivity than the Ozarks proper, but less than that of the plains region,\(^2\) so this western part of the state is much more productive than the Ozarks, but less so than the northern glaciated plains. This does not imply that the area represents a marginal transition zone between the Ozarks and the glaciated section to the north.

**Position**

Johnson County is eighth in size among the 114 counties in the state. It embraces 831 square miles (531,840 acres)\(^3\) of fairly fertile land and prosperous farms. It is located about midway between the northern and southern boundaries of the state, being separated from the state of Kansas by only about 26 miles on its westernmost border (Fig. 2). Two counties, Cass and Jackson, lie along the western border. It is bounded on the east by Pettis County, by Henry and Cass Counties on the south, and separated from the Missouri River by Lafayette County to the north. It lies between 38 degrees and 34 minutes and 38 degrees and 56 minutes north latitude; and the county seat of Warrensburg is about 93 degrees and 45 minutes west of Greenwich.

This position gives it a latitudinal location about

---

\(^2\)Ibid., p. 10.

Fig. 2
comparable to Louisville, Kentucky, Washington, D. C., and San Francisco. It is rectangular in shape, being 33 miles long from east to west, and 25 miles wide from north to south. It includes most of the land between ranges 23 and 30 West, and townships 43 and 48 North; and has been divided into 15 civil townships (Fig. 3). It is just south of a direct line between St. Louis and Kansas City, and long before the Missouri Pacific Railway was built, overland journeys to the west penetrated the county. There are no boundaries of the county that are distinctly topographic, all of them being related to the conveniences of the surveys.

**Surface Configuration**

Genetically, the county is part of an old plain, slightly elevated and in a mature stage of dissection. This plain is a driftless section of the Central Lowland, with the part lying south of the limits of glaciation in western Missouri in an advanced stage of peneplanation. Fenneman describes the Osage or Scarped Plain as an "area of low relief, interrupted at intervals by east-facing escarpments which indicate the presence of stronger strata in a great mass of relatively weak rocks dipping gently west or

---

4 Base Map of Missouri

northwest toward the syncline of the Great Plains."\(^6\) The strata dip westward at a rate of 20 to 25 feet per mile.\(^7\) There are several mounds or "knobs" within the county, but only the two north of Knob Noster and two in the extreme northwestern part of the county are prominent. They are the result of differential erosion, the mounds being composed of limestone that is more resistant to weathering than the surrounding soft shales and sandstones.

The local relief is rarely much over 100 feet, and no slopes are over ten degrees, the greater part being much less than five degrees.\(^8\) Such slopes are found only along the streams, particularly Blackwater River, and on mounds, hillocks, or "knobs" (Plates III and IV). The highest point\(^9\) is in the southeastern corner of the county, where the elevation reaches 969 feet above sea level. The lowest point, about 658 feet, is found to the northeast where Blackwater River leaves the county. In general, the area is best described as a gently undulating plain, containing few marked elevations or depressions. (See Plate I).


\(^7\) Ibid., p. 610.

\(^8\) "Knob Noster Quadrangle," Topographic Map, United States Geological Survey, 1917.

\(^9\) Called the "high point of Tebo."
Plate II. Symmetrical knob north of Knob Noster

Plate III. Asymmetrical knob north of Knob Noster
Most of the streams are indigenous to the area, rising from small mineral springs, and carrying off most of the rainfall to the Missouri River. The divide between the Missouri and Osage watersheds cuts irregularly across the county in the south, the largest part of the area draining into the Osage being found in the southwest.

The county might be said to comprise two physiographic divisions — an upland and a lowland. Nine-tenths or more of the area can be described as upland. Although rolling or undulating, there are areas of considerable extent that are comparably level. The valley of the Blackwater includes level areas over two miles wide. A central belt and the southeastern and southwestern sections of the county are smoother than the remainder. The lowland belt rests on a foundation of soft shales that lie beneath a series of more resistant limestones that form the adjoining higher country to the south. The limestone outcrops along the southern border of the lowland, making the top of a low but well-defined escarpment. The level area to the southwest is also formed on soft shale beds somewhat higher than the central belt. It rests just in front of an escarpment that barely enters the western part of the county. This escarpment constitutes the eastern boundary of a high plateau in Jackson and Cass counties. The smooth part in the southeast might best be described as a low plateau of resistant limestone, as yet but little dissected.
CHAPTER II

THE PHYSICAL PATTERN

Origin of the area

The earth materials of the first two eras of earth’s history are almost everywhere deeply buried in Missouri. The only exceptions are exposures in the southeast in the St. Francois Mountains.

With the opening of the long Paleozoic era, seas arrived to cover the state, and the record left by deposition and erosion tells the story of the advancement and withdrawal of the waters of the sea. The Paleozoic is all-important, therefore, as most of the rock strata of Missouri belongs to the first six periods of that era.\(^1\) In western Missouri there is knowledge of only the Mississippian and Pennsylvanian systems. The latter includes 24,000 square miles of western and northern Missouri.\(^2\) Figure 4 shows the extent of this series in the state.

At the opening of Pennsylvanian time, the cherty Mississippian deposits of western Missouri were above the seas, characterized by shallow valleys and numerous

\(^{1}\)See Geological Map of Missouri, Missouri Geological Survey, 1939, Scale 1:500,000.

Fig. 4
sinkholes. Evidence points to a vegetation cover at this time. Pennsylvanian rocks up to about 2000 feet thick\(^3\) cover the area, making knowledge of the preceding period exceedingly sketchy.

Johnson County history during Pennsylvanian times apparently typifies that of all the Scarped Plains region. The land was low and poorly drained, and there were a number of fluctuations in the level of the floor. Great masses of vegetation filled the swamps. The several paroxysms of contraction that affected the surface appear to go along with oscillations in other great coal fields like the Appalachian.\(^4\) Lower measures show eight coal horizons due to subsidence. During one of the general upward thrusts, a great river valley existed for a time, running from north to south through the heart of the county. According to McQueen and Greene\(^5\), this existed towards the close of the lower Pennsylvanian.

In common with the rest of central United States, Johnson County experienced the dissection and general conversion to a desert during Mesozoic time. Then, and

\(^3\)Edwin B. Branson, The Geology of Missouri (Columbia: The University of Missouri Studies), XIX, No. 3, 270.


throughout the succeeding Cenozoic Era of about 55,000,000 years, the county was subjected to more or less uninterrupted erosion. Solution of Pennsylvanian limestones by ground water was not so conspicuous here as to the southeast in the Ozarks; but what cavern formations exist were probably the result of action since the Tertiary period (i.e., belonging to the most recent period of earth history).  

The present surface of Johnson County, then, has resulted from the mature dissection of a slightly sloping upland plain by streams which now flow in valleys 50 to 100 feet below the average level. Some river terraces are discernible, testifying to some isostatic fluctuation in land or sea level in comparatively recent times. As the Pleistocene glaciation was limited in Missouri to the section of the state for the most part north of the Missouri River, glacial till and other effects of the ice sheet are absent in Johnson County.

**Bedrock and Structure**

In the preceding section it was noted that all the bedrock of Johnson County was sedimentary and of Pennsylvanian origin. For Missouri as a whole, eight variously called groups or formations of this system have been delineated. Branson preferred to recognize a Lower, Middle, and

---

6Ibid., p. 22.
Upper series in the state,\textsuperscript{7} with the lower embracing three widespread groups. Johnson County bedrock consists entirely of these three groups: the Cherokee, the Henrietta, and the Pleasanton. Figure 5 shows the distribution of these groups in the county, with a separate division for channel deposits which belongs to the lower Pleasanton.

The Pennsylvanian rocks are thinnest in the eastern portion of the county, and thicken to the west, attaining a maximum depth of over 1900 feet near the western boundary of the state. They rest on the Burlington limestone of the Mississippian which also dips in the same direction.\textsuperscript{8} The Blackwater River has cut down to the latter. The surface rocks include shale, sandstone, limestone, clay, and coal of considerable economic importance.\textsuperscript{9} Shale is the dominant rock, with limestone second quantitatively, sandstone third, coal fourth, and fire clays fifth.\textsuperscript{10} The shales are generally bluish-gray and argillaceous, and only rarely without some mica and sand – the "soapstone" of drillers. The sandstones contain much calcareous material, and might appropriately be called sandy limestones. The limestones

\begin{itemize}
\item\textsuperscript{7}Branson, \textit{op. cit.}, p. 271.
\item\textsuperscript{8}Edwin B. Branson, "A Geologic Section from 40 Miles West of St. Louis to Jackson County, Missouri," \textit{American Journal of Science, 4th Series}, XLIX, 269.
\item\textsuperscript{9}Hinds and Greene, \textit{op. cit.}, p. 49.
\item\textsuperscript{10}Branson, \textit{op. cit.}, p. 270.
\end{itemize}
Figure 5 (after Geological Map of Missouri, 1912)
are usually highly fossiliferous. The clays are former swampy tropical subsoils, robbed of their minerals by the roots of the coal-forming forests, and gradually altered to refractory, or fire, clays.

Everywhere the rocks of the Pennsylvanian system are singular for their vertical variability.\(^{11}\) Shaft borings logged in Johnson County show horizons that extend similarly considerable distances to other parts of the state. Tables I, II, and III when analyzed reveal many interesting features of the bedrock of the county. The Cherokee group being most widespread in the county also exhibits the most important coal horizons, showing variously no less than eight veins ranging from one foot to five feet in thickness, and lying at depths ranging from 3 to 158 feet. The instability of land conditions during the Pennsylvanian period is suggested by the relatively thin strata.

The Henrietta group is only partly represented in most parts of the state.\(^{12}\) On the divide in southern Johnson County there are many outcrops of this group of rocks, and the full formation extends eastward to Sutherland. Keyes in 1897\(^{13}\) named the formation from exposures in an escarpment.

\(^{11}\)Hinds and Greene, op. cit., p. 3.

\(^{12}\)Ibid., p. 66.

\(^{13}\)Charles Rollin Keyes, "Stages of the Des Moines, or Chief Coal-bearing Series of Kansas and Southwest Missouri, and Their Equivalents in Iowa," *Iowa Academy of Science Proceedings*, IV, 22-25.
<table>
<thead>
<tr>
<th>No.</th>
<th>Cherokee Stratum</th>
<th>Thickness (Feet)</th>
<th>Depth (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shale, soft and argillaceous at top, black and slaty at bottom</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Coal (Lexington)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Clay, with nodular limestone at base</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Shale, yellow</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Interval, chiefly shale; very variable in thickness</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>6</td>
<td>Limestone, dark gray; compact; vertically jointed</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>Shale, in part slaty</td>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>8</td>
<td>Coal (Munky)</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>Interval, chiefly shale</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>Shale, with a few thin limestone bands at top; black, slaty, and with small nodules at base</td>
<td>21</td>
<td>81</td>
</tr>
<tr>
<td>11</td>
<td>Limestone, bluish-black, very fossiliferous</td>
<td>1</td>
<td>82</td>
</tr>
<tr>
<td>12</td>
<td>Coal (Bevier)</td>
<td>2</td>
<td>84</td>
</tr>
<tr>
<td>13</td>
<td>Clay, white</td>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>14</td>
<td>Limestone, blue to gray, irregularly bedded; nodular</td>
<td>3</td>
<td>91</td>
</tr>
<tr>
<td>15</td>
<td>Shale</td>
<td>2</td>
<td>93</td>
</tr>
<tr>
<td>16</td>
<td>Coal (Tebo)</td>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>17</td>
<td>Shale</td>
<td>17</td>
<td>112</td>
</tr>
<tr>
<td>18</td>
<td>Sandstone, reddish-brown; in part massive; in part thin-bedded</td>
<td>11</td>
<td>123</td>
</tr>
<tr>
<td>19</td>
<td>Shale, dark below, light above</td>
<td>15</td>
<td>138</td>
</tr>
<tr>
<td>20</td>
<td>Coal (Brushy Hill)</td>
<td>1</td>
<td>139</td>
</tr>
<tr>
<td>21</td>
<td>Clay</td>
<td>5</td>
<td>144</td>
</tr>
<tr>
<td>22</td>
<td>Shale</td>
<td>8</td>
<td>152</td>
</tr>
<tr>
<td>23</td>
<td>Coal</td>
<td>1</td>
<td>153</td>
</tr>
<tr>
<td>24</td>
<td>Clay</td>
<td>4</td>
<td>157</td>
</tr>
<tr>
<td>25</td>
<td>Shale</td>
<td>12</td>
<td>169</td>
</tr>
<tr>
<td>26</td>
<td>Coal</td>
<td>1</td>
<td>170</td>
</tr>
<tr>
<td>27</td>
<td>Clay</td>
<td>6</td>
<td>176</td>
</tr>
<tr>
<td>28</td>
<td>Shale</td>
<td>9</td>
<td>185</td>
</tr>
<tr>
<td>29</td>
<td>Coal</td>
<td>1</td>
<td>185½</td>
</tr>
<tr>
<td>30</td>
<td>Clay</td>
<td>4½</td>
<td>190</td>
</tr>
<tr>
<td>31</td>
<td>Coal (Montserrat)</td>
<td>5</td>
<td>195</td>
</tr>
<tr>
<td>32</td>
<td>Clay, sandy</td>
<td>10</td>
<td>205</td>
</tr>
<tr>
<td>33</td>
<td>Shale, sandy at top, black at base</td>
<td>25</td>
<td>230</td>
</tr>
<tr>
<td>34</td>
<td>Sandstone; thin-bedded; firmly cemented</td>
<td>20</td>
<td>250</td>
</tr>
<tr>
<td>35</td>
<td>Mississippian flint and limestone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*after Hinds and Greene
**TABLE II**

LOG RECORD OF SHAFT BORE NEAR HOLDEN

<table>
<thead>
<tr>
<th>No.</th>
<th>Pleasanton Stratum</th>
<th>Thickness Uneven Strata (Feet)</th>
<th>Depth Uneven Strata (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shale, bituminous</td>
<td>1 1/2</td>
<td>1 1/2</td>
</tr>
<tr>
<td>2</td>
<td>Shale, argillaceous, or porous S.S.</td>
<td>13 1/2</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Limestone, sandy</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Sandstone, calcareous; 3&quot; of coal at base</td>
<td>1 1/2</td>
<td>17 1/2</td>
</tr>
<tr>
<td>5</td>
<td>Shale, sandy</td>
<td>35 1/2</td>
<td>53</td>
</tr>
<tr>
<td>6</td>
<td>Coal, a few inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Shale, clayey</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>8</td>
<td>Sandstone, buff</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>9</td>
<td>Sandstone and shale</td>
<td>45-55</td>
<td>117</td>
</tr>
<tr>
<td>10</td>
<td>Limestone</td>
<td>2</td>
<td>119</td>
</tr>
<tr>
<td>11</td>
<td>Shale, marly, and limestone nodules</td>
<td>7</td>
<td>126</td>
</tr>
<tr>
<td>12</td>
<td>Shale, olive and purple</td>
<td>10</td>
<td>136</td>
</tr>
<tr>
<td>13</td>
<td>Shale, sandy, and shaly sandstone</td>
<td>22</td>
<td>158</td>
</tr>
<tr>
<td>14</td>
<td>Coal (Holden)</td>
<td>1</td>
<td>159</td>
</tr>
<tr>
<td>15</td>
<td>Shale</td>
<td>6</td>
<td>165</td>
</tr>
<tr>
<td>16</td>
<td>Limestone</td>
<td>2</td>
<td>167</td>
</tr>
<tr>
<td>17</td>
<td>Shale</td>
<td>9</td>
<td>176</td>
</tr>
</tbody>
</table>

**TABLE III**

LOG RECORD OF SHAFT BORE NEAR SUTHERLAND

<table>
<thead>
<tr>
<th>No.</th>
<th>Henrietta Stratum</th>
<th>Thickness Uneven Strata (Feet)</th>
<th>Depth Uneven Strata (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dirt</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Pawnee limestone</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Soapstone,&quot; Labette shale</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>4</td>
<td>Slate,</td>
<td>&quot;</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Coal,</td>
<td>&quot;</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Clay,</td>
<td>&quot;</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Limestone</td>
<td>11</td>
<td>74</td>
</tr>
<tr>
<td>8</td>
<td>Black clay</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>9</td>
<td>&quot;Soapstone&quot;</td>
<td>11</td>
<td>70</td>
</tr>
<tr>
<td>10</td>
<td>Limestone</td>
<td>4</td>
<td>74</td>
</tr>
<tr>
<td>11</td>
<td>&quot;Slate&quot; (top of Cherokee shale)</td>
<td>3</td>
<td>77</td>
</tr>
<tr>
<td>12</td>
<td>Coal</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td>13</td>
<td>&quot;Soapstone, fireclay and boulders&quot;</td>
<td>61</td>
<td>139</td>
</tr>
<tr>
<td>14</td>
<td>Rock (Marbut's base of Henrietta)</td>
<td>14</td>
<td>153</td>
</tr>
<tr>
<td>15</td>
<td>Slate</td>
<td>2</td>
<td>153</td>
</tr>
<tr>
<td>16</td>
<td>&quot;Soapstone&quot;</td>
<td>12</td>
<td>167</td>
</tr>
<tr>
<td>17</td>
<td>Coal</td>
<td>2</td>
<td>169</td>
</tr>
</tbody>
</table>

*after Hinds and Greene*
near the community of Henrietta in the southern part of the county.

Except for channel sandstone, the Pleasanton rocks are all found in the western part of the county. The record of the coring near Holden shows the prevalence of shale, with only thin bands of limestone and coal. The most interesting exposure of the Pleasanton consists of the strip of thick sandstone running the entire length of the county from north to south. The whole channel, extending from the Missouri River, where it is over ten miles wide, more than fifty miles to the south, varies from one to two miles wide in Johnson County.\(^\text{14}\) Named for the town of Warrensburg, this channel has been of considerable economic significance.

**Climate**

The climate of Johnson County is largely controlled by its position in the interior of a large land mass, and its latitude in the intermediate zone. Neither altitudes of adjacent areas nor the local relief play a part in determining the chief climatic characteristics. The spread latitudinally and longitudinally is not great enough to

---

noticeably change its temperature or rainfall pattern.

The county is generally thought of as part of a larger interior region of the United States described climatically as humid continental with a long summer. In the Thornthwaite system it falls well into the Humid Mesothermal (BB'r) type, which includes all the vast area from eastern Kansas to the Atlantic coast. The type is Cfa according to the Köppen classificatory system, the county lying in the extreme northern portion of the Cfa province of the United States. Köppen's warm temperate C climates are defined as having an average January temperature of more than \(-3^\circ C\) (26.6° F.) but less than \(18^\circ C\) (64.4° F.), and an average July temperature of more than \(22^\circ C\) (71.6° F.). Russell considered it more meaningful to make the dividing line between warm and cool temperate provinces the \(0^\circ C\) (32° F.)

\[\text{15}\]
Hopkins' Bio-Climatic Law states that, in general, spring advances in the United States from south to north at the rate of four days for one degree of latitude; from east to west at the rate of four days for five degrees of longitude; and from lower land to higher land at the rate of four days for 400 feet of altitude.

\[\text{16}\]

\[\text{17}\]
January mean. Ackerman, too, found fault with the \(-3^\circ C\) isotherm for January and offered the \(0^\circ C\) isotherm as being more significant ecologically between mesothermal and microthermal areas.\(^{19}\) With a \(31^\circ F\) January mean in the central part of the county, the whole area under the above-mentioned revision would fall in the microthermal province. The transitional character of the section is shown by a closer analysis of the climatic elements. Warrensburg has been selected for this climatic description of the county. It is centrally located and records are available for seventy-six years.

Two distinct seasons stand out in the climate of Johnson County: winter and summer. Summer is often marked by excessively high humidity, while the winter season is marked by rapid changes of temperature. Sometimes spring hardly materializes, and the transition from winter to summer is strikingly abrupt. Usually fall is more discernible than spring, and is characterized by periods of relatively warm sunshiny days quite important to the area agriculturally.

Over a fifty-one year span, January (\(31.0^\circ F\)) and July


\(^{19}\) Edward A. Ackerman, "The Köppen Classification of Climates in North America," Geographical Review, XXI (1941), 107.

\(^{20}\) Spoken of as "corn weather" over northern Missouri, Iowa, and Illinois.
(79.7° F.) have been respectively the coldest and warmest months. The highest temperature ever recorded at Warrensburg was 116° F. in August, 1954, while the absolute minimum was -26° F. in January, 1897.

The growing season at Warrensburg averages 189 days. This long growing season (in spite of considerable local variation) practically prohibits failure of grain and forage crops. The average date of the latest killing frost is April 14; the date of the latest killing frost ever recorded was May 25. The average date of the first killing frost in autumn is October 20; and the earliest date ever experienced for the first killing frost in autumn was September 20.

Precipitation in the county is of the Missouri type, with the continental early summer maximum and light winter minimum (Fig. 6). The total annual precipitation has been singularly uniform over the years recorded, although the distribution seasonally and monthly is subject to wide variation. Over a period of thirty-eight years it averaged 38.05 inches.

Snowfall is of erratic occurrence in Johnson County.

---

21 All climatic data are from the United States Weather Bureau.


RAINFALL-TEMPERATURE GRAPH...WARRENSBURG

Figure 6.
Although averaging about twenty inches annually, some winter seasons may be almost without snow. Generally, there is enough to protect winter wheat and grasses, and the threat of a heavy snowfall during winter makes the snow fence and snow plow familiar to all in the area (Plate IV).

Livestock losses or serious crop injury due to extreme climatic conditions are uncommon. Excessive heat and drought, such as experienced in the mid 1930's and the summers of 1953 and 1954, cause by far the most damage to the agriculture of the county. Adequate spring and early June rains produced a bumper crop of grasses in 1954, sending the corn crop off to an excellent start. However, subsequent July and August drought practically annihilated the corn crop. The previous year the grasses were almost non-existent, but
the corn crop was fairly good. These anomalies in the periodicity of rainfall are also expressed in periods of excessive moisture, but they are less damaging than the droughts.

The striking weather changes of winter are caused by the passing of air masses derived from various sources. In summer, cyclonic storms are much more poorly developed than in winter; the winds during summer are light and variable, and prevailingly from the south. Although the county is occasionally invaded by cooler air from the north during summer, the rains are generally convectional and local rather than being general over large areas as in winter. Local drought occurrence in summer is somewhat in inverse proportion to the number of cyclonic storms passing over the area.

Johnson County lies in a larger region of maximum tornado occurrence, although the state as a whole falls more within a medium classification. For each area of ten thousand square miles in the state, the average frequency of tornadoes is about one a year. Over a consecutive period of fifteen years (1935-1950) there was only one tornado in Johnson County, and it was of small intensity, causing but $60,000 property damage.


Material Resources

Native Vegetation

The native vegetation of Johnson County at the time of white settlement after 1827 was a mixture of (1) fairly heavy forests in stream valleys and on the rougher land, (2) open woodland and grasses on some rolling uplands, and (3) the prairie proper, which accounted for the majority of the area. There seems to be little concurrence in various sources as to just how much of the county was in forest. In 1870 a report of the state board of agriculture said "about four-fifths of the area is prairie, the rest timberland."

A source in 1877 intimated that the county had much less area in forest than in prairie. It is recognized by survey today that there are forests on only 13 per cent of the land area of western Missouri, being located on the stream bottoms and more dissected portions of the farm upland. Figure 7 shows the extent of timber lands after the Civil War, but does not discriminate between denser forests and the open


27 "Forest Resources of Missouri," Central States Experiment Station, Forest Survey Release No. 6, Columbus, Ohio, 1948.

