The Culture History of Grist Milling in Northwest Georgia.

Donald Gregory Jeane
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THE CULTURE HISTORY OF GRIST MILLING
IN NORTHWEST GEORGIA

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

Donald Gregory Jeane
B.A., Louisiana State University, 1968
August, 1974
ACKNOWLEDGMENTS

I would like to express my appreciation to the many people who have helped to make this work possible. A special thanks goes to Dr. Milton B. Newton, Jr., for his patience and understanding during many hours of reading and constructive criticism. I would like to thank my reading committee for their time and valuable comments. Several persons deserve special mention for assistance rendered; among them are Mrs. Pat Bryant and Mr. Marion Hemperley of the Surveyor General's Department of the Georgia Archives for maps and photostats, Mr. Roger Aycock of the Rome Tribune News for his valuable photographs of historic material, and Wayne and Judy Alderman for their kindnesses while conducting my field work. Space does not permit listing the many people who offered information about mills long since disappeared, without their help my task would have been more difficult.

I dedicate this work to my wife, Karen, whose patience and encouragement have been more than generous and without which this work could never have been completed.
# TABLE OF CONTENTS

List of Tables .................................. iv
List of Maps .................................. v
List of Plates ................................ vi

Chapter

I. Introduction ................................ 1

II. The Culture History of Milling: A Synopsis .................. 12

III. The Establishment and Diffusion of Milling in Georgia ........ 37

IV. A Basic Geographic Model for Mill Research ................ 45

V. The Landscape, Social, and Economic Significance of Mills and Milling .......................... 89

VI. Summary and Conclusion .................. 104

Bibliography ..................................... 118

Appendix

I. A Glossary of Mill Terms .................. 131
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Summary of Probable Mill Origins</td>
<td>14</td>
</tr>
<tr>
<td>II. Floyd County - Mill Statistics (1880)</td>
<td>54</td>
</tr>
<tr>
<td>III. Bartow County - Mill Statistics (1880)</td>
<td>61</td>
</tr>
<tr>
<td>IV. Murray County - Mill Statistics (1880)</td>
<td>71</td>
</tr>
<tr>
<td>V. Whitfield County - Mill Statistics (1880)</td>
<td>77</td>
</tr>
<tr>
<td>VI. Summary of Mill Evolution in Northwest Georgia</td>
<td>95</td>
</tr>
</tbody>
</table>
LIST OF MAPS

<table>
<thead>
<tr>
<th>Map</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Indian Trading Paths: Upper Georgia</td>
<td>6</td>
</tr>
<tr>
<td>2. Plan of the Swiss Colony in Carolina, 1710.</td>
<td>25</td>
</tr>
<tr>
<td>3. Major Indian Trails: North Georgia</td>
<td>38</td>
</tr>
<tr>
<td>4. A Geographic Model of a Mill Complex</td>
<td>48</td>
</tr>
<tr>
<td>5. Old Brick Mill Site. Silver Creek, Floyd County, Georgia</td>
<td>49</td>
</tr>
<tr>
<td>6. Floyd County: Mill Sites.</td>
<td>51</td>
</tr>
<tr>
<td>7. Bartow County: Mill Sites.</td>
<td>64</td>
</tr>
<tr>
<td>8. Jones Mill Site. Pentit Creek, Bartow County, Georgia</td>
<td>65</td>
</tr>
<tr>
<td>9. Ganes and Lewis Mill Site. Two Run Creek, Bartow County, Georgia</td>
<td>66</td>
</tr>
<tr>
<td>10. Auchmuteys Mill Site. Euharlee Creek, Bartow County, Georgia</td>
<td>68</td>
</tr>
<tr>
<td>11. Murray County: Mill Sites.</td>
<td>69</td>
</tr>
<tr>
<td>12. Dennis Mill Site. Rock Creek, Murray County, Georgia</td>
<td>70</td>
</tr>
<tr>
<td>13. Whitfield County: Mill Sites.</td>
<td>76</td>
</tr>
<tr>
<td>14. Praters Mill Site. Coahulla Creek, Whitfield County, Georgia</td>
<td>79</td>
</tr>
</tbody>
</table>