28 Atlas Map of Johnson County, op. cit. Old survey field notes of the period between 1840 and 1860 aided in outlining the wooded areas. These notes are preserved in the County Recorder's Office, Warrensburg, Missouri.
Figure 7

Relative extent of wooded and prairie sections about 1870
forest prairie grass sections. It appears that the woodland covered much more than one-fifth of the county.

Johnson County lies in a grassland-deciduous forest transition belt. It is an area in which the deciduous forest emerges from the flood plains and river margins, and occupies a portion of the upland. The forest was essentially an oak-hickory association, with many other varieties also present. The oak-hickory forest is considered to be the climax vegetation of the area, and since the prairie preceded the forest, the forests were constantly encroaching on the prairies. The oak-hickory association region, in which Johnson County lies, is considered to be a farthest avant-post in the prairie region of the Great Plains, and is generally classified as a prairie grassland of bluestem


32 R. A. Campbell, Gazetteer of Missouri (St. Louis: R. A. Campbell, Publisher, 1875), p. 782.

The principal original prairie grasses are more definitely designated as beard grass, Indian grass, and dropseed.\textsuperscript{35}

Based on the opinions of early settlers, it is apparent that the forest was unable to diminish the size of the prairie sections due to fires on the latter that destroyed the young growth of the trees. Sauer\textsuperscript{36} cites a number of early sources that deal with this phenomenon on transition zones from the deciduous forest to the Great Plains. A comment concerning Johnson County in 1875 ran: "its vast prairies were considered of little value by persons from densely timbered countries; but since the prairie fires are kept out, groves are growing up rapidly."\textsuperscript{37}

Sauer\textsuperscript{38} has also stated that he knows of no American aborigines who did not set fires for hunting or collecting purposes at suitable seasons if the vegetation was inflammable. He has related these fires to certain grassland

\begin{enumerate}
\item[{34}] \textit{Ibid.}, p. 6.
\item[{35}] Shreve, \textit{op. cit.}, p. 123.
\item[{36}] Carl O. Sauer, \textit{Geography of the Ozark Highland of Missouri}, Geographic Society of Chicago, Bulletin 7 (1920), p. 54.
\item[{37}] Campbell, \textit{op. cit.}, p. 288.
\end{enumerate}
climax areas of the United States. Stewart has also related fires to natural vegetation in the United States.

Early cultivation of the prairie was little handicapped by native noxious weeds, and it was several years before growth of introduced weeds interfered with cultivation of the land. Although there was perhaps an increased natural dissemination of weeds, in part due to an upsetting of natural balances by man's occupancy, most of the dissemination of noxious growths was probably artificial; that is, traceable to railroad sidings, roads, animals, river overflow, seeds, manures, and plants imported into the county.

The weeds that are of the greatest economic importance in western Missouri at the present time have all been introduced. These include (1) bindweed (in seed and feed oats shipped in from the north and west); (2) Johnson grass (in seed and feed oats from southwestern states); (3) dodder (in Korean lespedeza seed from all regions); (4) red sorrel (in timothy, lespedeza, and clover seeds); (5) plantains (in red clover and timothy seed). Of lesser importance are the

---


41 W. B. Drew and C. A. Helm, "Representative Missouri Weeds and Their Control," Agricultural Experiment Station Bulletin 433, University of Missouri (1941), pp. 5-7.
ox-eye daisy, cheat, cockle, and onion weeds. Some varieties of plantains, nettles, cockles, and onions were present before extensive cultivation occurred, but the author has been unable to find any reference to these undesirable plants affecting agriculture in the early days of settlement. Today, no section or region of the state can be said to be much different from another in the amount or variety of weeds present.\footnote{Ibid., p. 5.}

Today in the United States, a 10.2 per cent crop loss is accredited to weeds.\footnote{"Losses in Agriculture," \textit{Agricultural Research Service}, United States Department of Agriculture (1954), p. 86.} This national figure would, in general, apply to Johnson County as an area intermediate in productivity among the agricultural lands of the country. This provides an estimate that on a 160 acre tract of land in the county producing a gross income of $5000 annually, the annual loss to the farmer would be about $500.\footnote{In conversation with Dayton L. Klingman, Agricultural Research Scientist, Columbia, Missouri.}

Of the 13 per cent of the county mentioned above as supporting a forest growth today, only 14 per cent of that limited area sustains a growth of sufficient board-foot volume to be classed as saw timber - i.e., trees 6 to 8 inches or more in diameter.\footnote{Forest Resources of Missouri, \textit{op. cit.}} Practically all of this is
oak, whereas originally many other types of trees were present in quantities large enough to be valuable. The early forest contained many varieties of trees, including black, white, red, pin, post, and laurel oaks, the cottonwood, shell or shagbark hickory, black walnut, sycamore, slippery elm, white elm, black and white ash, pawpaw, wild cherry, honey and black locust, silver and sugar maple, willow, crab apple, red cedar, hackberry, persimmon, and box elder.  

Surface Drainage

Johnson County is largely drained by the Blackwater River system, a tributary of a tributary (Lamine River) of the Missouri River. This system drains about two-thirds of the county. There are two significant divides in the county. One, originating in the west around Kingsville, trends off to the southeast into southern Post Oak township. This drains off the southwestern portion of the county into the Big Creek system, whose waters eventually reach the South Grand and Osage rivers. To the extreme southeast in Jefferson township, the high point of Tebo acts as a watershed between the Blackwater tributary, Clear Creek, and the headwaters of the Tebo and Muddy Creek systems to the south.

---

46 Cleaned in part from numerous early references to individual tree types. List deleted and added to by Sam J. Hewitt, Botanist, Central Missouri State College, Warrensburg, Missouri.
and east respectively. The Clear Creek and Post Oak Creek sections provide some of the areas of greatest local relief in the county.

The Blackwater River is formed by the union of North and South forks in township 46 north and range 27 west, flowing eastward 67 miles to the Lamine River in Cooper County. The basin is rectangular, with a rather uniform width of about 25 miles. The fall of the stream is small and the channel is quite tortuous. Floods have been somewhat intensified by dredging straight channels on a few of the tributaries, which carries water into the main stream more rapidly. No regular measurement of the flow of the Blackwater has been kept in Johnson County, but miscellaneous measurements along the stream between the years 1942 and 1946 produced a peak flow of 57 second feet and a lowest flow of 1.65 second feet. This helps to stress the fact that the stream flow is subject to wide variation. A drainage ditch over 20 miles long parallels the river to combat this excessive fluctuation.


Plate V. Clear Creek South of Knob Noster

Big Creek, which cuts across the county to the southwest, rises in Jackson County and flows southeast 59 miles to the South Grand River. It is subject to about the same periodic rise and fall as the Blackwater River.

The streams of Johnson County usually have clay channels and are carrying fine suspended sediments (Plates V and VI). They are rarely free from some dissolved materials, tending to be alkaline. So far, it has not been necessary to draw on surface waters of the county for municipal supplies, but there has been pollution of the streams by way of sewage disposal. At the present writing,

\[50\text{Beckman, op. cit.}, \text{p. 357.}\]
\[51\text{Bolon, op. cit.}, \text{p. 902.}\]
Plate VI. Post Oak Creek West of Warrensburg

The channel of the stream in the foreground has been straightened.
Warrensburg, the largest town in the county, is constructing the first sewage treatment plant in the area. Surface water problems, then, are related to inconstancy of flow and pollution. Many years ago, it was recognized that the removal of forests and general vegetation cover in Missouri emphasized the need for water-storage work, particularly in order to raise low-water stages. The dry summers of 1953-1954, with the resultant drying up of a number of streams considered perennial in flow, as well as lowering water tables and ground water supplies excessively, brings this need further to the forefront.

Ground Waters

Johnson County lacks entirely any springs that could be considered large by Ozark standards to the south. The greatest spring flow ever measured in the county barely exceeded 200 gallons per hour. Moreover, the area does not have as great a supply of subsurface water as the glacial drift sections to the north. Usually, however, small amounts of potable water sufficient for most farms can be obtained from shallow wells into the bedrock,


ranging to a depth of 600 feet. Larger amounts from deeper drilling may be secured, but they become highly mineralized.\textsuperscript{54}

Missouri has been divided into four ground-water provinces based upon both the quality of the water, and the age and character of the aquifers from which the water is derived.\textsuperscript{55} As a basis for classification, waters containing less than 2000 parts per million of total dissolved solids are considered as fresh, whereas those having higher concentration are designated as mineralized.\textsuperscript{56} Johnson County mainly lies in a western water province of the state, with the extreme east and southeast transitional to a province that includes all of the Ozark section of the state. The mineral content of subsurface water, together with the character of the aquifers of the county, is expressive of the general ground-water pattern of the western province of the state. By the above-mentioned mineralized scale, waters from the Pennsylvania rocks of the surface run from 400 parts downward, and thus are considered fresh.\textsuperscript{57} However, by consumer standards, they are hard waters. Drillings into the Mississippian rocks usually supply waters in

\begin{footnotes}
\item[55]\textit{Ibid.}, p. 56.
\item[56]\textit{Ibid.} p. 57.
\item[57]\textit{Ibid.} p. 58.
\end{footnotes}
excess of 2000 parts, and are not potable.

Six Johnson County springs were considered noteworthy enough to be shown on a map of the state locating chief springs in 1892. 58 Five of these produced chalybeate waters, while one was designated as sulphur. 59 One of the earliest studies stated that almost all the springs of Johnson County are alkaline with varying amounts of iron carbonate. 60 Sulphur springs exist, but are only interesting as being a considerable departure from the general character of waters of the county. 61

By far the best-known spring in the county is located just south of the city of Warrensburg, the area being known locally as Pertle Springs. The waters were once believed to have medicinal value, and for several decades (1880-1920) the springs flourished as a health and pleasure resort. This was chiefly due to the natural attractiveness of the area (having several small lakes), and the development of facilities to attract and handle visitors, rather than to the quality or quantity of the waters of the spring. This and the Electric Spring in the northern part of the

58 Schweitzer, op. cit., map, p. 120.
59 Ibid., p. 115.
61 Ibid., p. 96.
city are typical of other springs of the county. Pertle Spring flows about 180 gallons per hour, emerging from sandstone, but in close association with coal and limestone beds; hence, the resultant predominance of carbonates with some sulphates. The water might be referred to as an alkaline water with a large proportion of iron carbonate. Wells into the Mississippian at the site of the spring provide water for the city of Warrensburg. The water secured is quite hard, and is aerated to combat the sulphur content.

In summary, then, it may be said that ground waters of Johnson County contain considerable mineral content, are adequate in quantity but far from abundant, and may be generally classified as either chalybeate or sulphur waters. Even fresh water from alluvial deposits along the Blackwater and other streams sometimes contains excessive amounts of iron. Fresh water from the Pennsylvanian rocks usually ranges in temperature between 55 and 60 degrees Fahrenheit.

Today the farmer's water supply is added to by many farm ponds that are adequate sources of water for stock except during sustained drought periods (Plates VII, VIII and IX). The subsurface clay horizon in many parts of the county provides a ready impervious floor.

62 Schweitzer, op. cit., p. 150.
63 Anderson and Grohskopf, op. cit., p. 57.
Plate VII

Plate VIII

Farm Ponds in Columbus Township
Soils

The greatest single natural resource of Johnson County is the soil. The most significant part of the income of both the rural and urban population stems from the productivity of the soils. The more-favorable rainfall pattern makes this area compete in production with the black earths of the Great Plains, even though not basically so fertile. 64

Most of the soil of Johnson County is evolved from the decay of the present rock formations. In a preceding section it was pointed out that these rocks are shales,

limestones and sandstones. Weathering under the original vegetation has produced chiefly zonal soils from this rock base. In larger regional soil associations, the county falls into a northern Prairie soil group, or is divided into Prairie and Planosol areas. The latter is an intrazonal soil of greater compacted subsoil, developed on level areas where drainage is more or less restricted. It covers about one ninth of the county and is found only in the south-eastern portion.

Soil is a product of the factors of climate, vegetation, relief, age, and parent rock. The first two of these factors were most important in the development of the true Prairie soils of Johnson County. The last three were most important in producing the intrazonal Planosol type. These Planosols on the flatter areas may owe their morphology to the influence of ground water, to excess salts (solodization), or to concentration of clay by downward washing where the parent materials are heavy.

---

66 "Soils and Men," Yearbook of Agriculture, Map (1938)
67 Ibid., p. 991.
68 Kellogg, op. cit., p. 9.
69 Ibid., p. 9.
70 Ibid., p. 18.
There are five major soil types distinguishable in the county (Fig. 8). The Summit silt loam, with an associated variant hill type, is by far the most extensive. It covers the entire western part of the county, as well as most of the northern portion. The Oswego silt loam, the Planosol representative, is limited to southeastern townships. The Bates fine sandy loam, associated mainly with original timbered areas, is irregularly distributed in the east central part of the county, with a significant island on the northern border to the west. Lowlands along the Blackwater River and its larger tributaries, as well as along the Big Creek cutting through the southwestern section, are occupied by the Osage silt loam, an alluvial soil association of wide distribution in southwestern Missouri.

The Summit silt loam was developed on level to very gently rolling surfaces of excellent drainage. The original vegetation was prairie grass, with narrow belts of oak, elm, hickory, and walnut timber along the streams. This soil lies over shale and limestone, and is sometimes called black limestone land, attesting to the importance of the limestone in its morphology.

Summit soil is prevalingly a heavy silt loam with a fairly heavy plastic silty clay subsoil. The topsoil is

71 M. F. Miller and H. H. Krusekopf, "The Soils of Missouri," Missouri Agricultural Experiment Station Bulletin No. 264 (1929), pp. 52-64.
Figure 8. Generalized after Soil Map of Missouri, 1931.
typically a black, dark brown, or very dark gray silt loam, 10 to 18 inches in depth, and contains considerable organic matter. The subsoil is a gray clay loam with a yellowish cast in the lower part. Summit soil as a whole is rather uniform, with two local variations of minor significance. Poorly drained areas, usually at the head of shallow draws, are black in both top soil and subsoil and are locally called gumbo. Another variant type is the so-called mulatto land, with the surface soil a dark brown mellow silt loam, grading at about 15 inches in yellowish or reddish brown crumbly silty clay loam. The subsoil is lighter than in the real Summit silt loam, and the soil is derived from limestone and shale with the former more important. This variant type is found along streams and more rolling sections and has more limestone outcrops. It is equal or superior to the Summit proper, and has always been prized as alfalfa land. All in all, the Summit silt loams compare favorably with the better glacial and loessial soils found elsewhere in Missouri, and erosion losses are less than on other upland soils. Land sells for from $100 to over $200 an acre.

Rather widespread in west-central Missouri is a rolling phase Summit silt loam, found only in the northwestern part

---

72 Miller and Krusekopf, op. cit., p. 52.
73 Ibid., p. 53.
of Jackson township in Johnson County. This soil occupies isolated hillocks, the sides of ridges and slopes near streams. Here thin-bedded limestone outcrops, and fragments are scattered over the surface, interfering with cultivation. The topsoil is dark gray with a yellowish-brown plastic clay subsoil. The land is less valuable than the Summit silt loam proper, and is usually in pasture, for which it is well suited.

The Oswego silt loam is a prairie intrazonal soil that occupies the broad interstream divide in the southeastern part of Johnson County. It is difficult to distinguish from the Summit silt loam where they come together, although readily identified elsewhere. It lies on level or very gently undulating areas and was derived through the uniform weathering of shales. Generally the surface soil is a gray silt loam, becoming lighter at 10 to 12 inches. The subsoil at depths of 16 to 18 inches is a drab to yellowish gray clay, very stiff and sticky. Particularly in poorly drained areas a claypan has been formed. With a general deficiency in sub-drainage and nitrogen and phosphorus, the soil is much less valuable than the Summit silt loam. Values range from $50 to $125 an acre.

The Bates fine sandy loam is found on surface features that vary from level to steeply rolling, including mounds

---

74 Miller and Krusekopf, op. cit., p. 55.
and lands bordering streams. It was weathered from sandstones, and sandy shales and limestones, and is the lightest soil in color in the county. It is readily worked, but is somewhat deficient in minerals, due to its development largely under timber. Miller and Krusekopf say, "while not a strong soil, and while it quickly deteriorates under bad management, it can, by use of proper rotations and treatment, be maintained in a fairly high state of productivity." Bates soil is well-drained, so that the chief problems are erosion and fertility. Values of land vary greatly, being as low as $15 to $25 an acre for timbered areas, to nearly $100 for better improved lands.

All the alluvial soils of the residual prairie region of southwestern Missouri belong to the Osage silt loam association. They differ considerably from one drainage basin to another, and the alluvium of Johnson County is somewhat different from the soils of the Osage basin to the south. The Osage silt loam in Johnson County is typically a black, dark gray or gray silt loam with a slightly lighter silty clay subsoil. Sometimes it is locally called gumbo, especially where it appears as a black silty clay up to a foot in depth and underlain by a lighter tenacious clay. Osage soil is fertile and productive, although locally problems of drainage are serious. A drainage ditch development along the Blackwater represents a
response to this need. Land values vary greatly with the character of the drainage and the grade of the soil, ranging from $25 to well over $100 an acre.

Soil erosion has been rather serious in Johnson County. Although there are considerable differences in the erodable character of the various soil types, relief and management of the land have loomed large in the erosion story.

The extent of soil erosion in the county is shown in Figure 9. It can be readily seen that all the upland soils have suffered serious losses. A later section will take up some of the developments, particularly during the last twenty-five years, which have combatted the problem of soil loss. The greatest losses have occurred on the Oswego silt loam, the Bates fine sandy loam, and the rolling phase of the Summit silt loam. Oswego soil erodes on slopes in excess of three per cent, no doubt due to the heavy clay subsoil and the resultant stoppage of free water percolation. In Johnson County one-half of the original surface soil of this type has been lost. The Bates soil has had surface depths cut to one-half by sheet erosion. It appears this soil should be left in timber or pasture. The reconnaissance erosion survey of 1934 showed that of the total

75 Most of the material on soil erosion is based on L. D. Baver, "Soil Erosion in Missouri," Missouri Agricultural Experiment Station Bulletin 349 (1935). A part of an accompanying map is reproduced as Figure 9. Acreage figures are direct quotations.
Figure 9

<table>
<thead>
<tr>
<th>CLASS OF EROSION</th>
<th>FRACTION OF ORIGINAL TOPSOIL ERODED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less than 1/5</td>
</tr>
<tr>
<td>2</td>
<td>1/5 to 2/5 - Moderate gullying</td>
</tr>
<tr>
<td>3A</td>
<td>2/5 to 3/5 - Moderate gullying</td>
</tr>
<tr>
<td>3B</td>
<td>2/5 to 3/5 - Serious gullying</td>
</tr>
</tbody>
</table>
acreage in the county, 90,000 acres had lost up to one-fifth of the original topsoil; 100,000 acres had lost between one-fifth and two-fifths of the original topsoil; 270,000 acres had lost between two-fifths and three-fifths of the original topsoil, accompanied by moderate gully development; and 50,000 acres had lost between two-fifths and three-fifths of the original topsoil, with serious gully development.

**Minerals**

Consideration of Johnson County minerals tends to be largely the story of past exploitation, although the mineral wealth that does exist has been only slightly tapped and is far from exhaustion. It is well to speak of a paucity of minerals in connection with the kind and variety that exists, rather than a deficiency in supply of those few that are found within the county boundaries. The analysis following will deal with the occurrence and past use of such deposits. A later section will examine the present status of minerals in the economy of the county.

**Coal**

The Pennsylvanian coal measures in Missouri are remarkable for their extension over great distances without significant alteration. In some instances the normal lenticular trend is so slight as to be hardly discernible. The various
measures are found everywhere in Johnson County, which possesses a greater coal reserve than any other county in the state. In 1910 the total original tonnage was estimated to have been 5,460,000,000 tons, the deeper beds providing well over one-half. In light of this it is paradoxical that in 1950 six counties produced 75 per cent of all the coal mined in Missouri, but Johnson County was not among them. Coal mining in Johnson County has more or less tapered off since a heyday reached around 1880, and over a ten-year period between 1900 and 1910 the average annual production was only 17,046 tons. Numerous attempts have been made to revive interest in the industry during the last fifty years, particularly during the period of coal shortage due to strikes as an aftermath of the First World War. Commercial coal mining recently has been limited to stripping operations in the extreme southeastern part, an extension of large operations in Henry County to the


78 Ibid., p. 219.


80 Hinds, op. cit., p. 216

81 The Star Journal, Warrensburg, Missouri, 1918.
Six coal beds have been distinguished in the Pennsylvanian Series in Missouri that variously appear and supply coal of commercial quality and quantity. The following descriptions of these horizons apply to their appearance in Johnson County. The highest is the Lexington, which is thin in the county and has never supplied more than local small quantities. Below this is the Mulky, generally of good quality and averaging 20 inches thick, some places even exceeding three feet. The Bevier lies below the Mulky, and is consistently over two feet in thickness. Fifty feet below the Bevier is the Tebo, usually equal in thickness and extent. All of these beds outcrop in many places. The deepest and thickest beds are respectively the Brushy Hill and the Montserrat; and they have few outcrops, the only ones occurring in the eastern part of the county.

The greatest coal mining operations in the county centered about the section from Montserrat to Knob Noster, this development being along the Pacific railroad after it reached the county in the early 1860's. Shafts one and two at Montserrat exploited a seam five-feet thick, the upper part of which had many impurities and was often discarded.\footnote{\textit{Biennial Report of the State Geologist}, "Geological Survey and Water Resources" (Rolla, Missouri: 1945), p. 59.}

\footnote{Hinds, \textit{op. cit.}, p. 225.}
<table>
<thead>
<tr>
<th>Depth (Feet)</th>
<th>Stratum</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Shale</td>
</tr>
<tr>
<td>60</td>
<td>Black Shale</td>
</tr>
<tr>
<td>90</td>
<td>Coal (Brushy Hill)</td>
</tr>
<tr>
<td>120</td>
<td>Coal (Montserrat)</td>
</tr>
<tr>
<td>150</td>
<td>Shale (Black)</td>
</tr>
<tr>
<td>180</td>
<td>&quot;Flints&quot; (Base of Coal Measures)</td>
</tr>
<tr>
<td>210</td>
<td>Limestone (Mississippian)</td>
</tr>
</tbody>
</table>

Figure 10. Cross-section of Shaft at Montserrat No. 1 (after Hinds).
Figure 10 shows the strata in a drilling at Montserrat shaft No. 1. Here the three deepest measures appear, and the variability of the intervening layers is well shown. These mines were abandoned by 1883, in spite of the fact that expansion of the Pacific railroad traffic was increasing the need for coal. It has been said this abandonment was because of the impurities of the coal and the lack of good markets.

This early exploitation was about equally divided between strip-pit and shaft operations. Plate X shows a strip pit at the turn of the century. Extensive mining operations were also carried on in the southeast near Sutherland and Bowen, and at Bristle Ridge, Burtville, and Henrietta. Important quantities of coal were shipped from mines around Chilhowee and Denton up to 240 feet deep. This commercial operation extended up to 1910. Smaller operations were carried on for many years after this at Bristle Ridge and in Mulky coal outcrops at the end of the Warrensburg sandstone east of the city. Figure 11 gives a general picture of the coal measures as they appear in the eastern portion of the county.