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# LIST OF PLATES

<table>
<thead>
<tr>
<th>1. Notes on Plates</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>109</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Plates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>112</td>
</tr>
</tbody>
</table>
ABSTRACT

Grist milling in northwest Georgia was a late comer to the cultural landscape. Milling first began in Georgia in 1740 with the Germans at Ebenezer. The northwest corner of the state, however, remained Cherokee territory until the 1830s. Once the Cherokee were removed westward, white settlements mushroomed in the fertile valleys of the Etowah and Coosa rivers. Grist milling expanded with this population boom; virtually every settled area had one or more mills.

Four milling landuse patterns evolved in northwest Georgia: the single grist mill, the grist-saw mill combination, the grist-flour-saw mill association, and the integrated mill complex offering a wide range of services other than milling. The combination of grist and flour milling with a sawing operation represents the typical mill within the area. The larger integrated mill complex offered the same services with the possible additions of cotton ginning, blacksmithing, and a general store and post office. The integrated mill complex represents the peak of the milling era in northwest Georgia. The short span of a century saw, for the greater part, the birth, maturing, and death of grist milling in the area; most mills had ceased operations by the end of the Depression of the 1930s.

A consequence of the reconstruction of cultural landscapes is often to destroy popularly conceived notions about certain phenomenon. Mills are no exception. Contrary to accepted beliefs, there is no
evidence from northwest Georgia to substantiate that grist mills served as magnets for settlers or that mills frequently formed the nuclei of later towns. At its peak, the integrated mill complex could correctly be termed a hamlet, but the significance dwindled as the demand for milling decreased. Thus, once prosperous and bustling activity centers began to die out rather than expand into larger settlements. Likewise, mills in northwest Georgia showed no tendency to necessarily associate with fords, ferries, or bridges on major roads. Mill location was dependent on a sufficient head for power, other landscape factors were secondary.
CHAPTER I

INTRODUCTION

Grist milling is one of America's most misunderstood and romanticized industrial enterprises. Too many mills and too many people associated with them have passed on before the rising interest in this pioneer industry could seriously question its effects upon the cultural landscape. Much of the writing concerning mills is conjectural, partly a result of the romance of "ye old waterwheel." Certainly an aura associated with old grist mills tends to evoke images of days when life was "simpler." It cannot be denied that there is a restful, peaceful quality in the ruins of an old mill and, perhaps, in any old ruin. It can be an amusing and useful pastime to conjure images of past mill activities. Poets and authors, however, have so frequently taken liberties in their generalizations that there is little wonder at the false image in the mind of the ordinary reader. Surprisingly, this less-than-accurate image has entered, with little alteration, the writings of some scholars, and thus, the myths have been perpetuated by those who should know better.
Purpose

There is a need to know more about grist milling in America. Limited information and rapidly disappearing elements of our cultural landscape prompt some scholars (particularly, cultural geographers) to chronicle and describe what survives while there is still opportunity. The object of the present study is to present an explanatory description of northwest Georgia grist milling and to assess its impact on the cultural landscape.

A descriptive approach has been chosen for the simple reason that accurate, substantive data concerning milling in America are scarce. Early travel accounts, journals, letters, and the like of colonial America often mention or describe mills. The use of mills as stopover or resting places, however, tells little of their landscape significance. The descriptive approach is not new and recording a substantial amount of information will add significantly to our limited knowledge of America grist milling. The intent of this study, then, is to show where, when, and how milling spread into the region of northwest Georgia. Information on the origin and spread of milling in the Old World has been included as American mill types, with the possible exception of the tub mill, had their antecedents in Mediterranean and Western Europe.

Much of the material written about American milling is wrong or generalizations are made which pertain only to small areas. As a result of erroneous generalizations an additional intent of this study lies in dispelling certain myths about grist mills. Contrary
to such statements as "a mill served as a focus to draw settlers" (Jackson, 1971), "the mill and store became the nucleus of a small town" (Thomson, 1953), and that mills formed sites of future towns (Tunis, 1965), and others, no evidence in northwest Georgia substantiates their general conclusions that mills served as the foci and magnets of settlement. Other works suggest the same without stating it as fact. Museum brochures, club publications, and similar casual publications continue to misinform the public. A similar facile claim suggests that mills located near roads, bridges, and fords because these were the heavily traveled points. While examples of such can be found, no evidence warrants positing such as the general rule. More often than not, the evidence supports the notion that the prime factor was the availability of a head of water for power and that access roads, fords, and the like were secondary considerations.

The Place of this Study

Mills have received less attention from cultural geographers than they merit. The mill is one of man's most common machines. In its primitive form, the mortar and pestle, the mill is frequently found as a piece of technical equipment among most primitive peoples (Wagner, 1960:98). As societies become more sophisticated, their list of technical implements and their facilities also increase. The grinding of grain became adapted to water-power around the beginning of the Christian era and represents one of man's most important prime movers. Because the watermill has been
an integral part of the technology of man for centuries, it is disconcerting to find little attention devoted to its role in shaping or altering the cultural landscape.

European geographers have devoted little time to the place of the watermill in the European cultural milieu. There is a strong tradition of cultural geographers' using the explanatory descriptive approach in analyzing numerous aspects of the cultural landscape, but mills have been relegated to a lowly position in landscape discussions. Meitzen (1895, I: 584), based on the Lex Salica, mentions briefly that watermills were generally located outside rural farmsteads. Schwartz (1959), in his continental approach to settlement, does not even mention mills. General texts on European settlement geography have placed little importance on the presence of watermills upon the landscape (East, 1966; Smith, 1967; Pounds, 1973).

One might assume then that mills were so commonplace as to be considered unimportant. Oversight by cultural geographers of the watermill as a major landscape element is one reason for this study. Mills have had an impact upon the cultural landscape, vestiges of which have survived to the present in some areas. Analysis of mills, as pertains to their site and situation and their influence within a specific geographic area, falls within the realm of cultural geography.

The Department of Geography and Anthropology at Louisiana State University has produced a number of dissertations that have, by the method of explanatory description, covered a wide range of cultural-geographic topics. Each of these dissertations has added signifi-
cant and substantial knowledge of subject and helped toward a better understanding of American cultural landscapes (Davis, 1973; Lee, 1960; Knipmeyer, 1956; Hall, 1970; Rehder, 1970). All of these dissertations have incorporated culture-historical, landscape, and field analysis of geographic phenomena. The basic approach to studying the culture history of grist milling accords with these works as it does generally with the established tradition of cultural-geographical research.

Methods

Georgia was selected for study because milling had attained advanced development in that state in historic times and because of the greater likelihood of obtaining sufficient field information. Georgia served in the eighteenth and nineteenth centuries as either source or transit area for much of the population of other parts of the South and the Southwest. Many of the cultural traits that can be observed in Georgia will be found farther west. Such information ought further to substantiate research in other areas.

Evidence of a large number of historic mills led to concentration on northwest Georgia. Selection was arbitrary and was based upon the listing of mills in the Census of Manufacturing for 1880. Those counties with the largest numbers of mills were chosen in the belief that they would yet contain the largest numbers of mills or their ruins. Such a presumption has proved to be the case.

Data were collected over a period of one year from four counties: Bartow, Floyd, Murray, and Whitfield (Map 1). The counties are either wholly or partially in the Ridge and Province
MAJOR INDIAN TRADING PATHS:
UPPER GEORGIA

Map 1

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Region of the United States. Roughly the southeastern portion of Bartow falls within the Piedmont Region and the eastern half of Murray lies within the Blue Ridge Mountains Region. Selection of counties covering a range of physical conditions aimed at assessing the effect of topography, particularly insofar as concerned the "mill seat," or physical site.