It appears that decline of the coal industry in

---


85 Hinds, op. cit., p. 225.
Plate X. Old strip pit one mile northwest of Sutherland, about 1900.  
(After Hinds)
Johnson County cannot be adequately explained by a lack of markets or handicaps associated with any deficiency in the coal. To the author the decline is more closely connected with the fact that the lower carboniferous rocks with the thickest and best seams of coal reach the surface in other counties over a much larger area. The necessary deeper operations in Johnson County were unable to compete with cheaper surface exploitations in neighboring counties.
Limestone

Limestone is fairly abundant over the area. Various thin beds underlie much of the county, but only outcrop in a few places. The principal outcrops of the Missourian group are found on mounds or hillocks and the crests of ridges. They belong to the Bethany Falls and average from 5 to 10 feet in thickness. This is excellent limestone, quite suitable for cement manufacturing, but nowhere thick enough for commercial exploitation. These outcrops represent some of the most easterly extensions of the Missourian group.

The limestone beds of the Des Moines group are too thin to be of more than local use. Where readily accessible they supply agricultural limestone, concrete aggregate and stone for paving. (Plate LIII in Chapter IV). In Missouri, lime is derived mostly from the Mississippian strata, but these are too deeply buried in Johnson County to be exploited profitably.

Several adjacent counties have mined limestone for the manufacture of rock wool. So far no stone suitable for such

---

87 Ibid., p. 156.
use has been found in Johnson County, although in Jackson County shale has been used in combination with limestone to produce the necessary chemical reaction.

Clay and Shale

Workable seams of potter's clay and shale are found scattered throughout the county, but they are especially accessible in the eastern part (Plate XI). Seams were mined at Montserrat and Knob Noster for the manufacture of brick and stoneware, some being shipped to Kansas City to be used in sewer-pipe manufacture. A seam of "tough plastic bluish-gray clay that is very freely streaked yellow to brown by iron" was extensively exploited up to the early 1920's.

In 1891 two kilns at Warrensburg produced 500,000 bricks, using clays that outcrop on the eastern flank of the channel sandstone. A much larger brick production was obtained at Knob Noster, where plants were turning out

---

89 Limestone must have a 20 to 30 per cent content of carbon dioxide to be usable commercially in the production of rock wool. See H. S. McQueen and Kenneth Aid, "Rock Wool Resources of Missouri," Missouri Geological Survey, 59th Biennial Report (1937), p. 4.


92 Ibid., p. 520.
Plate XI. Old clay pit at Knob Noster, about 1890.
Note coal seam. (after Hinds)

30,000 bricks a day in 1931. 93 However, these plants were closed shortly after, and there has been no production since. No clay has been found suitable for refractory purposes, all of it being too fusible. 94

There is an almost inexhaustible supply of shales of good quality and thickness in the county. Some of the beds are exposed along the banks of streams and in railroad cuts, but shafts are necessary to reach most of them. Excellent

93 The Star Journal, Warrensburg, Missouri, 1921.
beds up to 30 feet thick are cited by Buehler as occurring with the Bethany Falls limestone.\(^{95}\) Probably the largest outcrop of shale occurs about three miles south of Warrensburg on the Post Oak Creek, where sixty feet of dark sandy shale is exposed.

Sand and Gravel

The immense supplies of alluvial sand and gravel associated with Ozark streams are not found in Johnson County, due to the mature condition of the stream valleys. Scattered and small deposits have been worked from time to time, but the story of sand in the county centers around the channel sandstone of the upper Des Moines group. This channel, shown in Fig. 5, is of fluvial or lacustrine origin - a filled-in channel eroded in the surrounding regularly deposited strata during an emergence of the coal Measure swamps.

Sandstone

Warrensburg sandstone was one of the first stones extensively quarried in the state, and at one time was the principal building stone of the city of St. Louis.\(^{96}\) Many

\(^{95}\)Buehler, \textit{op. cit.}, p. 156.

public buildings of this stone were also built in Kansas City, Omaha and Lincoln. A large portion of this stone was taken from two quarries located a short distance north of the city of Warrensburg (Plates XII and XIII). Operation tapered off and ceased not too long after World War I.

The Warrensburg sandstone is a fine-grained micaceous stone, cemented with calcium carbonate and bitumen. About two-thirds of the deposit is bluish in color, while the rest is white or striped blue and white. Effervescence with acid is good so that the stone might be called a sandy limestone. Although generally of excellent quality, there are flaws consisting of jointing planes, nodules of quartzite, and bands of iron oxide.

At one time, the bitumen content made this formation the focus of much attention. Bituminous sandstones occur frequently in the lower Pennsylvanian formations, and the possibility of using such material for paving received considerable attention. Samples of the channel stone in the northern part of the county and extending to the Missouri River show bitumen contents of 7 to 10 per cent. In 1917

---

97 Ibid., p. 274.
98 Ibid., p. 273.
100 Ibid.
Plate XII. Sandstone quarry north of Warrensburg at the turn of the century (after Buckley and Buehler).

Plate XIII. Same quarry at the present time (not operating).
this stone was used to pave a street in Higginsville, Missouri, and further use was considered to be a problem of economy as to whether it was more economical to use the ordinary sheet asphalt artificial mixture or the natural rock properly treated. No importance is attached to the bitumen content today.

Other Minerals

It has long been thought reasonable to expect oil or gas, or both, to be present in the top of the Mississippian. From time to time, geologists have commented on the latency of gas or oil in the area surrounding the Ozark plateau. Among several indications is the presence of dark, heavy, tar-like oil in the series elsewhere, such as that in exposed and eroded domes south of Dresden in Pettis County to the east of Johnson County. So-called "Peru Sands" of western Missouri have been productive, particularly to the west of the Johnson County line. Warrensburg sandstone is of this type, but as only buried channels have been producers in other areas, it is doubtful whether the Warrensburg shows promise.

103 Ibid.
By 1922 there was considerable drilling in the western part of the county around Holden and Kingsville. There were no finds of commercial importance, although one well at 110 feet in the Pleasanton produced an excellent oil in small quantity. Subsequent drillings showed some light flows of gas in the Cherokee shale at depths of 100 to 300 feet, especially in the north central part of the county. Light flows have occasionally been encountered since, but nothing of commercial importance. Drilling was continued at one place to a depth of over 1700 feet north of Warrensburg, but salt water was encountered and the well abandoned.

There has been no exploitation in the county of deposits producing other minerals, although a good supply of yellow or bright-brown ochre was reported near Knob Noster. The deposit is well exposed over several square miles and is three feet thick. However, this source of iron has never been exploited.

105Ibid.
106In conversation with H. A. Phillips, Professor Emeritus of Geology, Central Missouri State College, Warrensburg, Missouri.
CHAPTER III

SETTLEMENT AND DEVELOPMENT

The geography of the settlement and development of Johnson County is essentially the story of the occupancy and progressive growth of all the prairie region of northern and southwestern Missouri. It involves the human response to a rich natural scene; it depends on the changing transportation factor, on agricultural innovations in implements and techniques; it inquires into the social and economic forces operating during a period unique in American history. The unfolding of the story brought about the occupancy and development of an area at a rate probably unparalleled for swiftness up to that time. The rich, virgin character of the land, coupled with the positional advantages, probably played a greater role in this rapid transformation than all the human elements operating to advantage. The story will be dealt with under several headings, well-defined but inextricably related to one another.

General Occupance of the Western Prairies

Early Johnson County history cannot be separated from the history of settlement in Missouri. Hence, a discussion of the county development must begin with general conditions
prevalent in the state at a time prior to entrance by settlers into the county area.

There is little doubt that the most important geographic factor operating in the history of central and western Missouri has been location near the Missouri River. The river has been successively the natural gateway to the west for the fur traders, the settlers, and the river-men associated with commerce. It played a distinct role in influencing the trend of roads and railroads west of the Mississippi. Actually, the role played by the Missouri River in the settlement of western Missouri cannot be over-emphasized.

Prior to the cession of Louisiana to the United States, only a thin belt of settlements extended up the west bank of the Mississippi and along the lower Missouri adjacent to the St. Louis district. By 1805 the population had nearly doubled, but was still confined to approximately the same districts.\(^1\) The period to 1820 saw an increase in the population of the area of the territory now within the state to about 70,000, or a gain of almost seven hundred per cent.\(^2\) It was during the second decade

\(^1\) Louis Houck, A History of Missouri, (Chicago; R. R. Donnelley and Sons Co., 1908), p. 140.

\(^2\) Ibid. p. 141.
of the century that a zone of settlements pushed westward from the border of the Mississippi up the Missouri to the Boone's Lick country of central Missouri. At first there was little expansion away from the river, even up the larger tributaries; but when this push occurred, it tended to develop more strongly to the south in the west central part of the state. The needs of pioneer life were best met in the lands just adjacent to the river, and the advantages of settlement here became known far and wide.

By 1830 the settlement zone had stretched westward to the Kansas City area, almost all the movements of peoples being channeled through the lower Missouri River corridor. The significance of the river is well emphasized by the fact this band of settlement nowhere was more than about 50 miles wide. The expansion of this band away from the river was occasioned by the press of new settlers and the increasing cost of better lands close to the river. This push occurred during the decade after 1830, and brought the first large tide of settlers to Johnson County.

There seems to have been little attention given to

---

3 F. C. Shoemaker, Missouri and Missourians (Chicago: The Lewis Publishing Co., 1943), I, 140.
4 Collier, op. cit., p. 49.
5 Sauer, Geography of the Ozark Highland of Missouri, p. 110.
6 Collier, op. cit., p. 48.
natural factors in the platting of early sites for towns along the Missouri River. Areas developed around boat landings, and many were later destroyed by the river or abandoned for more-favorable sites growing under the spur of a larger hinterland. Such a town was Franklin, across the river from the present site of Booneville, where one of the three government land offices established in Missouri in 1818 was located. In 1820 Franklin was the second largest town in the territory, being surpassed only by St. Louis. Here was purchased the first parcels of land located in Johnson County. Soon after 1830 the river began to cut away the town, and not long afterwards the site was abandoned. The land office was moved to Fayette in 1832, and subsequently to Booneville in 1858. By far the major portion of the land in Johnson County, then, was secured through the land office in Fayette.

The basis of United States public land policy was the Ordinance of 1785. This required that surveys be made before the land could be offered for sale, and that the rectangular plan of survey be followed. The fifth

---

7 Houck, op. cit., p. 183.
8 Shoemaker, op. cit., p. 243.
principal meridian was carried northward through eastern
Missouri in 1815. Survey westward followed rapidly, so that by 1825 land in most of the prairie counties of
western Missouri was ready for sale. However, occupancy had preceded survey in many cases, and this area figured strongly in the struggle over pre-emption. The tracts of land secured by the first settlers of the western prairies varied greatly in size. The clamor for smaller land offerings had pushed the size of tracts down to a quarter section, or 160 acres. When the Land Office opened at Franklin in 1820 this was reduced to 80 acres, and the minimum price of $1.25 per acre was authorized. Twelve years later land could be bought in quarter-quarter sections, or forty acres. Most of the land acquisitions in Johnson County were in 40- or 80-acre tracts.

In conclusion, then, it may be said that practically all of the pioneer settlers of the western prairies came by way of the Missouri corridor. The first steamboat on the Missouri reached Franklin in 1819, and egress to the new country became relatively easy. A small proportion

---


11 A right claimed by settlers of unsurveyed lands to purchase same at the minimum price when offered for sale through the regular channels.
of settlers entered the area by way of the old Boone's Lick road, in part approximating the present route of U. S. highway 40. It was not until 1837 that steamboats plied up the Osage River and reached Warsaw and Osceola south of Johnson County. There was never any large movement of settlers by this route into the prairies.

Early Settlement in Johnson County

Johnson County has been successively a part of St. Louis, Howard, Cooper, Lillard and Lafayette counties as the state was subdivided in the first two decades of the nineteenth century. The latter county included three other present counties besides Johnson, as well as parts of two others. There seems little doubt that the first settlers in Johnson County pushed southward out of what is now Lafayette County. As is usually the case, the earliest entrants were probably of that transient class that never legally entered the land, but moved on when the main tide of immigrants arrived. According to the records, the first settlers appeared in the area around 1827, just six years after Missouri became a state.

Located as it was, over twenty miles from the Missouri


13 Missouri was admitted as a state in 1821.
River, and not containing any navigable stream, the county experienced many of the inconveniences of inadequate transportation and communication facilities which characterized many other parts of the state during its early history. The people were quite unevenly distributed over the area for many years, due to the preference of the early settlers for the timbered areas rather than the larger extent of intervening prairie.

There is reasonable agreement that the Pleasant Rice and the Nicholas Houx families were the first settlers in Johnson County.¹⁴ They were from Tennessee and Maryland, respectively. They settled near the center of the present town of Columbus in the northern part of the

Plate XIV. Looking north to the present settlement of Columbus

¹⁴The History of Johnson County, Missouri, (Kansas City, Kansas City Historical Co., 1881), p. 212.
Plate XV. Part of old Columbus cemetery

Plate XVI. Grave of first settler in Johnson County (Columbus cemetery)
county. (Plates XIV, XV, and XVI). Other early arrivals were made by John Whitsitt, Robert Craig, Uriel Murray, Morgan Cockrell, Noland Brewer, John Trapp, William Norris, and William Cheek. During the early 1830's this colony grew in numbers and renown, and became the hub of a considerable number of outlying settlements. It was here the first legal machinery of the county was established. The descendants of some of the earliest families still hold large acreages of land in the county; a few families have retained the original holdings for more than 120 years.

State legislative action organized the area as a county, Dec. 13, 1834, being named in honor of Richard M. Johnson of Kentucky. This made it the forty-fifth county established in the state. Briefly, delimitation was as follows: the northern boundary, beginning at

---

15 Campbell, Gazetteer of Missouri, p. 287.

16 "Inventory of the County Archives, Johnson County, Missouri," Historical Records Survey No. 51, (St. Louis: WPA, 1941), p. 3.

17 The History of Johnson County, Missouri, op. cit., p. 213.

18 A study of the Johnson County plat book will reveal the acreages involved. There seems to be no particular part of the area where original holdings are more pronounced.

19 Missouri Laws, Sections 2-6 (1834), p. 419.

the northeast corner corresponding to the southeast corner
of section 24, township 48, range 24, runs west to the
line between ranges 26 and 27, then south to the corner
between townships 47 and 48, and from there west to the
middle of range 29. The western boundary runs south from
this point to the southwest corner of section 27, town-
ship 44; then east to the range line between 23 and 24,
and from there north by the range line to the point of
beginning.\textsuperscript{21} The first division of the area was into
four townships: Jackson, Washington, Madison, and Jeff-
er-son.\textsuperscript{22} Fig. 12 shows the position and proportionate size
of these early townships. Between 1835 and 1890 subdi-
vision finally created fifteen townships in the county.
(See Fig. 3).

Generally speaking, the survey of Johnson County
produced regularity of sectional division. "Standard
Lines" extend across the county in the northern part and
just north of townships 44-24, 44-25, 44-26, 44-27, 44-28
and 44-29. The southern line is inclined from northwest
to southeast and the survey from the south failed to
reach this line. The intermediate portion, then, was sub-
divided and became known early as "The Lots." These

\begin{footnotes}
\item[21] H. L. Conard, Encyclopaedia of the History of
\item[22] County Court Record (Warrensburg: 1835-1839),
pp. 9-10.
\end{footnotes}
extend across the county in the northern part of the southernmost townships. To the east the sections are divided into four lots, but the inclination of the standard line causes this number to increase to six lots in the west. Sections to the west include about 1200 acres.

The first county seat was east of the present village of Columbus, where the first county court convened in 1835 at the home of Mrs. Rachel Houx. Subsequently, Widow of Nicholas Houx, who built the first permanent house in the county. It has been preserved to the present time (Plate XVII).
Plate XVII. First house built in Johnson County. The original building is at the left and has been weather boarded over the original logs. (from Cockrell).

the seat of government was moved to a more central position at Warrensburg, where the county court held a special term, September 6, 1836.\textsuperscript{24}

\textsuperscript{24}County Court Record, \textit{op. cit.}, p. 69.
Areas of Settlement

Considering the natural character of Johnson County, it would appear in retrospect that it was an area of easy settlement. Then too, the settlers there were seemingly never in any danger from the Indians, as they were in so many other pioneer areas in the United States. The region including Johnson County had been bought by the United States from the Great and Little Osages in 1808 for a pittance.\(^{25}\) Although the Indians returned for many years to hunt and trade, there is no record of any trouble with the settlers.

There are numerous evidences of prehistoric Indians in the plains region of western Missouri. There are a number of conical mounds, several embankments or enclosures, and great quantities of unearthed cultural material. The latter includes much pottery for domestic and decorative use, almost every type of arrow and spear point, and knives, scrapers, hoes, and axes. The presence of grinding stones indicates the cultivation of corn.

The relationship between the prehistoric Indians and the historic Osage tribes is not clearly known. It appears, though, that the customs and traditions of the Osages show

\(^{25}\)Ewing Cockrell, *History of Johnson County* (Topeka, Cleveland: Historical Publishing Co., 1918), p. 75
a cultural relationship with the prehistoric group. A mound in Vernon County was used by the Osage Indians as a burial place for over a hundred years.\textsuperscript{26} Even as late as 1874 members of the tribe returned each year to mourn there.

When the first French explorers visited central Missouri late in the seventeenth century, they found this tribe living around the mouth of the Osage River. Before 1718 the Indians migrated up the Missouri and Osage rivers into the western plains section of the state. The early settlers of the counties south of the Missouri River contacted them in the Missouri Corridor; but, as noted before, by the time outlying counties were settled the Indians had pushed westward into Kansas.

The Osages were conspicuous among various Indian tribes for their general stability and sobriety. Living in villages, they built cone-shaped huts and larger oblong structures of poles and mats. Subsistence was chiefly through hunting, although they sometimes raised small crops of corn, beans, and pumpkins. The fall hunts began

\textsuperscript{26}Missouri,\textit{op. cit.}, p. 32.
in September and continued until the first of the year, when the Indians retired to their villages until the spring hunts commenced about the first of March. The previously mentioned prairie fires were set by the Indians during the extensive fall hunting season. 27

The independence and general reluctance of the Osages to submit to the authority of the whites no doubt hastened their withdrawal to new lands when the tide of settlers in the Missouri corridor increased in size.

The problem of selecting suitable land for homesteading loomed large in the minds of the early settlers. Many factors were involved in spite of the kindly character of the terrain. The general lack of relief resulted in many areas being poorly drained. In many parts of western Missouri this problem is not completely solved today. The gumbo character of some of the soil, combined with poor drainage, made travel by wagon impossible in winter and spring. Without water transportation, this was a serious handicap. For many years the outpost condition of the settlements provided no available market, and coupled with the difficulty of travel an acute problem was created.

27 Ibld., p. 33.
Further, the small size and unpredictable character of the streams provided but few power sites. One appreciates this impediment when considering how important power was for the pioneer's saw, flour, and grist mills. The only suitable mill sites were on Blackwater River and Clear Fork. Probably the first water mill was built on the latter stream in 1831 to saw timber.  

Besides the Columbus settlement, several other communities were established in the county prior to 1835. The Clear Fork mill site near the line of Grover and Washington townships became the Gallaher Mills settlement. In the northeast a settlement developed near the present site of the community of Dunksburg. The Mulkey settlement grew on Flagstaff Creek in the northern part of what is now Simpson township. On the head of Walnut Creek the Hazel Hill settlement started about 1830. A community grew at Rose Hill in the southwestern part of the county, and a water-powered grist mill was erected there on Big Creek. This was first called the Scott neighborhood. Near the border of Kingsville and Jackson townships, one of the first settlements was planted, which competed with the Columbus settlement. It became known as Bluff Spring.

---

28 Ibid., p. 88.

29 The second-oldest building in the county was erected here.
The Cornelia settlement developed to the south of Warrensburg, and included parts of Post Oak, Chilhowee, and Centerview townships. The rough Bristle Ridge section to the southeast of Warrensburg was settled early and the area became known as the Huff settlement. Lastly, to the extreme southeast, the Owsley and Wall settlement included all of Jefferson and part of Post Oak townships. 30 These early areas of settlement are shown in Fig. 13.

In many other frontier sections of middle United States the government largess in the matter of lands for settlement produced early eras of land speculation. This not only hastened the end of the public domain in the best areas, but encouraged the development of tenancy. It has been said that "the swift rise of tenancy is one of the most striking features of the history of the American prairies." 31 Although no doubt true of many prairie sections, there was little early land speculation in Johnson County. Tenancy gradually developed, spurred on by the Panic of 1837 and the impact of the Civil War. Certainly,

30 The History of Johnson County, Missouri, op. cit., See separate histories of the townships for a detailed account.

EARLIEST SETTLEMENTS
landlordism and tenancy was well established in Missouri prairie sections by 1890,\textsuperscript{32} being much more characteristic of the northern part of the state. The great landed estates, and holdings of thousands of acres of land so typical of many Middle West areas, never were realized in Johnson County.

The indispensable aspect of the timber land to the pioneer, made for an unusual development at an early date. The early settlers shunned the prairie sections, which were not only strange and unfamiliar to most of them, but were not adapted to pioneer occupancy. Close comparison of land entries and the early vegetation pattern makes it appear probable that the county suffered from population pressure long before half the land was taken. This forced a spilling out of the settlers over the larger prairie areas.

Land Entries and the Public Domain

As we have seen, originally all the land in Johnson County was government land. At the Franklin Land Office it was first offered to the public in 80-acre tracts or larger. Much choice timber land went at the minimum price of $1.25 an acre. Only occasionally was a price as high as $5.00 an acre obtained. There was no limit to the amount of land a purchaser could buy, as long as he could afford

\textsuperscript{32}Ibid., p. 203.
and cultivate it. Even though these prices appear ridiculously low today, many pioneers were probably pressed to the limit of their resources in acquiring only a small tract.

The first entries of land in Johnson County were made May 1, 1828.\textsuperscript{33} Figures 14 to 20 show by map representation the succeeding lands entered by settlers by five-year intervals, 1830-1860.\textsuperscript{34} Analysis of these maps shows that after an unusual increase in settlement between 1830 and 1835, growth was steady but not striking until the middle of the century. Then a phenomenal increase in land entries occurred during the five-year interval to 1855, and by 1860 practically all the land had been entered.

The unentered areas left in the 1860 map are school lands and swampy or poorly drained areas. By act of the United States Congress in 1826, section 16 of each township was set aside for the benefit of public schools. Sale of these lands should accrue to the townships and be used to partly defray the costs of public education. Several laws were passed, starting in 1833, by the state of Missouri applying to the sale of these lands.\textsuperscript{35} Actual sale of

\begin{flushleft}
\textsuperscript{33}Land Entry Book, County Recorder's Office, Warrensburg, Missouri.
\end{flushleft}

\begin{flushleft}
\textsuperscript{34}Ibid. Developed from over 6000 of the original entries preserved in this book.
\end{flushleft}

\begin{flushleft}
\textsuperscript{35}Laws of a Public and General Nature of the State of Missouri, between the Years 1824 and 1836 (Jefferson City: W. Lusk and Son, 1842), II, 357.
\end{flushleft}
school lands started early in Johnson County, and poor prices were obtained in most cases. Swamp lands, or lands subject to overflow, became the property of the various counties in which they were situated through national and state legislation in 1850 and 1852. Sale of these lands in the county progressed slowly until after the Civil War.

Prairie and Timber Lands

Figure 7 in the section on vegetation shows the original timber resources of Johnson County. A comparison of this map with the series of maps on land entries shows a striking correlation between the areas of woodland and the land entered by the early settlers. This trend is noticeable up to the middle of the century, when encroachment on the larger prairie areas becomes pronounced.

Preference for the woodlands was in part based on the provisions of the forest for pioneer life. Obviously, timber provided shelter, supplied fuel, and furnished the multiplicity of materials needed for houses, fences, furniture, and tools. Then too, the wooded areas were close to streams where fish might be caught, and occasionally power developed. Also the woodland areas abounded with game, a welcome addition to the meagre fare of the frontier. Southeastern Johnson County was once renowned as a hunting

---

36 Conard, op. cit., VI, 138.
grounds, where buffalo, antelope, elk, deer, and bear were plentiful. However, the early settlers had a heritage that was steeped in life associated with the forest. Not only were they ancestors of Europeans from wooded areas, but previous existence in eastern United States was on forested lands. In most cases, the pioneers actually believed that lands that did not grow trees were infertile.

The prairie lands of Johnson County occupied about four-fifths of the total area of the county (Fig. 7). They were found away from the major drainage basins and the rougher areas.

Besides the fact that the lands away from timber did not provide many necessities of pioneer living, other reasons may be listed for their avoidance by the early immigrants. (1) The above-mentioned belief that they lacked fertility; (2) a stupendous task was entailed in breaking the tough sod with the primitive plows; (3) the treeless sections sometimes lacked the necessary running water for stock; (4) the prairie sod did not become friable and workable until a year or more after plowing; (5) the prairies were burned late every fall after the grasses had withered and dried. The fires were probably started by the Indians.38

37Jefferson Daily Tribune, September 20, 1893, p. 4.
38Cockrell, op. cit., p. 90.
The Early Population

The following analysis attempts in part to trace the evolution of the frontier society in Johnson County. It is vital that characteristics of the people be considered before dealing with the cultural impress on the environment. The latter part will examine the rather striking growth in population, together with some of the factors involved in this trend.

Origin of the Immigrant Stock

The dominant element in the early population of Johnson County was Anglo-American, of that racial stock whose descendants originated in England, Scotland, Wales, and Ireland. By 1860 there was a minor German element, which remained the most dominant of other foreign elements. Other European national backgrounds were represented, but they were very few in number and never exceeded the German representation. In 1870, 983 or about four per cent of the population was foreign-born, and approximately half of the people were born in another state. This was the peak year for the number of foreign-born, and each decade since has seen a decline.

The Negro population of the county has never been

39 Ninth Census of the United States, United States Bureau of the Census (1870), II, 270.
large, but relative to the total it maintained itself over the decades. Only the decade including the Civil War saw a decided drop in numbers and per cent of the total. In 1840 there were 560 Negroes in the county, and this constituted about 12 per cent of the inhabitants. Peak Negro population was 2,019 in 1880.

Most of the whites settling in Missouri during the first half of the nineteenth century originated in states to the east, especially from Kentucky, Tennessee, Virginia, West Virginia, Ohio, Indiana, and Illinois.\(^4\)\(^0\) The earliest wave of the century, particularly during territorial times, came chiefly from Kentucky, Virginia, Tennessee, Maryland, the Carolinas, and other southern states.\(^4\)\(^1\) In Kentucky and Tennessee land prices were rising sharply, and the new cheap land to the west attracted them strongly.\(^4\)\(^2\)

The origin of early Johnson County settlers followed the general pattern for the rest of the state that failed to get the large German element. Kentucky, Tennessee, and Virginia were represented in that order among the pioneers to the county.\(^4\)\(^3\) The decades up to the Civil War saw an

\(^4\)\(^0\)Collier, op. cit., p. 50.

\(^4\)\(^1\)Shoemaker, op. cit., p. 240.

\(^4\)\(^2\)Ibid.

\(^4\)\(^3\)Atlas Map of Johnson County, op. cit., p. 12.
increasing number from states north of the Ohio River.\textsuperscript{44} An analysis of 321 subscribers from all parts of the county to a publication in 1877 shows this trend. Origins were given for each subscriber, and a tabulation showed that Kentucky led with 54 representatives, but Ohio was close behind with 42. Virginia came next with 34, followed by Tennessee with 19 and Pennsylvania, 17. A check of nativity of ancestors of individuals listed in a biographical record\textsuperscript{45} showed the same trend.

Character of the Settlers

The pioneers to Johnson County did not follow the general pattern of those who settled the corridor of the Missouri River. There was located the general slaveholding belt of the state, including many upper-class settlers from the South who were affluent and brought slaves with them. Their larger homes, plus the number of their corn cribs, smoke houses, and negro cabins indicated their wealth.\textsuperscript{46} This frontier group looked forward to the day they could reproduce the social and economic conditions of the South, including the replacement of cabins with a large plantation

\textsuperscript{44}United States Census Bureau figures, 1850 and 1860.

\textsuperscript{45}Portrait and Biographical Record of Johnson and Pettis Counties, Missouri (Chicago: Chapman Publishing Co., 1895).

\textsuperscript{46}Shoemaker, \textit{op. cit.}, p. 264.
house.

Being outside the country along the Missouri River, Johnson County was primarily entered by small farmers from mountainous sections of the border southern states, or small land holders from the free states. Most of them refused to own slaves, and were most uncompromising in their opposition to that institution. Politically, they were about evenly divided between the Whig and Democratic parties.47 The minority of small land owners were Whigs, but practically all the larger owners were Democrats. The prestige of wealth and social position was on the Democratic side. This division is well illustrated by the fact that during the Civil War, Union recruits drilled on the east side of the town of Warrensburg, while the Confederates drilled on the west side of town.48 However, feeling was not too intense, as they sometimes drilled together.

In religious belief the early settlers were Cumberland Presbyterian, Baptist, or Methodist, with the first claiming the largest number of adherents.49 They generally formed communities that were noted for strict morality, uprightness

48 I bid.
49 Seventh Census of the United States, 1850.
and piety. The lawlessness and crime that existed in so many other Missouri frontier societies never expressed themselves as strongly in Johnson County. Illustrative of this is the following anecdote: About 1831 a liquor store was started in Columbus, but the settlers drove the owner out of town, and he went a few miles south to start in business again. The now-nonexistent town of Blackwater grew up around the store, which did not appear to prosper, as the owner subsequently entered the ministry.

By and large, the people were uneducated, obsessed with strong personal feelings and prejudices. Although quick-tempered and quarrelsome, they were nonetheless honest and sincere in their beliefs, and their hospitality was unbounded. Differences were probably too often settled with the fists rather than the courts, but this was characteristic of all pioneers, who relied on self-help in emergencies. In spite of this, early travelers in the county commented on the timidity and bashfulness of the settlers, no doubt a product of the isolation and loneliness true of almost all frontier areas.


51 Mentioned in several sources, but does not appear to be too well authenticated.

52 The History of Johnson County, Missouri, op. cit., p. 211.
Population Tendencies

First key to the number of inhabitants in early Johnson County lies in a listing of 15 heads of families in 1831. Several of these had a few slaves, and there was no indication of the family sizes. One can only guess at the total number of individuals. Perhaps 100 to 150 people resided in the area at that date.

First enumeration of the area as a political entity was in 1840, when the population of the county was 4,471, of whom 3,911 were white. Each of the next three decades saw the population almost doubling, after which growth was much slower to 1880 (Table IV). That year the population reached

<table>
<thead>
<tr>
<th>Year</th>
<th>Population of county</th>
<th>Population of Warrensburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1840</td>
<td>4,471</td>
<td>-----</td>
</tr>
<tr>
<td>1850</td>
<td>7,464</td>
<td>241</td>
</tr>
<tr>
<td>1860</td>
<td>14,644</td>
<td>982</td>
</tr>
<tr>
<td>1870</td>
<td>24,648</td>
<td>2,945</td>
</tr>
<tr>
<td>1880</td>
<td>28,172</td>
<td>4,049</td>
</tr>
<tr>
<td>1890</td>
<td>28,132</td>
<td>4,706</td>
</tr>
<tr>
<td>1900</td>
<td>27,843</td>
<td>4,724</td>
</tr>
<tr>
<td>1910</td>
<td>26,297</td>
<td>4,689</td>
</tr>
<tr>
<td>1920</td>
<td>24,899</td>
<td>4,811</td>
</tr>
<tr>
<td>1930</td>
<td>22,413</td>
<td>5,146</td>
</tr>
<tr>
<td>1940</td>
<td>21,617</td>
<td>5,868</td>
</tr>
<tr>
<td>1950</td>
<td>20,716</td>
<td>6,857*</td>
</tr>
</tbody>
</table>

*Includes 1,237 students at the Central Missouri State College who are bonafide residents of areas out of the county.

53 All figures from the United States Bureau of the Census.

54 Enumerated in 1889 by Judge Harvey Harrison who had moved to the county in 1831 when 25 years of age.
its zenith of 28,172 inhabitants, and there has been each
decade a gradual but steady decrease until in 1950 the
county contained 20,716 persons. This decrease between
1880 and 1950 of 27 per cent coincides with an increase of
227 per cent in the state as a whole. The early decrease
after 1880 was caused by lessening productivity of the land
and the opening up of new virgin areas to the west associ-
ated with railroad construction. Decrease after 1900 was
associated with the urban movement as industrialization
rapidly increased.

The figures for 1880 represent a population density for
the county of 34 persons per square mile, while the density
in 1950 was less than 25 persons per square mile. All the
townships have lost population with the exception of
Warrensburg; and non-urban incorporated places have fol-
lowed the same trend. Including the latter with the city
of Warrensburg as urban, the rural population amounts
to 51.5 per cent of the total. This is a considerable
increase in urbanity over the 1870's in spite of the fact
the smaller incorporated places have lost ground.
Warrensburg and Madison are the most populous townships,
and they contain respectively the two largest towns. The
coming of the railroads brought a decided shift in
township populations. It is of interest to note that
Jackson township was by far the most populous in 1850,
having about one-fifth of all the people in the county.
Today it has fewer inhabitants than in 1850, but one must remember it has decreased in size.

Town Development

It is difficult to categorize the towns of the county on the basis of location. The towns that developed before the coming of the railroads had various reasons for birth and existence at a particular spot. (1) They grew around the first store placed in the community. (2) They developed around the home of a prominent settler in the area. (3) At least three sprang up around an early stream mill-site. (4) One grew at a ford on the Blackwater River. (5) Others started around a post-office centrally located for a settlement. No less than thirteen communities that might qualify as villages existed before the Pacific railroad came through the county just after the Civil War. Several of these early villages have virtually disappeared, at least three being abandoned before 1900. Figure 21 shows categories of towns on the basis of origin. Warrensburg is the only one of the early towns to experience consistent growth. (See Table IV).

Altogether, there are fourteen towns either directly or indirectly associated with the establishment of

55 Concluded from bits of information concerning various communities in the two histories of the county.
EARLY AND PRESENT TOWNS
ORIGIN BASED ON:

- FIRST STORE IN AREA
- STREAM MILL-SITE
- HOME OF PROMINENT SETTLER
- STREAM FORD
- POST OFFICE
- RAILROAD

Fig. 21
railroads through the county. In several cases a post office or home of a prominent resident already existed when the railroad came along, and a basis for growth was immediately established. In one important case (Holden) a town was platted eight years in advance of railroad penetration, the railroad survey of the route having been previously announced. Although the railroad provided the initial impetus for site and growth, the period of greatest development of some towns was based on the nearby exploitation of the coal beds. The towns of Knob Noster, Montserrat, and Bowen are excellent examples. The general decline of the villages the last few decades has made virtually ghost towns out of several railroad communities that flourished for a time. (See Table IX). Decline of several towns before 1900 was related to the decrease in coal production of the surrounding areas; but more recent loss of population is the result of increased mobility associated with the automobile, and the general migration from farm and town to the larger cities.

Holden experienced a phenomenal growth after the Pacific railroad came through. It was named for a prominent citizen instrumental in bringing the railroad through the area.56 Being practically non-existent in 1860, the

population was 1,576 in 1870 and 2,520 in 1890. In 1887 it boasted of two thriving colleges, several growing industries, and looked forward to a great future. However, by 1900 the population had fallen to 2,126, and it has undergone a slow decline since that time.

Knob Noster has undergone a similar rapid expansion followed by steady decline. It was named from two mounds or "knobs" north of town, that were at one time thought to be Indian mounds (Plates III and IV). From having no listing as a town in the 1860 census, it grew to 914 inhabitants in 1870, and was estimated to have about 2,000 people by 1875. This was either a gross exaggeration or the town suffered an extremely rapid loss of people, for the population in 1890 was 851, and had further declined to 673 by 1900. In 1950 the town contained 585 persons.

Although Warrensburg has had a steady growth, its importance today does not rank with its former prominence. In 1870 it was the tenth most populous city in the state of Missouri. In 1880 its rank among the state's cities had declined to thirteenth.

In summary, it may be said that Johnson County towns

57 Holden and Johnson County (Holden: The Enterprise Press, 1881).
58 Eaton, op. cit., p. 291.
59 The History of Johnson County, Missouri, op. cit., p. 489.
have experienced the same decline that is prevalent in other parts of the state. This, of course, is in accordance with the general urban increase associated with the growth of the cities and most towns larger than 5,000 inhabitants.

**Early Economies**

From the earliest times, the major economy of Johnson County has been based on the soil. Commercial agriculture has been the basis of most of the considerable wealth of the area. Possession of, and work on the land has patterned and shaped the thinking and way of life of the people. Even though the county seat and other larger towns have had roots imbedded in different activities, the general economic health of each urban area is closely related to the economic well-being of the farmers of the county.

Most of the early settlers had very meagre assets, possessing little agricultural equipment, seldom any livestock, and only a few personal and household possessions. Usually there was little capital for the acquisition of the necessities of frontier existence. However, probably all were possessed with a common desire to better themselves, to secure and develop lands that would produce a superior living to what had been possible in the areas from which they had migrated.

The earliest efforts of the pioneer were not directed toward the production of money crops. His isolation forced
a spread of his activities to produce as many things as possible to sustain his family. The combination of well watered forest and grassland, plus the favorable climate of the county, allowed the settler to attain a degree of independence not always the case in frontier societies. The variety of products produced by the pioneer farm easily surpassed the farm of today.

The early settler usually built his cabin near the margin of the timber where a spring or other water supply was at hand. He soon enclosed some of the adjacent grassland. This was part of the general practice for a long time, of fencing only areas of cropland to keep out the stock. First-year activity produced an acre or two of corn and a few vegetables. Combined with the fruits of hunting and fishing, this constituted the total sustenance for the pioneer family.

The first structures were a cross between "hoop cabins" and Indian bark huts. These round pole cabins usually sufficed for the first few years. They partly copied the French use in eastern Missouri of upright poles for the sides of the cabin, but evidently also copied an Indian practice in the area. The Indian construction involved the bending of stout saplings which

---

had been driven into the ground, over at the top and covering the whole with large sheets of bark. The settlers usually lived in these crude shelters for only a few years. When time allowed, and manpower became available, a "raising" of a log house followed (Plate XVIII). Built

of round or hewn logs notched at the corners, this structure was ribbed with poles and covered with rough-hewn boards. Refinements included a puncheon floor, a hole for a door and sometimes for a window, a chimney of sticks and mud, and the chinking of cracks with wood blocks, liberally daubed with mud. To the fireplace was added flat stones for a hearth. 62

The story of the log cabin in Missouri begins with the building of log structures by the early French in the eastern part of the state. These buildings were made of poles planted vertically in the ground and fastened together only at the top. 63 This type of construction was early used by the French and English in America, and was probably copied from the similar Indian palisade or stockade of logs thrust into the ground.

The introduction of the true log cabin of horizontal logs or hewn timbers to the United States is credited to the Swedes and Germans during the seventeenth century. By 1720 Scotch-Irish were copying the horizontal type of construction, and they coined the term "log cabin" about 1750. 64


64 Missouri. cit., p. 181.
The settlers that pushed west of the Appalachians used this construction everywhere. The English, Scotch-Irish, and Germans brought the true log cabin to Missouri. By the late eighteenth century two major types were widespread in the state: the log cabin, of unhewn logs with V-shaped corner notchings and the ends of the logs projecting, said to be the Swedish type; and the hewn-log house, with squared timbers and neatly mortised, smooth-out corners credited to the Germans. The first type appeared early in western Missouri.

The first agricultural implements used in Johnson County were the bull-tongue or colter plow, the wooden mold-board turning plow, and for light work the single shovel plow. These tools were not much better than wooden shovels, principally because they would not "scour". The hand-cleaning made all working of the soil slow and laborious. Often the leveling and pulverizing of the soil was accomplished with a crude wooden harrow, or the top of a small tree used as a brush.

These first agricultural implements were of a type used in the southern Atlantic states. The chief implement used in these areas was the shovel plow (Fig. 22) which had a blade of wrought iron in the shape of an Irish shovel, with a loop on the back side for the wooden stock.

---

65 The History of Johnson County, Missouri, op. cit., p. 261.

66 Ibid.
Fig. 22

A - Early Shovel Plow
B - Wrought Iron Blade

Fig. 23

A - Mold-board Turning Plow
B - Wrought Iron Tip
to enter. They were easily drawn through the ground by one horse or mule, and threw dirt both ways, but mostly to the right hand or furrow side of the work. This light instrument only stirred the soil to a depth of three inches, and was usable only on land without turf or root. The bull-tongue plow was about the same as the shovel plow, except the iron part was narrower and thicker. This feature made it much more useful to the settlers in Johnson County who were breaking new ground and encountering tough root systems. The wooden mold-board turning plow was used to turn a furrow where the land was already prepared. It had a bottom all in one piece, and was tipped or edged with wrought iron (Fig. 23). This implement was sometimes known as the Allen plow.

The brush harrow was a very useful tool. It was made by taking a stick of timber, six or eight feet in length, and boring two inch augur holes a foot or more apart, and inserting small straight trees, ten or twelve feet in length, with the brush on. By putting on a weight (ox chains were often used), land could be smoothed and made

---


68 Ibid., p. 55.

69 Ibid., p. 56.
fine with a minimum of effort.\textsuperscript{70}

Many oxen were used to draw the early implements in Johnson County, but horses and mules were also brought in by the earliest settlers. Oxen continued to be used agriculturally, particularly in the breaking of prairie areas, until about 1880. There were a few instances where oxen were used for heavy pulling jobs up until 1900.\textsuperscript{71} The yokes in use around 1870 were made of a single piece of light wood, with collars or bows of curved wood that were fastened to the yoke with metal pins. Draw chains were usually fastened to the center of the yoke, but sometimes a wooden tongue was employed for this purpose.\textsuperscript{72}

The only help secured by the early settler was in rail-making, the rail-splitter getting $1.00 per hundred for his labors.\textsuperscript{73} Some of these early specialists saved money and eventually became land owners. This is understandable in light of an assertion that the second settler in the county could make 250 rails a day, and then visit with neighbors until ten o'clock at night.\textsuperscript{74} Rail fences were the rule

\textsuperscript{70}Ibid., p. 60.

\textsuperscript{71}In conversation with J. R. Grinstead of Warrentsburg, who was born in Johnson County in 1862.

\textsuperscript{72}Ibid.

\textsuperscript{73}Pioneer Days in Johnson County, op. cit., p. 3.

\textsuperscript{74}The History of Johnson County, Missouri, op. cit., p. 665.
everywhere for several decades; but as the hedge plant grew here exceptionally well, by 1870 the rails were beginning to disappear.\textsuperscript{75}

In many parts of the Middle West the evolution of fencing was definitely from rail fence to hedge to wire fence. This was only partially true in Johnson County, for many rail fences lasted until they were replaced by wire.\textsuperscript{76} The Osage Orange tree, a native of North America, grew well all over the Middle West; and when planted in rows it made a reasonably good fence if kept properly trimmed. However, the trimming was imperative or the plant would spread out and deplete the fertility of large areas of soil. Some of the trees were allowed to grow until they were 30 to 40 feet in height and had trunks up to 10 inches in diameter. The resultant ruinous shade and depletion of soil fertility kept the planting of crops to within 30 to 40 feet of the hedge, and was therefore expensive and wasteful of land. Wood for rail fences was more plentiful in western Missouri than in most of Iowa or Illinois, and this probably was a determinant in a less pronounced trend to the hedge fences (Plates XIX and XX).

As the population increased, the economic life of the settlers became more complex. Prosperity tended to increase

\textsuperscript{75} \textit{Atlas of Johnson County, op. cit.}, p. 16.
\textsuperscript{76} J. R. Grinstead, \textit{op. cit.}
Plate XIX

Plate XX

Hedge Fences in Madison Township
the size of farms; better roads and communication were established, and the isolation problem was eased. More farmers shipped their products to other areas or traded them for tools, harness, and household necessities produced in the settlement, where a class of artisans and merchants appeared. Thus, the extreme rigors of frontier life for the first settlers was not carried over much beyond 1840.

**Field Crops**

With the early farmers, corn became the leading grain product of the county. From the first, it became the staff of life for man and beast, and the failure of the corn crop almost amounted to a famine. The settlers depended on corn for bread, hominy, hasty pudding, and succotash.77 Corn bread was usually made with shortening from the rendering when hogs were butchered. Their meat diet was dependent on hogs and wild game; for prairie chickens, quail, geese, and ducks were plentiful during certain seasons. Other common foods were milk and mush made from corn meal, garden vegetables, "spice" wood tea, sassafras tea, wild fruits, berries, and nuts.78

A useful tool for the pulverizing of corn was the so-called "hominy block." This was made from a large log

---

77 *The History of Johnson County, Missouri*, op. cit., p. 262.
78 *Britton*, op. cit., p. 264.
about 18 to 28 inches in diameter. A section about four feet long was sawed off square and raised on end; and the upper flat surface was hollowed out with an axe and fire. When completed the block resembled a druggist's mortar. A pestle was made of a suitable piece of timber and was used to pound the corn. Sometimes one hominy block accommodated an entire neighborhood. The corn foods and method of grinding had been borrowed from the Indians of the eastern maize area.

Corn was the chief feed for horses, cattle, hogs, and sheep. As soon as the ears ripened, the pioneer stripped off the blades on the lower part of the stalk, cured and bound them, and stacked them for the horses. The tops of the stalks were cut, bound and shocked for the cattle. In some parts of the county, it was the custom to cut down the corn and stack it into shocks about sixteen hills square. A hill was an area of about 2,000 square feet. For this sort of work, a corn-cutter was paid from seven to ten cents a shock.

Reasons for the extensive cultivation of corn by early settlers was well summarized by Sauer: (1) it is equally satisfactory as food for men and stock; (2) it keeps in the field as long as desired; (3) it gives large returns for the seed used; (4) it grows on newly cleared

---

79 History of Johnson County, op. cit., p. 208.

80 Ibid. p. 211.
land which is too rich in humus for small grains, and which is not in condition to have the seed bed prepared as carefully as is necessary in the case of small grains; (5) the climate of the region is well-suited to the production of corn; and (6) it was readily marketable for whiskey. These reasons might be enlarged to include: the simplicity of cultivation of the grain; the ease of securing the seed; and the simple harvesting as compared to wheat or oats.

Wheat, oats, rye, barley, and flax were grown to a limited extent. The proper tools for their production were lacking, and threshing by treading-out or flailing was slow and expensive; not to mention the poor storing qualities, and the low value of the straw as compared to corn for animal feed. At an early day spring and fall wheat were both tried. Smut and the accumulation of chinch bugs on spring wheat rendered it unprofitable as a crop. Fall sown wheat generally did well. The dominance of corn in the early economy is shown by the Census of 1840 which shows that Johnson County produced about 500,000 bushels of corn, as compared with 4,000 bushels of wheat and 50,000 bushels of oats.

Other crops early introduced into the county were tobacco, hemp, and the Irish potato. The first two, along

---

81 Sauer, Geography of the Ozark Highland of Missouri, op. cit., p. 118.
82 The History of Johnson County, Missouri, op. cit., p. 262.
with flax, were introduced by settlers from Kentucky. Although the soil and climate are adequate for tobacco, it never became as important in Johnson County as in other parts of Missouri. All of these minor crops only filled local needs, and never became significant commercially. Decades after 1870 saw their decline and disappearance.