A wide assortment of sources was used in accumulating data. These include considerable field work, interviews with local millers, mill owners, and descendents of millers. Deed records for the various counties proved to be valuable with regard to the content of activities at particular mills, as well as helping to locate some of the more elusive ones. Original cadastral maps, as well as later editions, also provided authentic, original observations. These later property maps proved particularly helpful in plotting the mills and naming their owners.

It was thought that aerial photographs would prove helpful in locating some of the mills that were difficult to find in the field. Unfortunately, such was not the case, and this method of investigation was little used. Had it been possible to establish criteria for finding grist mills, air photos would have been more useful.

Organization

This study is divided into five sections. Chapter II deals with the origin of milling in the Old World and its spread throughout the European continent. It shows that the major types of mills found in America (i.e., tub, undershot, breast, overshot, and turbine)
all had their origins in the Old World and spread to America as part of a well established milling tradition. A description of each of the types is presented, and attention is given to the standard pattern of gearing. A discussion of millstones also is included.

Chapter III deals with the movement of milling into Georgia and its establishment in northwest Georgia. Principal routes into the area are established and secondary routes are suggested. Some notion of the origin of the population element in the region is included.

The fourth chapter contains an analysis of milling in northwest Georgia. A geographic model of a mill complex is offered. Each county is described in detail as to particular mill sites. Location, type of mill, associated buildings, additional services, the general arrangement, construction techniques and materials, and other aspects are discussed, insofar as data permit for each site, with the purpose of substantiating the model. Tables of milling data are included for each county. The information included gives a valuable insight into the status of milling at approximately the middle period of its duration in northwest Georgia.

Chapter V deals with the impact of milling upon the Georgia cultural landscape. Four basic patterns of mill arrangement evolve: the single grist mill; the grist and saw mill combination; the grist-flour-saw mill combination; and the integrated mill complex represented by a variety of services other than milling of corn, wheat, and timber. An attempt is made to dispel certain romanticized conceptualizations of mills. Evidence is offered, contrary to
popular opinion, to show that, at least in northwest Georgia, mills never served as the foci of future towns. Another popularly held notion that cannot be substantiated in northwest Georgia is that mills tended to locate along major roads at fords, bridges, or ferries because, since people frequented these areas, they would likely use a mill operating at the site. Additional material is presented on the role of the miller; the social function of mills is also discussed.

The sixth chapter presents a brief summary and conclusion and offers some additional possible channels of research into mill-related landscape activities.

Appendix I contains a glossary of terms most commonly encountered in milling literature.
Notes - Chapter I

They are, however, relatively useless in conveying an impression of early American grist mills, a near ubiquitous landscape feature of the period.

2. The transactions of the Institute of British Geographers contain a number of articles indicating a well-established tradition of using the explanatory descriptive method in cultural geographical studies. See Turner, 1972; French, 1969; and Thomas, 1967.

3. The *Lex Salica* was the first written record of the Salian Franks, the originators of the Frankish Empire. The work served through the Middle Ages as the most important basis for determining land tenure.

4. The Census of Manufacturing for 1880, State of Georgia, represents the most complete source of mill data for the area. Although incomplete, and subject to error in tabulation, it is the best source for obtaining an idea of the intensity of milling in the various counties of Georgia.

5. The physiographic regions are based upon those established by Fenneman (1938).
CHAPTER II

THE CULTURE HISTORY OF MILLING: A SYNOPSIS

Grain-milling is one of civilized society's most ancient chores. The variety of archeological remains indicates an early development in the classical Mediterranean of sophisticated methods of grinding, most notably the use of geared machines. Pre-classical origins are generally held for the less sophisticated methods, in particular, the quern and its multiple forms. The multiplicity of milling techniques as verified through archeological and historical reconstructions indicates that grain has been a staple in the diet of man for milennia and that reduction of the grain by grinding has evolved over an equally long period. Milling artifacts have been found scattered from the eastern Mediterranean to Scandinavia and, indeed, around the world wherever grain has attained any importance as a food staple. The basic process of milling, either by pounding, rubbing, or grinding, attains its highest efficiency when powered by some force other than human or animal. The watermill represents one of the most significant changes in the use of power by man (Forbes, 1955:78; Wagner, 1960:98) and, as such, marks a turning point in the technological development of society.
Classical Origins

The origin of the watermill is not known precisely. Evidence, however, points to a beginning in or near the first century B.C. (Table I). Prior to the advent of the water-powered mill, grain was milled by a variety of techniques including querns, lever mills, slave mills, donkey mills, and the like. Placement of the watermill in the continuum of developing mill techniques finds it near the end of the span. Indeed, the most important change in milling after the introduction of the water wheel was the invention of the modern turbine (1827) which rapidly replaced water wheels.

The watermill operates upon the principle of the rotary mill. Grinding is accomplished by the rotation of circular stones. Scholars in the early part of this century placed the origin of the rotary mill near the fifth century B.C. (Curwen, 1937:137-40; 1941:15-16; Childe, 1943:24-25). This notion of the early origin was based upon archeological finds and subsequent interpretations of the artifacts. More recent research has disproved much of these early interpretations and established a fairly conclusive argument in favor of a rotary mill origin very near that of the water-driven mill, possibly earlier than the second century B.C. (Moritz, 1958). The argument definitely ascribes the origin of the watermill to the Romans, not the Greeks, as formerly believed. The Greek origin of the rotary technique was based upon the interpretation of scenes upon "Homeric" bowls, in particular the Megarian bowl, now in the Louvre (Plate I-fig. A). It was assumed that the apparatus behind the donkey was a rotary mill of the type later found at Pompeii, thus implying it was animal-
<table>
<thead>
<tr>
<th>Author</th>
<th>Mill Type</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Piggott (1965)</td>
<td>1. quern</td>
<td>1. Barbarian times</td>
</tr>
<tr>
<td></td>
<td>2. gearing &amp; watermills</td>
<td>Italy 2nd cent. B.C.</td>
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<tr>
<td></td>
<td>3. windmill</td>
<td>shortly after 2nd cent. B.C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. possible 7th cent. A.D. surely 12th</td>
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<tr>
<td>Curwen (1941, 1944)</td>
<td>1. donkey mill</td>
<td>1. 400 B.C.</td>
</tr>
<tr>
<td></td>
<td>2. quern (rotary hand-mill)</td>
<td>2. 70-19 B.C.</td>
</tr>
<tr>
<td>Finley (1965)</td>
<td>1. watermill</td>
<td>1. 150 B.C. - 50 A.D.</td>
</tr>
<tr>
<td>Moritz (1958)</td>
<td>1. quern</td>
<td>1. Xenophon (400 B.C.?)</td>
</tr>
<tr>
<td></td>
<td>2. donkey mill</td>
<td>2. at least by 160 B.C. possible 185 B.C.</td>
</tr>
<tr>
<td></td>
<td>3. rotary hand-mill</td>
<td>3. 2nd cent. B.C. (?) possible earlier</td>
</tr>
<tr>
<td></td>
<td>4. geared watermill</td>
<td>4. early 1st cent. B.C.</td>
</tr>
<tr>
<td>Storck &amp; Teague (1952)</td>
<td>1. quern</td>
<td>1. 5th cent. B.C.</td>
</tr>
<tr>
<td></td>
<td>2. geared mill</td>
<td>2. pre 19 B.C. (1st cent. B.C.)</td>
</tr>
</tbody>
</table>
driven and must be rotary. Supporting evidence is far too scarce to assign such importance to it. Careful analysis of Greek literature from the period fails to substantiate evidence of the donkey mill (i.e., rotary motion) in the early Hellenistic period (Moritz, 1958:10-17).