Livestock

Cattle, swine, and sheep early became important in the economy of the county. Hogs were particularly valuable. They could be raised with very little trouble and expense, and they added a number of necessary items to the pioneer's table. Swine gathered most of their food from the forest, chiefly mast, while cattle had to be fed during the winter. The prairies constituted an open range for everyone, the wild grass being considered good for all stock. Hundreds of tons of prairie hay were mown annually by hand, and stacked for winter use.

Most of the early settlers were forced to become livestock raisers. Isolation and the lack of economical transportation made marketing of grain virtually impossible. Each year more land was brought under cultivation, until

83 Based on comparison of production in 1850 and 1860 with several other counties in the state.
the settler had 25 to 50 acres annually in use. This was about all that could be handled without outside help. As the resulting production of grain increased, a problem of surplus grain arose. Grain became a useless commodity unless it could be fed to livestock, which could be driven to market. The earliest census figures show the importance of livestock in Johnson County. With a population of only 4,471, the county contained 3,169 horses and mules, 7,617 cattle, 5,578 sheep, and 23,553 swine. The sheep provided the wool to meet the clothing needs of the settler; and horses and mules, along with well-trained oxen, provided the draft requirements.

It is interesting to note that early farmers were pressed by developments in the direction of an animal economy. Much later, with marketing conditions no longer a problem, thorough testing showed it paid better to feed corn to stock than to sell it in the market.

Horticulture

Commercially speaking, the first three decades of settlement in the county saw little attention paid to this branch of agronomy. Most settlers had a garden plot, where

84 Standard-Herald, op. cit.

85 Numerous references to this economic phenomenon were found in newspapers of the 1860's and 1870's, as well as in other contemporary publications.
small quantities of Irish potatoes, sweet potatoes, beans, turnips, and other garden vegetables were grown. Some of the earliest immigrants brought seedlings or cuttings and started small orchards and vineyards. At least two of these are worthy of note. Sometime between 1829 and 1833 Richard Huntsman settled near Fayetteville and planted an apple orchard from cuttings secured in Lafayette County in 1835. One of the products of this orchard later attained great fame as "Huntsman's Favorite." It was the most highly-prized apple in the county in 1880. In the early 1830's rather extensive vineyards were established in the neighborhood of Dunksburg. These became rather widely known, and the area manufactured some of the earliest wine produced in the county.

Natural conditions are excellent for most varieties of fruits, and it is difficult to account for the slow development along these lines. Though there are glowing references to the thriving condition of early orchards and vineyards, and to the importance of the industry, they appear to be of

---

86 Three different sources fail to agree on the date.
87 Campbell, op. cit., p. 287.
88 The History of Johnson County, Missouri, op. cit., p. 658.
89 Ibid., p. 266.
doubtful validity. The author has failed in many instances to find dependable corroboration of numerous assertions of early writers dealing with the area. This is particularly true in economic matters.

Deer and rabbits seem to have given trouble to early orchard owners. Perhaps depredations by these animals limited early interest in fruit. William Zoll, one of the renowned 19th century horticulturists in the county, said that the lack of a nursery in the area before 1861 acted as the greatest drawback to the early fruit industry. Budded or grafted fruit trees had to be brought from eastern nurseries. Certainly, the industry made great strides after 1860, so that by 1880 almost every family cultivated orchards and vineyards.

Trends in Development

Agricultural enterprise in Johnson County underwent the same astounding growth during the nineteenth century as the number of inhabitants. Early growth in wealth brought

---

90 Much of the historical, biographical, and general descriptive material is extremely flowery and replete with exaggerations. A last-century reference to the county runs as follows: "the most fruitful land on the face of the earth - a farmer's paradise and a manufacturer's Eden. The superb, the unapproachable, over whose pastoral charms the radiant heavens spread a ceaseless benediction!" From Holden and Johnson County, op. cit., p. 1.

91 The History of Johnson County, Missouri, op. cit., p. 266.
great pride to the people, and gave promise of more rapid
growth. The County Assessor in 1856 said "a few years more
and we will take rank among the wealthiest counties of the
state." 92 This statement was based on a doubling of the
county assessment between the years 1852 and 1856, having
increased from $1,111,870 to $2,210,615. Census figures
show that in 1850 there were 41,000 acres of improved
farmland, with a valuation of $752,935, and livestock valued
at $314,697. By 1870, comparable figures were 197,491
improved acres; farms valued at $11,835,733, and livestock
worth $2,024,087.

Probably the most significant trend in agriculture was
the movement toward a cash-grain economy in the last half
of the nineteenth century. It has been noted how corn was
all-important in the early agricultural picture. However,
more and more acreage was devoted to winter wheat, until the
county became renowned for the production of this grain.
It can be said that by 1880 the county had become
pre-eminently the wheat county of the state - if not of the
nation. During the years 1882, 1883, and 1884 it produced
more wheat than any county in the United States. 93 In 1881
Christian County, Illinois, was in first place. This

92 Jefferson City Inquirer, Jefferson City, Missouri,
September 13, 1856.

93 Southwest Missouri, (St. Louis: Southwestern
position was not long maintained, as more recent tendencies
dealt with in a later section will demonstrate.

There is little doubt that the railroads were basic in the
trend towards a grain economy. The area was not really
conscious of its tremendous agricultural potential until
the Civil War. The enlarged grain production was based on
a number of physical, cultural, and economic changes and
adjustments. The railroads were not only of great import-
ance in transporting the grain and livestock to market,
but were equally significant in bringing in needed commod-
ities not produced locally. Also, the railroads made pos-
sible commercial exploitation of coal and other minerals,
and capital was produced to enlarge agricultural horizons.
Further, the rapid growth of Kansas City as a market and
railroad center was reflected in the adjacent agricultural
hinterland. This period also saw the great improvement of
agricultural equipment, as well as the invention of new
machines. The period after the Civil War saw the sickle
and old-fashioned wheat cradle giving way to the horse-
drawn cutters and binders that preceded the modern combines.
Improved plows, jointed metal harrows, cultivators, disc
harrow, and drills and spreaders contributed to the vastly
increased production. When we examine this in company with
more advanced agricultural techniques, it is easy to account
for more and more land being brought into cultivation, and
greater volumes of grain being produced year after year.
It is of value to note some of the average yields of agricultural products after a half century of occupance. In 1880 the average yield for the county was 18 bushels of wheat per acre, 50 bushels of corn, 30 bushels of oats, 100 bushels of Irish potatoes, and 2 tons of hay. At the same time there were two large elevators in the county for the storage and shipment of grain.

In spite of the considerable swing to production of grain for the market, animal husbandry continued to make remarkable strides. As the areas of cultivation encroached on the prairies, the wild grasses tended to disappear because of poor propagation and seed production, and were replaced by the more-tenacious domestic grasses. All of these domestic grasses had been imported into the eastern part of the United States from Europe. They included timothy, several clovers, alfalfa, and blue grass. By 1880 it was noted that blue grass was making a steady but sure conquest of the county, and it was merely a question of time until it would cover all the land not in actual cultivation. White and red clover were introduced early, the former doing well on light soil in wetter years, and the latter sometimes producing two crops a year. Timothy was

---

94 Missouri Immigration Society, Handbook of Missouri (St. Louis: Times Printing House, 1880).
95 The History of Johnson County, op. cit., p. 264.
the oldest grass cultivated, being introduced primarily to furnish pasturage for horses.

In areas where the soil was not very fertile, or where distances from water transportation made shipping charges prohibitive, stockraising early became an important industry in the state. This was particularly true in the Ozark borderlands and the western prairie section. As early as 1838 it was said that vast herds of cattle were being raised on the western prairies of the state. The cattle were usually either driven to Missouri River ports or to Warsaw on the Osage River.

In central Missouri counties, the breeding of fine horses had been introduced and strongly developed by immigrants from Kentucky and Virginia. It was in this area of the state that the raising of mules became a major industry after the introduction of jacks and jennets from New Mexico via the Santa Fe Trail. An expedition returning to Howard County in 1823 brought back 400 mules, jacks, and jennets. At first mules were only valued as pack animals for the long overland trains. However, they soon proved superior to either oxen or horses for heavy farm work, and after 1840 the mule industry boomed. The raising of mules did

---

96 Ibid., p. 265.
97 Missouri, op. cit., p. 65.
not develop greatly in the western prairies until wheat production tapered-off towards the close of the nineteenth century.

The Kentucky heritage expressed itself early in concerted efforts to produce better livestock. Blooded cattle and horses were imported into the county before the Civil War, and herds of cattle were driven to St. Louis some time before the coming of the railroads. The blooded cattle of these early days were a variety of the English Shorthorn, usually called the Roan Durham. They were a large breed, mixed reddish-brown and white, although sometimes pure red or pure white types were evolved. The Hereford and dairy breeds did not appear in the area until around the turn of the century. By the 1880's newspapers contain numerous references to affluent stock breeders, and the county was exporting thousands of cattle, hogs, and sheep. Horses and mules reared in the area found ready buyers in eastern markets. By 1900 the county had become one of the great mule centers of the state. This eminence was continued until the decline of mule raising after the First World War. The county was among the first five counties of the state in horse and mule production in 1910, 1920, and 1930.

Agricultural activity of the last century suffered from

---

98 United States Bureau of the Census, Census of Agriculture, 1900, 1910.
the same cultural and natural impediments as it has in more recent times. Economic fluctuations wrought by panic and war exacted their toll. Natural debacles of drought and insect visitation offered setbacks. Insufficient summer rains several times virtually destroyed the corn crop. Perhaps the greatest agricultural blow over the years was the complete devastation of the county by grasshoppers in 1875. Visitations by these insects are not too common in the area, serious depredations being manifested only about every twenty years. Oddly enough, a bad grasshopper year is often followed by another, unless late spring cold spells destroy the larvae. The summer of 1954 was marked by serious crop damage from grasshoppers, and at the present time another bad growing season is expected.

Assessment figures for Johnson County by decades are given in Table V. These include land values exclusive of town lots, personal property values, and a total of the two. The personal property figures chiefly involve livestock and agricultural equipment, particularly until about 1930. As can be easily seen, the fluctuations in valuation may be correlated with progress and retrogression of the American economy through the years.

100 Aggregate Abstracts, Johnson County Clerk's Office, Warrensburg, Missouri.
## TABLE V

<table>
<thead>
<tr>
<th>YEAR</th>
<th>LAND VALUATION</th>
<th>PERSONAL PROPERTY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1867</td>
<td>$3,079,361</td>
<td>$1,293,883</td>
<td>$4,373,244</td>
</tr>
<tr>
<td>1870</td>
<td>6,071,342</td>
<td>1,808,257</td>
<td>7,879,599</td>
</tr>
<tr>
<td>1880</td>
<td>4,653,880</td>
<td>2,101,243</td>
<td>6,755,123</td>
</tr>
<tr>
<td>1890</td>
<td>5,807,590</td>
<td>2,083,535</td>
<td>7,891,125</td>
</tr>
<tr>
<td>1900</td>
<td>6,624,770</td>
<td>2,348,485</td>
<td>8,973,255</td>
</tr>
<tr>
<td>1910</td>
<td>8,118,155</td>
<td>3,672,618</td>
<td>11,790,773</td>
</tr>
<tr>
<td>1920</td>
<td>9,337,040</td>
<td>5,978,177</td>
<td>17,753,917</td>
</tr>
<tr>
<td>1930</td>
<td>25,870,933</td>
<td>6,703,668</td>
<td>32,574,601</td>
</tr>
<tr>
<td>1940</td>
<td>18,864,785</td>
<td>3,634,768</td>
<td>22,499,553</td>
</tr>
<tr>
<td>1950</td>
<td>19,064,505</td>
<td>7,059,551</td>
<td>26,124,056</td>
</tr>
</tbody>
</table>

Assessment Figures for Johnson County

For many decades the agriculture of the county was directly determined by the pioneer conditions, even long after those conditions had disappeared. There was widespread soil waste, and continued cropping without rotation or any steps to maintain the soil. Of all the needs for a crop, land was the cheapest and easiest thing to obtain. Even when land became scarcer and more dear, the wasteful practices of early days were continued for many years. It was about 1895 before there was an adaptation and transformation to the systematic methods of a new era of agriculture.¹⁰¹

Agricultural fairs have never developed to the degree attained in many other parts of the Middle West. The

---

¹⁰¹Cockrell, op. cit., p. 346.
first fair was held in 1857\textsuperscript{102} at Warrensburg, and except for the War years, operated until 1868. Twenty acres had been acquired by the agricultural association, and it was an increased expenditure to improve the fair that caused its collapse after the Civil War.\textsuperscript{103} Subsequently, in the late 1870's new grounds were secured north of town,\textsuperscript{104} then moved to an area south of town, operating in desultory fashion until just before the First World War. Since that time fairs held in the county have been largely street fairs, no permanent grounds existing.

Other Productive Enterprise

Early activities outside the realm of agriculture included coal mining, quarrying, brick manufactures, flour mills, woolen mills, machine shops, an iron foundry, breweries, and wagon factories.\textsuperscript{105}

Although there had been a little local stripping of thin seams of coal long before the Civil War, the larger and deeper seams were not discovered and developed until about 1863. This was at first confined to the Clear Fork area. The first shaft was sunk by the Pacific Railroad Coal

\textsuperscript{102}Ibid., p. 212.

\textsuperscript{103}The History of Johnson County, op. cit., p. 426.

\textsuperscript{104}Warrensburg Journal, Warrensburg, Missouri, 1875-1876.

\textsuperscript{105}Handbook of Missouri, op. cit.
Company in 1866. A change of management lost the railroad its patronage and after five years this mining company ceased to operate. The largest operation in the county was carried on by the Montserrat Coal Company starting in 1875. This was the golden era of coal mining in the area, as for several years this company had an output averaging 400 tons a day.

The first commercial quarrying of the Warrensburg sandstone (see section on minerals) was in 1871, though a quarry site had been open to use by the public for many years. At one time three quarries were operating simultaneously, and the size of the operation is well shown by the fact that the largest one shipped 900 cars of stone in 1874. Peak mining and quarrying activity was contemporary with the period of maximum population of the county.

A few interesting facts about some other industries will suffice. The flour mills of Warrensburg produced several hundred barrels a day in the 1880's. Their product was shipped to many distant places. The woolen mill was founded in 1867, and by 1880 filled orders as far away as California. During peak operation the mills

106 The History of Johnson County, Missouri, op. cit., p. 505.
107 Ibid.
108 Star-Journal, Warrensburg, Missouri, 1881.
109 Ibid.
produced 200 yards of finished goods a day. The only other exporting industry of note was the foundry at Warrensburg, which supplied agricultural implements to Kansas and Iowa. The Warrensburg brewery did an extensive business until 1873, when the plant was burned to the ground by temperance workers.

**Early Travel**

It was only natural that early routes from Johnson County trended to the north or south, connecting points on the Missouri and Osage rivers. Then too, the Boone's Lick road running north of the Missouri, and the Santa Fe trail that followed several routes west to Independence after crossing the river at Franklin played strong roles in the gravitation of trade in a northerly direction. There is reference to a passway through the county from east to west in the earliest pioneer days, but no details concerning it are available. East-west roads were not significant until the Pacific railroad began to push westward, and road connections with the Santa Fe trail moved across the county.

Until the coming of the railroads, there was a minimum of industrial and commercial expansion in Johnson County. Horseback, wagon, and stage travel furnished the only

---

110 Produced 2,000 barrels of beer annually.

connections with markets, chiefly located in the Missouri corridor. Wagon transportation of goods in Missouri cost almost 30 times as much as river transportation in 1818.\textsuperscript{112} Although this disparity was lessened as roads were improved, it was a long time before counties along the river were threatened by competition from those inland.

**Early Roads**

There were at least two much-used Indian trails through the county before the coming of the settlers.\textsuperscript{113} One ran from the Osage River in a slightly northwesterly direction across the county to the Missouri River near the vicinity of Lexington. This narrow trail passed through the present site of Warrensburg. Before the county was separated from Lafayette a road paralleled this route, connecting Warsaw on the Osage with Lexington on the Missouri. Another Indian trail passed through the southwestern part of the county, early referred to as the Shawnee Trail from a mound of that name in Henry County to the South. The early Clinton to Independence road followed this trail.

By early road legislation in Missouri, all roads and highways that were laid out by order of a court were

\textsuperscript{112} Shoemaker, op. cit., p. 603.

declared public roads. Twelve or more householders might petition for a public road and the court would appoint commissioners to survey the route.\textsuperscript{114} Justices of the Peace, appointed by the courts, were in charge of the road districts. A road tax was provided in the laws of 1835, not to exceed one-half of the state tax chargeable on the property. An additional road tax was applied to licenses - not to exceed ten per cent. All males between 16 and 45 years of age were liable for road service. An individual could discharge the road tax by working under an overseer at the rate of 75 cents a day - later increased to $1.00 a day. There was also a road tax on town real estate in unincorporated places equal to one-half the county tax on the property. On request, citizens had to supply plows, wagons or other implements to work the roads.\textsuperscript{115}

By 1837 three roads had been laid out by the County Court.\textsuperscript{116} The first ran north from Old Town in Warrensburg to the Lafayette County line and on to Lexington. It crossed the Blackwater River at the Grindstone ford, there being no ferry across that river until 1868.\textsuperscript{117} Another ran

\textsuperscript{114} Shoemaker, \textit{op. cit.}, p. 591.

\textsuperscript{115} Ibid., p. 592.

\textsuperscript{116} County Court Record, Warrensburg, Missouri, Five Volumes, 1835-1846.

\textsuperscript{117} The History of Johnson County, Missouri, \textit{op. cit.}, p. 278.
from the county line to the northwest through Warrensburg and south to Clinton, while the third extended from the county seat northeastward to the line between Johnson and Saline counties, thence on to Jonesboro. By 1850 there were several other less-used roads criss-crossing the area.¹¹⁸

There was little systematic improvement of the roads until after the Civil War. It is interesting to note the public transportation available before the war. In 1860 there was a daily stage from Warrensburg to Tipton, another daily to Independence, and one tri-weekly to Lexington.¹¹⁹

Improvement after 1865 fell into five distinct classes:¹²⁰ (1) leveling and widening; (2) straightening and squaring; (3) steel bridges; (4) concrete culverts; and (5) county grades. It appears that the rapid strides made may be tied in with railroad construction and the increase in grain production. The farmers had to wagon their grain to key points along the railroad, and were only able to do this during the summer or when the ground was frozen in winter. Towns were interested in good rural roads as well as the farmers, for improved roads meant more trips to town and consequently more trade. By 1900 Johnson County had

¹¹⁸Cockrell, op. cit., p. 80.


¹²⁰Cockrell, op. cit., p. 81.
made remarkable progress in their road program. Several impartial writings comment on the generally good condition of the major routes across the county. The road from Warrensburg south to Clinton was cited in 1892 as being one of the best roads in the western part of the state. 121 Reference was also made to the number and excellence of the bridges, particularly those of steel. 122 This progress was carried on into the twentieth century, for in 1918 there were 583 steel bridges and 997 concrete culverts scattered throughout the county (Plates XXI and XXII). 123 Most of the steel bridges constructed during the late 1800's and early 1900's were of the braced girder variety. Some of the smaller bridges have a simpler distribution of girders, but arch or suspension bridges were not necessary in the county.

As noted in another section, the rectangular method of survey was chiefly responsible for the rural road pattern of squares. The fairly level terrain of Johnson County allowed the creation of such a pattern. In rougher foothill parts of the Ozark section the roads became more winding even though the same survey was applied. The rural roads of the county trend generally in an east-west or north-south direction in a checkerboard fashion, with

121Road and Handbook of the Missouri Division of Wheelmen (St. Louis, Kansas City and Columbia: 1892), 3rd edition.

122Encyclopaedia of the History of Missouri, op. cit.

123Cockrell, op. cit., p. 83.
Plate XXI

Bridges Over the North Fork of Blackwater River

Plate XXII
intersections occurring at intervals of a mile. (See Road Map in folder.) It is only in several rough sections that this pattern is extensively changed. This sort of pattern gives excellent accessibility to all parts of the county, usually by the most direct route. Grading and gravelling improvements came relatively early, even before the boom in automobile and truck travel. There seems no reason to doubt that by 1917 the general road system of the county was one of the best in the state.\footnote{Ibid.}

Coming of the Railroads

The changing agricultural economy, the development of commerce and industry, the boom in roads and the clustering of the population, are all inseparably interrelated with the coming of the railroads. The railroads were the first economical and competent means of sending grain out of the county to market. It follows that the complete dependence of the county on livestock was ended. Much earlier an animal economy had changed the pioneer subsistence farmer into a grain and livestock producer. Now the railroad made it possible for the county to shift from a dominant livestock economy to an important position commercially in both grain and livestock.
The railroads also brought about the appearance of the grain elevator, making it a conspicuous feature of the landscape. The need for the collection and temporary storage of grain quickly arose after transportation to market was provided. The elevator was the response to this need. In the case of several of the villages that sprang up along the railroads, the elevator had much to do with their growth. As previously indicated, the elevator spurred on the development of rural roads in the immediate vicinity.

The first construction on a railroad in Missouri commenced July 4, 1851, on the Pacific at St. Louis.\(^{125}\) This rather premature start on its projection westward to Kansas City was inspired by the hope that the national government would select St. Louis as the eastern terminus of the contemplated transcontinental railroad.\(^{126}\) Progress was exceedingly slow, only five miles of the line being completed after two and one-half years of work.\(^{127}\) This is best considered by noting that by 1900 five miles of road could be laid in a single day under favorable conditions.\(^{128}\)

\(^{125}\) Shoemaker, op. cit., p. 761.

\(^{126}\) Margaret Louisa Fitzsimmons, "Missouri Railroads during the Civil War and Reconstruction," Missouri Historical Review (1902), XXXV, No. 2, 1.


\(^{128}\) Ibid.
In 1852, Congress granted land to the state of Missouri to be used in aiding railroad construction, appropriating "every alternate section of land designated by even numbers, for six sections in width on each side of the road."\textsuperscript{129} There was provision for substitution if pre-emption of the land involved had taken place. The Pacific railroad was strictly a Missouri enterprise,\textsuperscript{130} there being little support from eastern capitalists.\textsuperscript{131} The road was almost entirely built with funds from local investors and state and county aid. The railroad only received 125,000 acres from the government, a small endowment when compared with other roads.\textsuperscript{132} Also, the land had been well-picked over and brought lower prices.

It was known as early as the summer of 1854 where the route for the Pacific railroad would be through Johnson County.\textsuperscript{133} An alternate and slightly shorter route was considered just south of the Missouri River,\textsuperscript{134} and

\textsuperscript{129} Shoemaker, op. cit., p. 752.
\textsuperscript{131} Shoemaker, op. cit., p. 762.
\textsuperscript{132} Ibid.
\textsuperscript{133} Jefferson City Inquirer, Jefferson City, Missouri, August 19, 1854.
\textsuperscript{134} Now mainly a freight branch from Jefferson City to Kansas City.
considerable pressure was brought to bear in the legislature by local citizens to secure a southerly route through the county. An inducement was certainly the local aid to the railroad, which reached a total of $260,000, of which Warrensburg township gave $100,000 and Madison township $60,000.\(^{135}\)

The railroad was certainly unique in that it was built in stages, with some time elapsing between each one. Too, the road was immediately placed into operation, and several terminals became important almost overnight. One might say that the terminal of an actively operated railroad followed the construction gang across the state.\(^{136}\) The line reached Warrensburg in 1864, and after a year's inaction, pressed westward to Kansas City by the fall of 1865.

The gauge of this railroad was five and one-half feet.\(^{137}\) This compares with the four feet, eight and one-half inches of standard gauge today. Rails weighing 50 pounds to the yard were used, whereas it is common now to use rails weighing over 100 pounds to the yard.\(^{138}\)

The next railroad built in the county was a sort of

---


136 Cockrell, *op. cit.*., p. 103.

137 Fitzsimmons, "Railroad Development in Missouri," p. 57.

"orphan" branch from Holden southwest to Paola, Kansas.\textsuperscript{139} This was called the St. Louis and Santa Fe railroad, and was operated for a time by the Pacific road after its completion in 1873.\textsuperscript{140} In 1895 this line was projected eastward to unite with the main line of the Katy railroad in Pettis County. It then became a part of the Missouri, Kansas, and Texas system.\textsuperscript{141}

Like most areas of the West, Johnson County underwent an epidemic of railroad projects.\textsuperscript{142} An abortive attempt was made as early as 1870 to construct a road from Warrensburg north to Marshall.\textsuperscript{143} The county voted one hundred thousand dollars for the project. Before the rest of the money needed was subscribed, grading was pushed for a distance of 13 miles.\textsuperscript{144} The funds could not be raised and work was abandoned, with a total loss to the county and subscribers.

Two more railroads added lines through the county.


\textsuperscript{140}Ibid.

\textsuperscript{141}Masterson, \textit{op. cit.}, p. 262.

\textsuperscript{142}Cockrell, \textit{op. cit.}, p. 105.

\textsuperscript{143}Jefferson City People's Tribune, Jefferson City, Missouri, November 23, 1870. The article refers to the line as the Warrensburg, Blackwater and Marshall railroad.

\textsuperscript{144}The History of Johnson County, Missouri, \textit{op. cit.}, p. 276.
The St. Louis and San Francisco railroad built through the southwestern part of the county in 1886; and the Rock Island built from east to west through the southern part in 1906. This made four railroad lines in the county. No less than ten of the fifteen townships are intersected by one or more railroads, and none of the other five is more than five miles away. (See Figure 3).
CHAPTER IV

RECENT ECONOMY AND LAND USE

Morphological changes in landscape have been significant in Johnson County. Over the years the landscape has experienced significant changes, while there have appeared alterations in land use, institutions, ideas, technologies, and the general cultural pattern. Although changes are ceaselessly occurring in all landscapes, whether large or small, the degree of change is subject to wide variation. The alterations in Johnson County have been quite profound, considering its general homogeneity as compared with other areas. Perhaps the present economy is only a stage in a long-time transition to some other land use. It cannot be said with certainty that the dominant crop will be corn after another half century of occupancy. It is only logical to expect changes in the future as in the past.

Present Landscape

The woodlands of today are much reduced in area, and consist of second- and third-growth timber. Even so, the impression of the landscape at a distance is one distinguished by many trees. This is due to the blending and coalescing of small stands of trees on a landscape of small relief. However, the deception is destroyed by most immediate views of the countryside or by views from the
air (Plate XXIII). Except for the remaining stands of timber along the major streams, the trees are mainly limited to patches around individual farmsteads, scattered growths along small drains, and some remnants of the hedge growth so well-developed some years ago. Though most of the older farms have their windbreak of trees, newer buildings may be in treeless areas, sometimes with no attempt visible to duplicate the growth of yesteryear.

The appearance of the farmstead has undergone other significant changes. The once prevalent windmill for
pumping water and generating electricity is rapidly disappearing (Plate XXIV); rural electrification has made this possible. The old horse barn is virtually extinct, or has been converted to some other use, a functional change involving the feeding or housing of dairy or beef cattle. Although the hay mow is still in use, the preponderant use of baled feeds leaves much space once filled with loose straw and hay. (See Plates XXV and XXVI).

However, the most significant change in recent times has been the complete alteration of the farm layout. This change has involved the fields as well as the buildings. The latter were formerly indiscriminately placed, being located in certain fields at considerable distance from each other and the farmhouse. There was little attention
Plate XXV

Plate XXVI

Representative Barns in Northern Johnson County
paid to location in connection with fencing. The awkwardness of opening many gates and covering considerable distances made many farm chores excessively laborious and time-consuming. The modern movement is toward a closer and planned arrangement of the buildings, which places them conveniently around a farm court to improve accessibility. In addition, a lane to all the fields is provided, and all steps are taken to make for the easy movement of machines and animals (Figs. 24 and 25). Fields are arranged and divided to give attention to slope, soil type, and drainage.

The once familiar straw stack is a thing of the past. Combines have replaced the old threshing machine, and harvesting and threshing are accomplished in one field operation. Power machine changes have been responsible for the increase in the size of fields. Many hog houses are now a conspicuous feature of the landscape. Sometimes these are portable, and are moved from place to place depending on the need for fertilization. The corn crib still plays an important role in the farm economy, and in the dominant feeding areas may have a large capacity.

Some new buildings having special use have appeared in recent times. Many farms have a machine shed or shop, although not so conspicuously a feature of the landscape as to the north in Lafayette County or some other parts of the state (Plates XXVII and XXVIII).\(^1\) Sometimes many tools

\(^1\)Particularly in German-settled sections, where much time and effort is devoted to the care and housing of farm equipment.
Fig. 24. Common Farm Layout of Former Times

1. House 4. Corn Crib
2. Barn 5. Hog House
3. Cattle Shed 6. Poultry House

Fig. 25. Modern Farm Layout

2. Barn 5. Corn Crib 8. Silo
Plate XXVII. Machine Shed and Barn

Plate XXVIII. Landscape in Columbus Township
Plate XXX. Gasoline Pump in Farmyard

Plate XXXI. Modern Poultry House
are found on an individual farm, including even welding equipment, portable pumps, and powered shop tools. A shed may provide space for the housing of tractor fuel and oil, and occasionally a gasoline pump (Plate XXX) may be seen. Almost every farm now has a poultry house (Plate XXXI), and some are of large size with electric lights and provision for heating. Silos are fairly common, but not as numerous as in the Corn Belt (Plate XXXII).

The silo appeared in the United States by 1875, but was not used in Johnson County until much later. It
developed first in areas with an emphasis on dairying, but was a familiar sight in many parts of the Corn Belt by the early twentieth century. The era of silo building in Johnson County followed the First World War, when the good times of the 1920's produced much new farm construction. Since the crash of 1929, few conventional silos have been built, provisions for grain storage now trending to the pit or trench silo.

The square, two-storied frame farmhouse of a generation or two ago has also undergone changes. Many have been replaced or measurably altered. There is little need today for the space required in former years. The smaller farm families, disappearance of hired hands, and increased heating costs have contributed to the shrinking size of the farm home. New homes are modern, usually of one story, and generally lack the cubage of the old farmhouse. The remodeling and adding of modern conveniences to the older houses has made many of the Johnson County farm homes the equal of the average urban dwelling.

The changing cultural landscape has been accompanied by changes in the human element. The farmer has been an integral part of the landscape alteration. He understands and heeds a host of factors once unknown or unnoticed. By and large, a progressively more scientific farmer has been the end result. The agriculturist of today has often had special training in the theory and practice of his specialty.
He knows and respects the soil; and he tests and treats it to bring about peak productivity. His knowledge of the breeding and treatment of animals has increased enormously, and his livestock program is usually aligned with fluctuating market prices and the multitude of economic factors involved. He seeks the aid and counsel of various local and national agencies, and may take advantage of extension classes, farm demonstration programs and other aids for improvement. Truly, the farmer is as dynamic as the landscape.

Changes in the countryside are not limited to the farmstead. Most of the rural roads are now gravelled and all-weather. Everywhere the electric and telephone lines extend along the roadway, attesting to the activity of the Rural Electrification Authority and the consolidation and expansion of the telephone services (Plate XXXIII). The universality of the lightning rod of yesterday has been in most cases supplanted by a more conspicuous feature - the television aerial. Most of the small rural schools that formerly dotted the Johnson County landscape have either disappeared or stand idle and deserted (Plate XXXIV). The school consolidation program of the last few years has posed large-scale transportation problems, and everywhere the school bus looms large on the horizon.

Here and there appear old scars of one-time mining activity. Also, more recent sporadic stripping has left
Plate XXXIII. Typical Rural Electric Substation

Plate XXXIV. Abandoned School with Dismantled Stove in Left Foreground
its blemishes on the landscape - particularly in the southeast. However, the general impression is one of a high degree of land utilization, being over 85 per cent. The pattern of farm distribution is fairly dense and uniform, lacking the great variation in size of farms occurring in some parts of the Middle West.

Agriculture

In general, Johnson County is located in the broad Corn and Winter Wheat Belt,\(^2\) with an agricultural system much like the Corn Belt, but with a greater emphasis on wheat and pasturage. On the basis of dominant types of farm organization and enterprise, it falls into a large Northern and Western Meat production region of Missouri.\(^3\) For production planning purposes, state economic areas have been set up, and Johnson County falls into a Western Grain region that includes eleven counties (Fig. 26). This division concurs with the functional grouping of the Bureau of the Census in dividing the 48 states into 201 economic areas. The Bureau's procedure in grouping requires that the counties in an economic area have similar agricultural,


MISSOURI

TYPE OF FARMING AREAS
(REVISED 1943)
FOR
PRODUCTION PLANNING

LEGEND
I Northwest Meat Production
II Northeast Meat Production
III Sub-urban
IV Missouri-Mississippi Ozark Border
V Ozark Highland Meat Production
VI Western Grain
VII Southwest Dairy, Fruit, and Poultry
VIII Ozark Plateau Dairy
IX Delta Border Livestock and Cash Crops
X Delta Cotton and Corn

DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF MISSOURI
demographic, climatic, physiographic and cultural characteristics.\(^4\)

In 1950 there were 3,165 persons employed in agriculture, out of a total working force of 7,896 persons.\(^5\) This represented 40 per cent of the employed population. However, the proportion of rural and urban population shows an interesting comparison. The true farming population accounts for 53.5 per cent of the total, rural non-farm residents for 19.9 per cent, while urban non-farm persons make up only 26.6 per cent of the total population. Only 19.5 per cent of the farms in the county are tenant-operated.

Agricultural Land Use

Ninety per cent of the total area of Johnson County is in farms (Fig. 27) and only 5,310 acres of 8.3 square miles can be classed as non-farm land. Crop land comprises slightly over 50 per cent of the county's area, with open pasture accounting for 25 per cent and the remainder in woodland, open-pastured woodland and farm wasteland. The high proportion of crop land shows the considerable area of level and fertile land, while the large pasture area reflects the diminished woodlands and the areas of rougher relief.


Fig. 27

Graph of Land Use in Johnson County
(data from the U. S. Census of Agriculture, 1950.)
and infertile soils. The open character of many woodland areas permits the favorable growth of grasses and other plants of forage value. The greatest proportion of land not usable for crops is found in the east-central part of the county, where a population of only 508 persons in Montserrat township can be related to the rough terrain and greater areas of woodland (Fig. 28).

Crop land in the county ranges from over 60 per cent of the total area to less than 40 per cent. In all of the southwestern quarter of the county the crop land comprises over 55 per cent of the land area, while the southeastern quarter has less than 50 per cent of land suitable for crops. The island of low percentage of crop land represented by Columbus township in the north shows the large area of woodland and greater relief found there. This is the area that contained lands most desired by the early settlers who were seeking timbered lands. The poorer portions in the eastern part of the county formerly included the great mineral exploitation, and today include the more than 6000 acres devoted to the Knob Noster State Park and the Sedalia Air Force Base. It may be concluded then, that the relative unevenness in the distribution of crop land is due to the fact that the rugged areas, although containing the major streams, have a very small proportion of land in alluvial bottoms, which might balance out the picture if they were extensive in area.
CROP LAND, 1950  PER CENT OF TOTAL AREA

OVER 60  50-55  40-45
55-60  45-50  BELOW 40

Fig. 28 - Crop Land, 1950, Per Cent of Farm Land (data from U. S. Census of Agriculture, 1950).
The amount of land devoted to pasture in the county does not entirely show the character of the land. (See Fig. 29). A general correlation of pasture lands with the quality of the terrain cannot be obtained. There is little doubt that the type of farming prevalent to an area is a prominent determinant. Livestock farming causes some of the better soil areas to be devoted to pasture rather than crop production. In other instances, the greater part of the pasture is on land unsuitable for crop growing. A good part of this is permanent pasture and is not used at any time for crop production.

Warrensburg township and adjacent townships to the north, east, and west have the greatest part of the land given over to pasture. This area contains a large proportion of land exploited by urban dwellers, and the figures for 1950 reflect the high prices for cattle at that time. Premiums were paid for pasture land, and cattle buying was at a peak. The northwestern part of the county also shows a high percentage of land in pasture. Excessive erosion in that area has put land into pasture that was formerly used for crop growing.

The percentage of land in farm woodland varies from 11.5 per cent in Warrensburg township to over 32 per cent in the adjacent township to the east. Almost two-thirds of this land is pastured, although the woodlands provide a
Fig. 29 - Land in Pasture, 1950, Per Cent of Farm Land
(data from U. S. Census of Agriculture, 1950).
poor forage area. Most of this is established forest land, providing some forage growth because of its open character. Some is cut-over forest land or former crop land reverting to its original condition. Grasses and herbaceous growth in such areas generally furnish better pasturage than the established woodland.

Farm woodland is more extensive in Montserrat, Washington, Simpson, and Columbus townships (Fig. 30). In general, the highest percentages are directly proportional to the more-rugged areas that originally contained the greatest amount of forested land. The central townships across the county west of Montserrat township contain the lowest percentage of farm woodland. Because of the relatively better land for farming, less of the original woodlands remain uncleared.

Character of Farms

According to the United States Census of Agriculture for 1950, there were 2,833 farms in the county. They embraced 476,791 acres, or 89.6 per cent of the total land area. The local figures of the Agricultural Stabilization and Conservation office of the United States Department of Agriculture has the farm acreage listed at 510,775 acres,

---

6 The area of the county is 831 square miles, or 531,840 acres.
Fig. 30 - Farm Woodland, 1950, Per Cent of Farm Land
(data from U. S. Census of Agriculture).
or an astounding 96 per cent of the total area. This compares with 79.3 per cent for the state of Missouri.

The average size of a farm in the state is 152.7 acres, while in Johnson County the average farm size is 168.3 acres. The Census of Agriculture reports farm sizes in the county ranging from 16 farms of less than 3 acres to 10 farms of over 1000 acres. In the Census categories of size ranging from thirty or forty-acre differentials, there are approximately 400 farms in each group from the 70 to 99 acre category up to the 250 to 499 acre grouping.

This typical Johnson County farm of 168 acres has a pattern that is squarish or rectangular in shape. Any deviations from this shape tend to be geometric with straight lines and right angles. The farm pattern would necessarily follow the road pattern (see Map in folder) of straight lines created by the rectangular survey. Fencing with barbed wire is quite complete, although vestiges of hedge still remain (Plates XIX and XX). Most of the fields tend to be rectangular in shape, and vary greatly in size. County roads are almost invariably found on at least one side of the farm, usually with the buildings quite close to the road. The undulations of terrain produce some poorly drained areas on many farms, that pose problems in years of excessive rainfall. Farm ponds have rapidly increased in number (Plates VII, VIII and IX), sometimes utilizing the natural terrain, but often placed indiscriminately with
respect to the relief of the land.

The older houses on Johnson County farms are usually square or rectangular with two stories. Practically all are of wood construction painted white. The most common type is rectangular, sometimes without windows on the narrow ends, and with a lean-to porch (Plate XXXV). Usually this type has had an addition built on at the back, and various modernizing effects are seen (Plate XXXVI). As noted before, the houses built in the last thirty or forty years are smaller, being single-storied of no particular design, but still largely constructed of wood (Plate XXXVII).

These squarish or rectangular houses were not particularly copies of New England, Dutch, or southern Atlantic types. This simple rectangular construction had appeared in many eastern areas of the United States, and seems to have been a natural development from the log house, where the materials at hand determined the design of the house. Then, too, the rectangular house was the simplest to construct, and was usually planned around the chimneys.7 Most of these simple two-storied houses in western Missouri had either one central chimney, or two—one at each end.

---

Plate XXXV - Representative Old House west of Warrensburg

Plate XXXVI - Similar Type with Addition at the back
By the 1890's these simple houses began to be decorated with much ornate but cheap decorative work over the porches and around the eaves, this gingerbread being characteristic of the period surrounding the turn of the century. The twentieth century building has been of various designs, tending to be of one story and of differing floor layouts.

There are 4,946 dwelling units in the county, and rural farm dwellings number 3,143, or 63.5 per cent of the total. Only 66 per cent of the non-farm homes are owner occupied, whereas the farm dwellings are 73.9 per cent owner occupied. The average farm home contains six to nine

---

rooms, and only 14.5 per cent of them have central heating. Most of the houses are heated by large coal or oil burning stoves, although for cooking the most used fuel is bottled gas. In 1950 three-fourths of the homes had electricity, which shows the great recent gains in rural electrification, as in 1945 less than one-fourth of the rural dwellings were served with electricity. At the same time, only 22 per cent of the farms had running water, 63.6 per cent had telephones, 93.5 per cent had radios, and 72.4 per cent had automobiles. At the present writing, agricultural census figures are not yet available for 1955, but from personal observation it appears that over half of the farms now have television. These modern conveniences are found in greater numbers in Johnson County than in the state as a whole.

The farm family of the county was slightly smaller than the average for the state or nation at the last census. The average for the United States was 4.02 persons per family. Johnson County had an average of 3.93 persons per family.

The farmhouses and buildings of Johnson County are not as pretentious, well-painted, or generally as well-cared-for as farmsteads through the Corn Belt. This is a natural manifestation when the county is compared with

---

leading agricultural counties of the United States. The
value of all farm products sold in the 100 leading agri-
cultural counties of the nation ranged from $156,962,336
down to $22,238,986 in 1950. That same year, the total
value of farm products sold in Johnson County was
$10,717,000. Although many of these leading agricultural
counties of the United States produced special fruit or
vegetable crops, some 40 per cent of them have grain or
animal economies that may be compared with Johnson County.

Types of Farming

If types of farming are considered from the stand-
point of direct income from a particular product, Johnson
County is overwhelmingly a livestock area. Of the
$10,717,000 worth of products sold in 1950, $7,114,000 or
66.4 per cent of the income was from livestock. This did
not include dairy products. However, this does not give
a true picture of the basis of agricultural activity.

10The U. S. Census of Agriculture places a farm
into a certain category on the basis of whether over 50
per cent of the total farm income is derived from a certain
source. The nine sources of farm income used are fruit and
nuts, vegetables, horticultural specialties, field crops,
dairy products, poultry and poultry products, other live-
stock, forest products and general - i.e., where none of
the other eight sources of income accounted for as much as
50 per cent of the farm income.

10U. S. Bureau of the Census, Census of Agriculture,
Actually, practically all Johnson County farmers are grain farmers; the variations in the economy being associated with the eventual use or disposal of the grain. The chief intent of the average farmer in the county is to raise as much grain as economically as possible. To this end the various skills in the manipulation of machinery and techniques are applied. Usually the farmer is flexible enough to shift an emphasis on grain to a combination of grain and livestock production. This does not entail any great change in his agricultural activities, nor does the physical plant need much alteration. The techniques associated with livestock production, as well as the many economic facets allied to the livestock market, make a combination type of farming much more complex.

It is possible to distinguish three types of farms in Johnson County: the livestock, the cash-grain-livestock, and the cash-grain farms. The livestock farmer feeds all of his crop and may even buy grain locally or from afar to supplement the feeding program; the cash-grain-livestock farmer feeds a variable part of his grain to animals, and sells the remainder as a cash crop; while the cash-grain farmer may be selling virtually all his crop in the market, except for a small quantity fed to milch cows and poultry.

The latter type only constitutes a very small percentage (68 out of 2,833) of the farmers in the county, while the first two are rather equally divided in number.
County and federal officials concur in the belief that a combination program is probably best in the long run. A better soil conservation is likely to result, and the risks of market fluctuations are best met by spreading production over both fields, rather than depending on prices in the grain or livestock markets separately. At the present time, it is difficult to estimate the relative emphasis on livestock and cash-grain-livestock activity. The comparable ease of change from one emphasis to another always reflects the general agricultural character of the times, and the farmer is alert to the need of catching the most favorable market.

The cash-grain-livestock activity seems to be basic in the agricultural economy of Johnson County. It probably furnishes the greatest protection against financial loss, although a complete collapse of both grain and livestock markets as in the 1930's would bring ruin to the county. Although post-war years have brought general prosperity to the farmers of the county, it appears that a more generalized type of farming would bring a greater degree of stabilization. Supplementary incomes from fruit, vegetables, seed, poultry products, and dairy products have diminished in recent years. By way of example, in 1950 there were only 110 acres in orchards and vineyards in the county. Not so many years ago this was a supplementary income to almost every farmer in the area. The author has asked a number of farmers in various parts of the county
the reasons for the decline of this activity, and the answers are always associated with plant diseases and insect depredations. This seems to be true of most general farming regions in the United States, only specialized fruit growing sections being able to afford and take the time to combat present-day plant destruction by diseases and insects.

Crops Produced

A fairly wide variety of crops is grown in Johnson County, although great emphasis is placed on a limited number (Fig. 21). By acreages devoted, corn, hay crops, oats, and wheat are ascendent in that order. There are limited acreages devoted to sorghums, soybeans, barley, rye and other crops, but the four ranking ones mentioned above occupy over 60 per cent of all crop land, and more than one-third of the total farm land. They are the major crops involved in the rotation systems, and provide directly or indirectly the chief sources of income.

The seasonal activity of the Johnson County farmers is closely related to crop rotation plans. The growing season is characterized by sporadic intensity, the farming effect being geared to the times when soil and weather conditions are ideal for plowing, planting, cultivating and harvesting. With lighting equipment on tractors, activity may be prolonged many hours of the day during peak farming
Table VI
Representative Crop Rotation Plan
for a Johnson County Farm

<table>
<thead>
<tr>
<th>Field Number</th>
<th>1951</th>
<th>1952</th>
<th>1953</th>
<th>1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Corn</td>
<td>Oats</td>
<td>Wheat</td>
<td>Clover</td>
</tr>
<tr>
<td>2</td>
<td>Oats</td>
<td>Wheat</td>
<td>Clover</td>
<td>Corn</td>
</tr>
<tr>
<td>3</td>
<td>Wheat</td>
<td>Clover</td>
<td>Corn</td>
<td>Oats</td>
</tr>
<tr>
<td>4</td>
<td>Clover</td>
<td>Corn</td>
<td>Oats</td>
<td>Wheat</td>
</tr>
<tr>
<td>5</td>
<td>Permanent Pasture</td>
<td>Permanent Pasture</td>
<td>Permanent Pasture</td>
<td>Permanent Pasture</td>
</tr>
<tr>
<td>6</td>
<td>Rotation Pasture</td>
<td>Rotation Pasture</td>
<td>Rotation Pasture</td>
<td>Rotation Pasture</td>
</tr>
</tbody>
</table>

operations. Things are usually rather quiet from one step to another in the agricultural program. Modern grain farming is characterized by periods of great intensive effort interspersed with times of relative quietude.

Many farmers follow a four-year rotation plan of corn, oats, wheat, and clover. Where soy beans are grown, they usually replace the corn crop in the rotation plan. Sometimes the succession of crops may be corn for one or two years, wheat one or two years, hay for a similar period, followed by pasture. A representative crop rotation plan is shown in Table VI.

Corn is the most important field crop of the county. (See Table VII). It occupies 21 per cent of the crop land,
Table VII
LEADING FIELD CROPS OF JOHNSON COUNTY

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acreage</th>
<th>Percentage of crop land harvested</th>
<th>Value</th>
<th>Percentage of crop value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>56,800</td>
<td>31.2</td>
<td>$2,073,118</td>
<td>43.7</td>
</tr>
<tr>
<td>All hay crops</td>
<td>57,018</td>
<td>31.2</td>
<td>1,014,546</td>
<td>21.4</td>
</tr>
<tr>
<td>Lespedeza</td>
<td>35,929</td>
<td>19.7</td>
<td>611,470</td>
<td>12.9</td>
</tr>
<tr>
<td>Clover and timothy</td>
<td>12,875</td>
<td>7.09</td>
<td>253,532</td>
<td>5.35</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>3,508</td>
<td>1.92</td>
<td>149,544</td>
<td>3.15</td>
</tr>
<tr>
<td>Other hay</td>
<td>4,686</td>
<td>2.57</td>
<td>73,344</td>
<td>1.55</td>
</tr>
<tr>
<td>Oats</td>
<td>28,644</td>
<td>15.7</td>
<td>345,588</td>
<td>7.3</td>
</tr>
<tr>
<td>Wheat</td>
<td>23,761</td>
<td>13.06</td>
<td>625,474</td>
<td>13.2</td>
</tr>
<tr>
<td>Soy Beans</td>
<td>2,532</td>
<td>1.33</td>
<td>71,032</td>
<td>1.29</td>
</tr>
<tr>
<td>Sorghums</td>
<td>1,923</td>
<td>1.06</td>
<td>53,899</td>
<td>1.13</td>
</tr>
<tr>
<td>Barley</td>
<td>931</td>
<td>.51</td>
<td>16,758</td>
<td>.35</td>
</tr>
<tr>
<td>Rye</td>
<td>333</td>
<td>.18</td>
<td>4,436</td>
<td>.09</td>
</tr>
</tbody>
</table>

Computed from acreages and values listed by the Census of Agriculture, 1950.
or twice the acreage devoted to wheat, and slightly more than the acreage given over to all hay crops (Fig. 27). In 1954, 64,613 acres of land were planted in corn. In 1949 the average yield on 54,197 acres was 30 bushels an acre, but some years yields will probably average as high as 40 to 45 bushels an acre. Over the years, corn has remained the most versatile grain for farm consumption. It can be produced more easily than most other grains, and the marketing by way of livestock feeding simplifies the program. However, Johnson County is in an area of the state where there is the greatest variation in corn yields from year to year. 12

Corn production is rather well distributed over the county, perhaps showing a little concentration in the west and southwest (Fig. 31). The rougher and wooded terrain may be easily spotted on such a corn-distribution map, but the generally large acreage devoted to this crop in every township is the outstanding feature. The county was the thirteenth of the state in corn acreage, and twenty-third in production. 13


13Missouri State Department of Agriculture, Missouri Farm Census by Counties 1950, Jefferson City, Missouri.
Oats are second to corn among the grain crops, although less extensive in acreage than hay (Table VII). However, more land is given over to the growing of this grain than is used for wheat. Oats have only a little more than half the cash value of wheat, and only produce 7.3 per cent of the total field crop value. Oats are fairly well distributed over the townships (Fig. 32), with a belt of heavier production through the middle of the county, and lighter production in the east and west central portions. The county ranked fourth in acreage devoted to oats, and sixth in production in the state.

Johnson County has less acreage in wheat than the state average. Normally about 18 per cent of the cultivated area of the state is in wheat, whereas the county had only 13 per cent of the crop land in such use in 1950 (Table VII). However, wheat is the most important cash-grain in the county, and generally brings in well over half a million dollars direct income to the farmers. Wheat has a strong earning power in proportion to its use of land and labor in the rather diversified agriculture of
Fig. 32 - Distribution of Oats

Data from the Agricultural Stabilization and Conservation Office of the U. S. Department of Agriculture
the county. Further, wheat is intimately related to
the conservation of the soil. Wheat, rotated with hay as
a cover for the ground throughout the year, is considered
to allow only one-twentieth the erosion as continued
cropping of corn allows. The growth of wheat, then, is
couraged by its cash sale value, its ease of rotation,
and its protection of the land against soil erosion.

Wheat is generally rotated with lespedeza, the latter
being sown on wheat in winter or early spring. The les-
pedeza may be grazed, saved for a midsummer hay crop, or
a fall seed crop. The wheat is generally sown on the
prepared lespedeza sod in the fall. The hay crop, once
well-established, renews itself year after year; and the
system might be said to be a double-cropping arrangement.
Wheat acreage in the county ranges from the 500 acres devoted
to the crop in Montserrat township, to over 2,000 acres in
Rose Hill township (Fig. 33). The western and southwestern
parts of the county place greater emphasis on the

14 J. M. Poehlman, "Wheat in Missouri," Missouri
Agricultural Experiment Station Bulletin 532 (1949), p. 3.

15 Ibid., p. 9.
Fig. 33 - Distribution of Wheat

Data from the Agricultural and Stabilization Conservation Office of the U. S. Department of Agriculture
cultivation of the grain. Wheat yields range between 20 and 30 bushels per acre. The county was forty-fifth among counties of the state in wheat acreage, and thirty-fifth in the state in production.

In 1950, slightly more acreage was in hay crops than in corn (Table VII). However, the value of hay crops was only half that of corn, even though far ahead of other crops. Well over one-half (59 per cent) of the hay land was seeded to lespedeza, with clover and timothy mixtures next, and alfalfa a poor third. The latter is only found on the better soils of the Summit group.

The increased acreage given to lespedeza recently is worth noting. This plant was known only in its wild state until its cultivation in the United States. It was present in Georgia by 1850, but the circumstances of its actual introduction from Asia are unknown. By the early 1900's it had spread to Missouri, but its actual introduction by way of commercial seed did not occur in Missouri until 1922. The grass was first planted in Johnson County in 1929, and Korean lespedeza is the variety most used.

Lespedeza is important as a hay crop to the county because of several advantages. It is very valuable as pasture; it is easily established; it reseeds itself even after being pastured, cut for hay or seed; and it is a great

---

soil builder and protector. In addition, it will grow on poorer soil than alfalfa or clover, and is so readily adaptable to the combination with wheat. Lespedeza occupied 19 per cent of the crop land in 1949, clover and timothy 7 per cent, and alfalfa and other hay over 4 per cent. In rank among the hay-producing counties of the state, Johnson County was fourth in acreage and second in production.

Other crops grown in the county include soy beans, sorghum, barley, and rye. Of these, only the first two occupied more than one per cent of the crop land, or supplied more than one per cent of the value of crops. All four of the above-mentioned crops only aggregated slightly over three per cent of the total crop. At the present time, fruit and vegetable growing in the county is negligible.

A recent study on the Middle West shows that Johnson County lies in an area of dynamic change insofar as the usage of land is concerned. Between 1939 and 1949, this changing trend is shown by the following: corn, oats, wheat, and soybeans production gained eleven, six, three and two per cent, respectively; while hay, barley, flax, and sorghum production fell off, respectively, thirteen, four, three, and two per cent. Between the same years the percentage of


18 Ibid., p. 34.
total land area that was harvested crop land fell in a category that showed a decrease of from two to six per cent.\textsuperscript{19}

Another article by the same author\textsuperscript{20} shows that Johnson County is part of a corn, oats, hay, and wheat region that extended in 1949 from the Ozark borderlands northwestward up the Missouri River and well out into central Nebraska.\textsuperscript{21} The dynamic change is again brought out in connection with the crop combination patterns.

Animal Industry

The marketing of livestock forms the chief source of farm income in Johnson County. The total value of livestock on the farms in 1949 was $8,528,357, almost twice the value of all the field crops combined. Slightly over half of the farms (1,486) derive over one-half of their income from livestock, and are classified by the Agricultural Census as livestock farms. The remainder can be classified as dairy, poultry or general farms on this basis. In 1949 there were 293 general farms, 288 dairy farms, 145 poultry farms, and 68 grain farms. Total direct farm income that year was distributed as follows:\textsuperscript{22} $7,114,231 from

\begin{itemize}
\item \textsuperscript{19}Ibid., p. 5.
\item \textsuperscript{20}John C. Weaver, "Crop Combination Regions in the Middle West," \textit{Geographical Review}, XLIV, No. 2 (1954), p. 194.
\item \textsuperscript{21}Ibid., p. 200.
\item \textsuperscript{22}Census of Agriculture, 1950.
\end{itemize}
livestock, $1,396,109 from poultry, $1,224,661 from field crops, $969,276 from dairy products, and a very small amount from various horticultural products.

The income realized from the different livestock animals varies considerably from year to year, depending mainly on the weather conditions and fluctuations in market prices. In 1946 Johnson County fell in a group of counties in which 5 to 15 per cent of the farm income was from beef, whereas in northern counties of the state over 80 per cent came from beef cattle. At the same time, parts of Johnson County had as much as 50 per cent of the farm income from swine.

Hogs are the most numerous farm animals of the county. The total number of cattle is slightly greater, but swine are more numerous than either beef or dairy cattle. Farmers in all of the fifteen townships report income from the sale of hogs. In 1949 about 70 per cent of all the farms in the area reported income from the sale of swine. Hogs are relatively evenly distributed over the county, but are somewhat more numerous in the central part. Townships reported swine populations ranging from 1,521 in Montserrat township

---

23 Hammar, op. cit., p. 72.
to 4,929 in Centerview township (Fig. 34). There seems to be a correlation between the hogs purchased and the acreage given to corn production. There does not seem to be any other identifiable factor that might account for inequalities of production in different areas of the county.

Beef cattle sold in 1949 were second in numbers to hogs (55,529 to 63,483 respectively) and, considering their greater value per head, had almost six times the total value. Beef cattle are raised rather equally in all parts of the county, perhaps being more numerous in proportion to area in the western half (Fig. 35). In 1949, sale of cattle brought $7,114,231 to the farmer, this representing over two-thirds of his total income from farm products. The distribution of beef cattle corresponds rather closely with the distribution of corn acreage and sections where the ratio of pasture land to total area is high.

Dairy cattle are distributed throughout the county, but because of the lack of any large urban center, show no particular clustering related to the density of population. The single exception might be Warrensburg township, where the large number of dairy cattle can also be attributed to a larger area. By far the greatest concentration of

24 Figures 34 through 38 are based on U. S. Census of Agriculture unpublished work sheets. A dot map showing actual distribution of different animals was not feasible, as local agricultural agents were unable to furnish data or opinions valid enough to produce even a highly subjective pattern of distribution.
NUMBER OF SWINE BY TOWNSHIPS, 1950

Fig. 34
<table>
<thead>
<tr>
<th>Township</th>
<th>Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson</td>
<td>4</td>
</tr>
<tr>
<td>Columbus</td>
<td>3</td>
</tr>
<tr>
<td>Hazel Hill</td>
<td>2</td>
</tr>
<tr>
<td>Simpson</td>
<td>4</td>
</tr>
<tr>
<td>Grover</td>
<td>3</td>
</tr>
<tr>
<td>Kingsville</td>
<td>2</td>
</tr>
<tr>
<td>Madison</td>
<td>3</td>
</tr>
<tr>
<td>Centerview</td>
<td>4</td>
</tr>
<tr>
<td>Warrensburg</td>
<td>4</td>
</tr>
<tr>
<td>Montserrat</td>
<td>3</td>
</tr>
<tr>
<td>Washington</td>
<td>2</td>
</tr>
<tr>
<td>Rose Hill</td>
<td>4</td>
</tr>
<tr>
<td>Chilhowee</td>
<td>3</td>
</tr>
<tr>
<td>Post Oak</td>
<td>4</td>
</tr>
<tr>
<td>Jefferson</td>
<td>3</td>
</tr>
</tbody>
</table>

**NUMBER OF CATTLE BY TOWNSHIPS, 1950**

*Fig. 35*
dairying is in the four westernmost townships, which might be explained by way of their nearness to the Kansas City area (Fig. 36). Approximately nine per cent of the farm income of the county is from dairy products, bringing $969,276 to the farmers in 1949. Most of this income is from the sale of cream and whole milk, the number of farmers selling butter being negligible (Plates XXXVIII, XXXIV, XL and XLI).

Sheep are considerably less numerous than other livestock, the number on farms in 1949 being 27,544, valued at $488,368. Sheep are relatively unevenly distributed over the county, seemingly with no identifiable factor wholly responsible for the pattern (Fig. 37). The number of sheep in 1949 ranged from a low of 411 animals in Kingsville township, to a high of 2,724 in Post Oak township. It seems there might be some slight correspondence of distribution with degrees of erosion, the two above-mentioned areas falling into rather severe soil erosion classes. Again, there might be some correlation of sheep raising with poorer soil areas, but acreages of minor soil types are not available to prove the relationship. Certainly the low number of sheep in Kingsville and Madison townships reflects the larger acreage of field crops. There were 27,544 sheep in the county in 1949, and they contributed $488,368 to the farm income. This amounted to 4.6 per cent of the total farm income.
### Number of Dairy Cattle by Townships, 1950

**Figure 36**

<table>
<thead>
<tr>
<th>Township</th>
<th>Hundreds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson</td>
<td></td>
</tr>
<tr>
<td>Columbus</td>
<td></td>
</tr>
<tr>
<td>Hazel Hill</td>
<td></td>
</tr>
<tr>
<td>Simpson</td>
<td></td>
</tr>
<tr>
<td>Grover</td>
<td></td>
</tr>
<tr>
<td>Kingsville</td>
<td></td>
</tr>
<tr>
<td>Madison</td>
<td></td>
</tr>
<tr>
<td>Centerview</td>
<td></td>
</tr>
<tr>
<td>Warrensburg</td>
<td></td>
</tr>
<tr>
<td>Montserrat</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Rose Hill</td>
<td></td>
</tr>
<tr>
<td>Chilhowee</td>
<td></td>
</tr>
<tr>
<td>Post Oak</td>
<td></td>
</tr>
<tr>
<td>Jefferson</td>
<td></td>
</tr>
</tbody>
</table>
NUMBER OF SHEEP BY TOWNSHIPS, 1950

Fig. 37
Plate XXXVIII. Pretentious Farm Buildings in western Johnson County

Plate XXXIX. Common Highway Scene in western Johnson County
Plate XL. Dairy Barn and Milk House in Madison Township

Plate XLI. Corn Shocks in a Field in January
The number of horses and mules found in the county has steadily declined for many years. This follows the same trend as in the state of Missouri as a whole. The state has declined from a position of leadership in the nation in mule production; and Johnson County, once a mule center, had very few at the time of the last census. There were 8,251 mules and horses in the area in 1945, a number that decreased to 5,211 by 1950. Total value was only $156,330.

Poultry farming has been on the increase in the county for a number of years. All sections of the area have shared in this general enlargement (Fig. 38). Poultry and poultry products sold brought in $1,101,951 in 1944, while in 1949 they realized $1,396,109. This amounted to 13 per cent of all the farm income for that year. The general increase is largely due to the steady growth of turkey raising. With 68,212 turkeys sold in 1949, Johnson County ranked 96th among all counties of the nation. Poultry on farms in the area in that year ranged from 14,315 in Montserrat township to 33,307 in Warrentsburg township. There is less variation in the distribution of poultry throughout the county than in any other agricultural product.

Value of Farms and Buildings

The best index to land values is probably the amount

---

NUMBER OF POULTRY BY TOWNSHIPS, 1950

Fig. 38
of income possible from the land. It has been pointed out that in regions of high fertility one invariably finds low mortgage rates of interest.\textsuperscript{26} Using this as an index to values, Johnson County is in one of the lowest areas of the state as to mortgage rates. Similarly, an inverse relationship has been set up regarding the cents per $100 of assessed valuation involved in the tax structure. The county is one of the fourteen lowest counties in the state in the tax rate per $100 of the assessment. This reflects the relatively high land values in the area.

Land derives its value from two major sources: first, the inherent character of the land (the physical make-up), and second, its economic setting.\textsuperscript{27} Although both of these factors are relatively good for Johnson County, the second is probably more significant in enhancing land values in the area. Soil fertility does not equal that found in the glacial drift counties in the northern part of the state; but the position of the area athwart east-west communications lines, and the proximity to the Kansas City area balances the factors involved.

The average values of farm land and buildings vary widely within the area, more widely than do values of implements and machinery, and they probably better reflect

\textsuperscript{26}Hammar, \textit{op. cit.}, p. 47.

\textsuperscript{27}\textit{Ibid.}, p. 61.
the character and productivity of the land. The average value of land and buildings per farm was $7,534 in 1945, a figure that rose to $10,192 per farm by 1950. This represents an average value of land in the county of $44.67 per acre in 1945; and an average value per acre of $58.67 in 1950, which is less than the state average of $63.66 per acre for the same year. However, the average value per farm in the state was $9,776, or somewhat less than the value for the county.

The greatest land values are found in the central part of the county (Fig. 39). Very little correspondence can be demonstrated between soil types and the average value per farm. Summit-silt-loam areas all have a higher value than the other residual soils, but the economic setting seems to be a greater control of values. Farms have the greatest value in Centerview township, and the lowest value in Grover township.

The gross value of all farm products sold in 1949 was $10,716,812. This amounts to an average gross value of products per farm of $3,783, which tops the state average of just under $3,200. Although net income would be considerably less, it is interesting to compare this figure with the median income for all families in the county in 1950. This income came to $1,907 per family, and 63.7 per cent of all families had incomes under $2,000 per year.
Fig. 39

VALUE OF FARM LAND AND BUILDINGS AVERAGE PER FARM 1950

OVER $9200

$8200-9200

$7200-8200

$6200-7200

BELOW $6200

SCALE OF MILES
Farm Tenure

Unlike many areas of the Corn Belt, Johnson County has never had a high rate of farm tenancy. In some of the prime agricultural areas of the Middle West over 60 per cent of the farms may be tenant operated. In 1949 only 19.5 per cent of the farms in Johnson County were operated by tenants. Many of the counties in the northern part of the state show much higher rates of farm tenancy.

The general concept of a tenant farm is usually one involving a run-down appearance and general atmosphere of slovenliness. This is not necessarily true in Johnson County. The value of the land and the large necessary investment in farm equipment makes farming a big enough business to inspire considerable care in selection of farm operators. Often the tenant supplies the agricultural implements and machinery, and this instills a greater concern for the care of the land and income derived than would otherwise be the case. Where the land is productive enough to supply a reasonably good income to both owner and tenant, the practice of tenancy is inevitable. A small number of farms are operated by managers, but the farm manager system has never developed strongly here as it has in other parts of the middle west.

In Johnson County owner-tenant relationships are

similar to those practiced over a wide area. The share in the crop claimed by the landlord is subject to a number of variables. The general demand for rental land, the quality of the land and improvements, arrangements as to seed supply and other factors all play a part in the adjustment of shares. It is common in the county for the owner to receive about two-fifths of the corn crop, one-third of the oats crop, and one-half of the wheat crop— the tenant to deliver the grain to market or the owner's storage facilities.

There have been a number of decided trends in farm ownership during the last generation. These trends are state-wide, but are well-expressed in the county. Although the number of very small farms (10-20 acres) has been increasing, the total number of farms has been steadily declining. This means more owners of smaller farms, but fewer owners overall. Balancing somewhat this trend towards fewer farm owners is the decline in tenancy over the last four agricultural censuses. The result of these various developments is an increase in the average size of farms in the state and county, and a subsequent decline in the number of farm owners.

Conservation

The future agricultural wealth of Johnson County will be determined by policies of soil conservation practiced
by the farmers. No doubt these practices will be in direct proportion to the effectiveness of county, state, and federal conservation programs. As pointed out elsewhere (Fig. 9), a large amount of valuable soil has already been lost; and wasteful methods that were a pioneer heritage were carried over well into the twentieth century (Plates XLII and XLIII). Only in recent years have farmers given more than casual attention to soil science programs outlined by the exponents of modern agricultural science. It appears that most of the farmers of the county now realize the danger accruing from soil depletion, and are finally ready and willing to take steps to combat it.

The Johnson County Soil Conservation District is ten years old. Since its inception in 1944, the aid given by that federal agency to the farmers can hardly be measured. Certainly it has been invaluable during a decade when many economic factors have operated to stimulate over-exploitation of the soil. The local program is ably directed and administered by a group of experts. Altogether, nine full or part-time conservationists, engineers, and assistants are involved directly or indirectly with the local soil program. Farm conservation plans have been completed for 347 of the 2,833 farms in the county; and, by the summer of 1954, there were 593 farms cooperating in the soil conservation program. These conservation plans involve 109,726 acres, or 23 percent of the total farm land in the county. In addition, the
Plate XLII

Soil Erosion in the Northwestern Part of the County
Plate XLIII

Soil Erosion Work
local office has between 300 and 400 applications a year from farmers for aid, over and above the actual programs already in operation. The soil-mapping part of the soil conservation program has moved forward rapidly. At the present rate, it is estimated that the mapping of the county will be completed in about ten years.29

The conservation district in Johnson County is rather unique in that it works in concert with a program of watershed development. The county has one of the 63 watershed areas in the United States, the operations being confined to the east branch of the South Fork of Blackwater River.

The cumulative effort of the conservation agency is impressive. On the 347 farm plans operating, there are 20,993 acres of farming on the contour, 8,388 acres of new seeding and improvement of pasture, tree planting on 17,952 acres (mainly five miles of hedge row), wildlife area improvement on 263 acres, 901.5 miles of terracing, 20.7 miles of open drainage on 2,700 acres, 432 ponds, and waterway development on 835 acres. In addition, 129 soil saving structures have been completed. The watershed part of the federal program has proposed 31 dam constructions on 12,600 acres.

A representative plan for a Johnson County farm is shown in Table VIII. Such plans are accompanied by excellent

29In conversation with Smoky Irwin, Work Unit Conservationist for the 11th District.
Table VIII

PLAN FOR LAND USE, CROPPING SYSTEM, AND CONSERVATION PRACTICES
(for George W. Diemer farm west of Warrensburg)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop land - 62 Acres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fields 3, 9, 8 and 7 to be farmed to a 4 year rotation (1) corn (2) oats, lespedeza (3) wheat, red clover (4) red clover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>sudan oats, lespedeza</td>
<td>small grain, red clover</td>
<td>corn small grain, lespedeza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>15</td>
<td>corn-terr. in fall</td>
<td>small grain, lesp. terr.</td>
<td>small grain, red clover terr. 3/4 mi.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>18</td>
<td>oats, lespedeza</td>
<td>corn, contour</td>
<td>sm. grain, lespedeza red clover clover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>lespedeza</td>
<td>sm. grain, sweet cl.</td>
<td>under corn lespedeza grain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As soon as field 7 has an established outlet it should be terraced and included in rotation.

Terrace outlets should be established as soon as possible in fields 8 and 9.

Diversion terraces are needed in field 8 at head of large gullies.

All fields to be farmed on the contour with terraces.

<table>
<thead>
<tr>
<th>Hay land - 18 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Pasture land - 95 acres

Fields 2, 5, and 6 to remain in pasture. Field 2 to be seeded to fescue and ledino in 1952. Other fields should be treated as soon as possible.

It is recommended that all fertilizer and lime applications be made according to test.
descriptions of the various soil and slope conditions found on the farm involved. Specific instructions are given as to the handling of each type of terrain for cropland, for pasture, for woodland, for wildlife and other general conditions. (See Plate XLIV).

It is difficult to assess the profit this program has brought to the farmers. Beyond the value from the standpoint of soil conservation, the farm plans have probably brought a 30 per cent increase in crop yields, sometimes being as great as 40 per cent.\(^{30}\) This should be highly encouraging to the county's farmers, and soil programs should make great progress in the future. Even so, the total realization of the soil conservation program will take many years to complete.

The Town Pattern

It was previously noted that all population clusters in Johnson County have been decreasing in size. The general movement of people from rural to urban environments is well-exemplified in the area. Many arguments have been advanced concerning the attractions the city has to offer. The various services to man it provides, the greater conveniences for living, and the gratification of man's gregarious propensity no doubt all play a part in the urban

\(^{30}\text{Ibid.}\)
Plate XLIV

Modernized Farm Layout Showing Courtyard Arrangement
movement. However, considering the fact that rural living no longer has the disadvantages it once had, one must recognize other reasons for the trek to the city.

The symbiotic relationship in many areas has notably changed over the years. In another connection the dynamic character of the landscape was pointed out, changes having occurred that are integrally related to man's way of life. The ecological relationship in the county was once of a nature that allowed many more people to make an adequate living. That situation has changed in recent years, for the economy of the area cannot now provide work for the population involved. Modern Johnson Countians simply respond to this development by moving to urban areas (particularly Kansas City) where a better living is possible. A later discussion will bring up several economic additions to the county which have somewhat countered the exodus to the city.

It was demonstrated in the section dealing with town development that most of the population clusters in the county were on sites significant in the early settlement, or originated in connection with railroad construction. Whether they prospered and grew, remained static or declined, depended on their relative location as the county

---

31 This takes into account the fact that the economy of the county is merely superimposed on the total national economy, and must operate in that broad structure. Any change in the national scene could, of course, alter man's symbiotic relationship in Johnson County.
and a much larger region developed. Although several towns in the area enjoyed brief periods of growth, no town possessed any particular strategic quality that would make it significant interregionally or intraregionally. If anything, this is more true today than ever before. An inquiry into the characteristics of towns will furnish a base for an evaluation and forecast of future existence.

Distribution and Population

There are twenty-nine settlements in the county, including Warrensburg. This amounts to one settlement for each 28.6 square miles of area. There are no great distances involved between settlements, most of them being less than five miles apart. The distribution pattern may be said to be one of uniform spacing. All settlements are connected by all-weather roads and sixteen of them are on railroads. Of the twenty-eight villages (excluding Warrensburg) only six are incorporated, the smallest being LaTour with a population of 80.

It is difficult to correlate the village pattern with any physical element of the region. Drainage, timber distribution and relief have played but minor roles in determining the sites of settlements. Cultural patterns have played a greater part in the location and growth of the towns. All of the larger and incorporated villages are on railroads, and ten of the population centers are on the
major highways of the county (Fig. 3).

There are 11,148 persons living in the towns and villages of Johnson County, and 9,566 living on farms. If the Warrensburg population is excepted, the village and farm populations respectively make up 20.6 and 46.1 per cent of the population of the county. Although the towns have been declining, the corresponding drop in the total county population has prevented any noticeable change in the proportion of farm and village dwellers.

Recently there has been a striking decline in the population of most of the smaller villages of the county, and this trend cannot be related to whether a village is located on the railroad (Plates XLV and XLVI). Field investigations of 1954 showed a considerable change in the functions of several villages since the census of 1950. If the present trend continues, it appears that a number of settlements will cease to exist in the near future.

Functional Characteristics

All of the towns of the county have always been dependent on the immediate umland for life and sustenance. The population center is only of value to the people to the degree that it serves their needs. The towns have always performed special services for the agricultural peoples in the adjacent areas. Town and umland are integrally related, and as the agricultural peoples have needed new functions
Plate XLV

View of Main Street, Centerview

Plate XLVI

Looking Eastward from Centerview
Along Missouri Pacific Railroad
and services, the villages have materially changed their offerings. Certainly, functional changes in Johnson County are not unique to the area but are national in scope. However, a definite shift in functions of settlements in the county is observable, and probably is inspired by the same events and forces at work elsewhere.

Many small-town changes have occurred in the modern period. The automobile brought an end to the small hotels, which were replaced by tourist cabins and motels. Garages appeared and increased rapidly in number. The old village blacksmith, once an indispensable craftsman in the village, has dropped a number of functions and acquired some new ones. Among other things, he now devotes most of his time to welding processes necessary in servicing farm machinery. The implement dealer, long a village fixture, has expanded his services in attractively displaying new farm machinery, and usually has facilities for the overhauling of farm equipment. Old stores dealing in harness, hardware and various farm items are practically extinct.

Not long ago most of the villages had a bank. Practically all of these collapsed and disappeared in the depression years of the early thirties. Others were extinguished by the increased mobility of peoples and the general decline of village population. Today there are only six banks in the county, and only two exist outside of the largest towns of Warrensburg and Holden.
Once, small stockyards were maintained in many villages on the railroads; today, they are extinct, for the need of holding animals until they can be shipped no longer is present. Livestock are now loaded directly into the trucks destined for markets.

Village schools have undergone decided changes in recent years. The number of school districts in Johnson County has been decreasing rapidly. In 1949 there were 90 districts in the area, while today there are only 33 districts. As the school districts have declined in number, a large proportion of the country schools have closed. In 1949 there were 87 country schools operating in Johnson County, in 1954 only 23 were still functioning (Plate XLVII).
While other village institutions have been undergoing extensive changes, the church still retains its community position. Decreased populations have reduced church membership, and most of the outlying churches no longer can afford a full-time minister. In many cases, several communities are served by a pastor in one of the larger towns. Several communities (for example, Rose Hill and Owsley) have only the church to mark the site of the early settlement. If present population trends continue, it appears that there will be merging and consolidation of many of the churches of the county.

The ubiquitous general store has not changed much through the years. Most of the village stores carry today as wide a variety of merchandise as they formerly did. Service station facilities have often been added, for the rural need for fuel and oils is probably greater per capita than in urban areas. Some of the newer or increased services of the larger towns include food lockers, fertilizer sales, feeds and feeding equipment, and bottled gas distribution.

A field investigation was made that included every settlement in the county. This inventory of the various services and functions each village performs was necessary in attempting to set up a correlation between the size of a settlement and the functions present. The tabulation of findings are shown in Table IX and Figure 40.
## Functions and Services

### Settlements

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Population</th>
<th>Incorporated</th>
<th>Railroad</th>
<th>Bank</th>
<th>Drug Store</th>
<th>Pharmacist</th>
<th>Dentist</th>
<th>Doctor</th>
<th>Lawyer</th>
<th>Newspaper</th>
<th>Barber Shop</th>
<th>Beauty Shop</th>
<th>Blacksmith</th>
<th>Welding Shop</th>
<th>Food Lockers</th>
<th>Feed Mill</th>
<th>Feed Store</th>
<th>Funeral Home</th>
<th>Garage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holden</td>
<td>1,765&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 2 2 2 1 2</td>
<td>5 1 1</td>
<td>2</td>
<td>5 1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2 1 3</td>
<td>2</td>
<td>1</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knobnoster</td>
<td>585&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 1 1 1 1</td>
<td>.. 2</td>
<td>.. 2</td>
<td>.. 2</td>
<td>.. 2</td>
<td>.. 2</td>
<td>2 1 3 1</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leeton</td>
<td>372&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 2 1 1 1</td>
<td>.. 1 1</td>
<td>2 1 1</td>
<td>1</td>
<td>1 1 1</td>
<td>.. 1 1 1</td>
<td>1 2 1 1</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chilhowee</td>
<td>335&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 2 .. 1 1</td>
<td>2 1 1 1</td>
<td>2 1 1</td>
<td>.. 1 1</td>
<td>1</td>
<td>1 2</td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kingsville</td>
<td>207&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 1 .. 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 2 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centerview</td>
<td>179&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 1 .. 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montserrat</td>
<td>150</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pittsville</td>
<td>84</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Tour</td>
<td>80&lt;sup&gt;b&lt;/sup&gt;</td>
<td>x 1 .. 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnolia</td>
<td>62</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fayetteville</td>
<td>55</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbus</td>
<td>53</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Oak</td>
<td>50</td>
<td>.. 2 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elm</td>
<td>43</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowen</td>
<td>42</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dunksburg</td>
<td>35</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medford</td>
<td>28</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quick City</td>
<td>25</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valley City</td>
<td>24</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Chilhowee</td>
<td>18</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deaton</td>
<td>18</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comelia</td>
<td>17</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sutherland</td>
<td>16</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robbins</td>
<td>14</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rose Hill</td>
<td>13</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owsley</td>
<td>9</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burtville</td>
<td>7</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bristle Ridge</td>
<td>5</td>
<td>.. 1 .. 1 1</td>
<td>.. 1</td>
<td>.. 1</td>
<td>1</td>
<td>.. 1 1</td>
<td>.. 1 1 1</td>
<td>.. 1 1</td>
<td>.. 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td>1 2</td>
<td>1 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table IX*
### Table IX

- **P**: Part-time minister
- **C**: Combination with welding
- **B**: Census figures (1960)
- **W**: Field investigation

<table>
<thead>
<tr>
<th>High School</th>
<th>Grade School</th>
<th>Minister</th>
<th>Church</th>
<th>Bottled Gas</th>
<th>Bulk Oil</th>
<th>Restaurants</th>
<th>Retail Stores</th>
<th>Auto Dealer</th>
<th>Gas Stations</th>
<th>Implant &amp; Dealer</th>
<th>Coop. Elevator</th>
<th>Garage</th>
<th>Funeral Home</th>
<th>Feed Mill</th>
<th>Feed Store</th>
<th>Food Lockers</th>
<th>Welding Shop</th>
<th>Blacksmith</th>
<th>Beauty Shop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

29
As shown in the table, only seven of the twenty-eight villages have over 100 people. The smallest settlements generally have only a church, school, or general store to mark their existence. Increase in size means perhaps a filling station or feed store in addition to the above. Only in the larger villages are services introduced that fulfill most of the needs of the surrounding farm area. Actually, Holden is in a class by itself, having most of the functions of larger towns. The group of villages have between 200 and 600 persons performs most of the services required by farmers, but provide no professional services and have no newspapers. This category is best sub-divided, for the three larger towns render about twice the services of the three smaller towns in that category. It is not merely the multiplying of the number of familiar establishments in the smaller villages.

Figures 41 and 42 show the town plans of two villages in the county. Plates XLVIII, XLIX and L show from the air one of the incorporated towns, one of the middle-sized villages, and one of the smaller settlements.
FAYETTEVILLE

LEGEND

1. GENERAL STORE AND GAS STATION
2. BLACKSMITH AND GARAGE
3. CHURCH

Fig. 41
SCALE: 1 INCH = 290 FEET

MAGNOLIA

LEGEND

1. GENERAL STORE AND FILLING STATION
2. METHODIST CHURCH
3. BAPTIST CHURCH

Fig. 42
Plate XLVIII

Town of Centerview, Looking North
Plate XLIX

Town of Magnolia, Looking Northeast
Plate L

Town of Chilhowee, Looking Northeast
Warrensburg

This county seat of 6,857 persons (1950) straddles the east-west Missouri Pacific railroad, the depot being on the north-south dividing line. The town is distributed rather evenly about this point, although recent construction is disturbing the balance. Unlike so many Middle West towns, the business section is not oriented around a large courthouse square. This anomaly is due to the movement of the business away from the old courthouse when the railroad came through, the new courthouse being built in 1896 near the new location. U. S. Highway 50 cuts through the northern part of the town (Fig. 43).

Warrensburg lies just east of the center of the county on a rather high point (over 800 feet), and contains 2.8 square miles of rolling land. As noted elsewhere, it has been rather static in growth for many years, failing to attain the development that its early prominence promised. Compared to many comparable urban areas in the Middle West, the town has been unprogressive in many ways, particularly failing to provide adequate water, sewerage, police, and fire services. Unless one considers economic stagnation as the cause, one must look into the character of the people for an answer. It is the author's opinion that no collective quality of the inhabitants was responsible for the lack of progress, but that the town's leaders were characterized by lack of vision and ineptitude during the period.
when basic municipal services were being developed elsewhere. It appears that individuals, rather than the characteristics of a regional group, have played the leading role in the development of small cities and towns.

The economic base of the town has long been dependent on the following conditions or activities: (1) its service as a marketing and distributing center for a rural area embracing most of the county, (2) the administration of county affairs, (3) the presence of one of the State Colleges with an annual budget over $1,000,000, (4) a small manufacturing industry, that included nine plants in 1950, and (5) the presence of the business offices of a rather large public utility. Except for the first two bases, a large part of the remaining economic foundation emanates from areas out of the county. The loss of any part of this out-of-county stimulation would be a serious blow to the community.

The relative position of Warrensburg regionally is not one that holds any promise for greater development. The loss of population of the county, and the present trend toward further expansion of large cities having strategic regional location will tend to diminish the demand for services of the umland area of the city. Like most small urban areas, the town has made strenuous efforts to attract outside interests and capital, but without notable success. However, the establishment of an Air Force Base in the
eastern part of the county during World War II acted as a tremendous economic boost. Recently that base has been re-activated, including great expenditures for enlargement and improvement of facilities. The result has been a building boom unlike anything ever experienced before. This prosperity stimulant, artificial in that it is not dependent on inherent physical or cultural qualities of the area, cannot loom too large in a long-range analysis of potential growth and development.

Other Economic Elements

Trade and Commerce

The position of Johnson County along a trunk east-west highway and railroad acts as a stimulus to the exchange of goods and services. The wholesale business of the county is done mostly with the Kansas City area, but extends also eastward to St. Louis. In addition to its proximity, Kansas City is on direct southwest lines from Chicago, giving it an advantage over its large sister city to the east. Johnson County is definitely a part of the Kansas City trading area, and in some analyses for advertising purposes is considered a part of the Greater Kansas City area. The county had 459 trade establishments in 1946, including 43 businesses engaging in wholesale trade, 315
retail stores, and 101 service-trade enterprises. They employed 593 persons.

Manufacturing

Johnson County cannot be considered an industrial region, but products from manufacturing enterprises amount to about one-tenth ($1,084,778) of the value of all agricultural products. These concerns benefit both town and countryside, as they add to the variety and number of various retail establishments and make for greater opportunities for professional services. No particular type of industry may be said to be unique to the area, although apparel and clothing products are the most numerous of any class that might be established.

There were sixteen plants classifiable as manufacturing concerns in 1947. All but one of these were in Holden or Warrensburg, with the former having six plants and the latter nine plants. Included were such widely different products as scent lure and power lawn mowers. Four establishments out of the sixteen fabricate wearing apparel, producing neckties, sport shirts, work shirts, coveralls, nurse and maid uniforms, and women's casual shoes. Of the

---


33Ibid.

34Missouri Division of Resources and Development, Directory of Manufactures (Jefferson City: 1947).
remaining classes that might be delineated, three produced food products, three were publishers and printers, two turned out ice, and two fabricated metal products. Several of the concerns are quite small and not well-established, and a change in the manufacturing picture is quite probable.

Mine and Forest Products

The mining and forest industries of today are negligible in their contribution to the economy of the county. It has been previously pointed out how a once considerable mining of coal, stone, and clay declined and virtually disappeared in the early twenties. Such activity has been extremely sporadic since, mainly limited to the stripping of coal in the southeastern portion of the area. In some recent years production has completely stopped, only to be renewed again the next year. For example, in 1948 the county mined 185,775 tons of bituminous coal, valued at almost a million dollars (Plates LI and LII). Two years later there was no production, while in 1951 minor operations produced 2,012 tons valued at $11,066. These are all surface strippings, for shaft mining has been extinct in the county for many years. In 1950 there were only 35 persons engaged in all phases of mining, most of those being connected with the limestone quarries. A small quantity of this stone is taken for local use, chiefly being crushed for road use and concrete aggregate (Plate LIII).
Plate LI

Plate LII

Strip Mining Operations in Jefferson Township
There are generally two or three small saw mills operating in the central and eastern part of the county. The product is rough, native oak dimensional lumber, used mainly for farm building and fencing. The total value of lumber in 1949 was $12,535.
The Grain Elevator

The grain elevator is quite a conspicuous feature in the cultural landscape of Johnson County. It dominates the buildings of towns where it is found, is located invariably on the railroad, and is an important index to the grain production of the county.

There are eight elevators in the area, ranging from an immense structure at Warrensburg that is 135 feet high to small barn-like structures not over 30 feet high. The average height is probably somewhere between 50 and 60 feet. Capacities vary greatly from over 200,000 bushels to less than 10,000 bushels. However, annual handling of grain usually far exceeds capacities, and six or seven times the capacity may be handled in a year's time.

All elevators of the county are vertical, rectangular structures of concrete or wood. Several are covered with metal sheeting, and all are characterized by decreased size with increased height (Plates LIV and LV).

Corn is the number one grain handled in terms of quantity and value. Wheat and soy beans are about equal in volume, and oats are in the third position. Trucking has been a force significant in the decline of the elevator in storage importance, for the itinerant trucker moves corn

35 All figures supplied or vouched for by Richard Innes, co-owner of the largest elevator in the county.
Plate LIV

Grain Elevator at Chilhowee on the Rock Island Railroad

Plate LV

The Innes Elevator at Warrensburg
directly to the market or the consumer. A trade radius of six to ten miles is common to all elevators, and most of the grain handled goes to Kansas City. In by-gone days when grain was hauled in wagons, there were a number of elevators along the railroads that are no longer in existence.

The range of margins earned by elevators varies considerably with the type of grain handled. In 1954, common earnings were: on corn, 6 to 7 cents a bushel; on wheat, 5 to 6 cents; on oats, 5 to 6 cents; and on soy beans 12 cents. Although elevators in the area have shipped some grain by truck, it has not made noticeable inroads on railroad precedence.

The largest elevator in the county (the Innes Mills) operates an important industry in feed production (Plate LV). This enterprise has annual gross sales of $1,500,000, and buys corn from Iowa and other distant points. Although not classified as a manufacturing establishment, the value of products almost equals the total value of manufactures in the county. This attests to the importance of agriculture in the area.

Knob Noster State Park

This study would not be complete without mention of the State Park located in the county. Originally a

---

36 One of twenty-five State Parks in the state.
recreational area developed by the National Park Service in cooperation with the Missouri State Conservation committee, the tract contains 3,441 acres of woodlands on a relatively rough terrain. The development was expressly for organizations that wanted to establish recreational and educational camps. The national area was established in 1935, but was taken over by the state of Missouri after World War II, becoming a part of the state park system. Besides two large developments for group camping, there are excellent facilities for public recreation and camping. Two branches of Clear Creek are dammed in the park, forming two lakes of several acres extent. In the fall of 1954 another new lake of 25 acres was developed.


38 See Map in back cover.
CHAPTER V

CONCLUSION

Johnson County is strongly representative of that large geographic plains region of Missouri that was never benefited by a thick mantle of glacial till. As a whole, the county must be considered inferior in wealth, population and intrinsic qualities of the land to the plains of northern Missouri and the similar prairie regions in Iowa and Illinois. A position near to the east-west corridor of the Missouri River made for ease of early settlement, and the area became pre-eminent in the state during the nineteenth century. However, the tremendous potential of other parts of the state enabled them to catch up and outdo the sections that had had early positional advantages.

Borderlands of the Ozark highland are sometimes considered to constitute a norm or average for the whole state, being intermediate in productivity and wealth between the Ozarks proper and true plains regions to the north. Johnson County is representative of a region superior to Ozark borderlands, but inferior to the glaciated plains. This Scarped Plains region has fundamental qualities that are sufficiently different from other surrounding areas to justify consideration as a geographic region. It should
be noted that these qualities are largely of the natural environment, for the basic character of the people of western Missouri is not different from inhabitants of adjacent sections. Perhaps long occupancy in the region has produced some cultural patterns evolved from the environment, but the difference is slight.

As long as the activity of the county is related to the inherent qualities of the land, it is difficult to visualize any return to agricultural pre-eminence in the state. However, we must remember that history shows that no trend or cultural development is permanent, and this dynamic quality of society may bring changes capable of altering the above picture. Cultural changes of great magnitude could give new advantages of relative position, and a future flowering of the area might be the result.

It appears that there should be some agricultural adjustment in the county. Thinking ahead to a permanent and productive agriculture, there should be increased emphasis on a general farming pattern with dairying and stock raising the major base. Crop production on only the better lands will produce all the food necessary for an animal husbandry, and will retire areas for pasturage that have never been seriously depleted by long use as crop land. This should include a well-developed poultry industry, with a much greater horticultural emphasis than
was ever present in the county. Recent trends have been partially in this direction, and harnessed to a sound and scientific soil conservation, Johnson County might be stabilized as an agricultural area, or even move ahead to a new degree of productivity.


Base Map of Missouri


_____. "A Geologic Section from Forty Miles West of St. Louis to Jackson County, Missouri," American Journal of Science, Fourth Series, XLIX (1920), 1-11.


County Court Record. Warrensburg, Missouri. Five Volumes, 1835-1846.


Drew, W. B., and Helm, C. A. "Representative Missouri Weeds and Their Control," Agricultural Experiment Station Bulletin 433, (1941), 1-216.


Fitzsimmons, Margaret Louise. "Missouri Railroads During the Civil War and Reconstruction," Missouri Historical Review, XXXV, No. 2 (November 2, 1941), 185-206.


"Forest Resources of Missouri." Central States Experiment Station Forest Survey Release, No. 6 (1943), 1-19.


-----., Roth, W. J., and Johnson, C. R. "Types of Farming in Missouri," Missouri Agricultural Experiment Station Research Bulletin 284, (1947), 1-100.


Jefferson City Inquirer, Jefferson City, Missouri, September 13, 1856.

Jefferson City People's Tribune, Jefferson City, Missouri, November 23, 1870.

Jefferson Daily Tribune, Jefferson City, Missouri, September 20, 1893.


Poehlman, J. M. "Wheat in Missouri," Missouri Agricultural Experiment Station Bulletin 532, (1949), 1-36.


Real Estate and Personal Property Assessment Records. County Clerk's Office, Warrensburg, Missouri.


Road and Handbook of the Missouri Division of Wheelmen. St. Louis, Kansas City and Columbia: 1892 (Third Edition).


The Star-Journal, Warrensburg, Missouri, 1918.


U. S. Department of Agriculture. Climate and Man, 1941


__________ Grass, 1948 Yearbook of Agriculture.


__________ Soils and Men, 1938 Yearbook of Agriculture.


VITA

Courtney C. Aldrich Jr. was born at Maplewood, Missouri on April 2, 1909. He received his elementary and secondary education in the public schools of that city, and then studied for three years at Westminster College, Fulton, Missouri. He received the bachelor of arts degree in 1934 from Louisiana State University. After teaching music and history in the high schools of Louisiana for three years, he held a graduate assistantship at Louisiana State University for five years, completing the course work requirements for the Doctor of Philosophy degree in geography. He was awarded the Master of Science degree in 1940.

After teaching two years as a civilian instructor in a Navy Pre-Flight School, he taught for short periods at Northwestern State College of Natchitoches, Louisiana, Western Illinois State College of Macomb, Illinois, and Fairmont State College of Fairmont, West Virginia. At the present time he is completing eight years as professor and head of the geography department at Central Missouri State College of Warrensburg, Missouri. Twice in the last four years he has substituted for a term in the geography and anthropology department of Louisiana State University, where requirements are now completed for the Doctor of Philosophy degree.
EXAMINATION AND THESIS REPORT

Candidate: Aldrich, Courtney C. Jr.

Major Field: Geography

Title of Thesis: JOHNSON COUNTY: A GEOGRAPHIC STUDY REPRESENTATIVE OF THE WESTERN PLAINS REGION OF MISSOURI

Approved:

[Signatures]

Major Professor and Chairman
Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination: July 18, 1955