The "invention" of the first geared watermill is attributed to Vitruvius, a Roman architect, who wrote around 25 B.C. (Moritz, 1958:131). The Vitruvian mill was powered by an undershot wheel, that is, the water struck the blades of a vertical wheel from underneath (Morgon, 1926). The significance of Vitruvius' watermill is that it was geared and thus represents an improvement over the earliest assumed watermill, the horizontal mill. The horizontal mill was powered by water striking the blades of a horizontal wheel attached to a vertical axis (Forbes, 1955:85-86; Curwen, 1945:211). No gearing was involved.

Whether the horizontal watermill preceded the vertical mill is as yet undecided. On the basis of mechanical sophistication, most assume that the horizontal came first, because it is certainly the simpler machine. A possible origin for the horizontal mill is given as around the beginning of the Christian era in the eastern Mediterranean (Hunter, 1967:458). More recent estimates have placed the origin near the end of the second century B.C. along the brooks and streams of the Galilee Mountains (Avitsur, 1969:389). Whatever the answer to the question, it appears certain that the horizontal mill is a Euro-Asian invention that spread westward into the Mediterranean Basin during the last two centuries before Christ.
From the Mediterranean, it rapidly disseminated throughout most of Europe, even as far north as Scandinavia by the eleventh century.

From the hills of western Europe the horizontal mill or Norse mill as it came to be called, made its way to America, where it was modified by enclosing the vanes of the wheel inside a wooden casing to increase speed and efficiency; the term "tub mill" soon characterized this machine. The term "tub mill", as well as the enclosure of the wheel, appears to be American in origin. The horizontal mill goes by numerous designates, including Floder (Strauss, 1971:25), Greek, Norse, roue volant, Loffelrad, Turbine-muhle, radizio, and tub mill (Hunter, 1967:456). The oldest known European pictorial representation of the horizontal mill is one drawing by an anonymous engineer during the Hussite War (1430). It is described clearly with a Latin legend, and the drawing is remarkably similar to the American tub mill of the eighteenth century (Strauss, 1971:37) (Plate I-fig. B). Although the vanes may be hooped in many of the European horizontal mills, apparently the Americans were among the first to encase the entire wheel regularly.

Although Vitruvius invented the geared mill shortly before the first century A.D., not until the 3rd century A.D. do we find sources that indicate the Vitruvian principle was beginning to spread throughout Europe. Traces of watermills have been found along Hadrian's Wall in Britain (Moritz, 1958:136), dating from perhaps the second half of the third century. Other scattered finds in Europe indicate that watermills were becoming increasingly common from the end of the second century A.D. (Moritz, 1958:135-39).
The earliest watermill known in detail dates from the fifth century A.D., excavated in the Athenian agora (Forbes, 1955:88-93; Moritz, 1958:137). The major difference between the Athenian mill and that of Vitruvius is that the Athenian mill had an overshot wheel (Plate I-fig. C).

The Spread Through Europe

The earliest picture of a Vitruvian watermill is a mosaic from the Great Palace of Byzantium (Curwen, 1944:132). Both the Byzantine and the Athenian mills date from the fifth century A.D. A watermill of some kind was known in Gaul during the fourth century A.D. Invaders from northern Europe apparently were already familiar with them, as the Goths in 536 A.D. sought to starve the citizens of Rome by cutting off the water supply to their mills (Curwen, 1944:133).² The concentration of milling on the Janiculum hill in Rome was well developed by the close of the fourth century, and references to mills outside Rome are practically continuous from the fourth century (Usher, 1954:177).

The routes by which watermills diffused throughout Europe simply are not known. Perhaps the idea was spread during the Barbarian invasions following the fall of the Roman Empire. The chief references to mills from the late fifth to the ninth century come from the Teutonic Codes; unfortunately, none of these affords any clue whatsoever to the types of mills (Usher, 1954:177-78).

The first West European record that can be dated with any certainty refers to a horizontal mill in Ireland. The source is the
Irish Code, known as the *Senchus Mor*, which contains an explicit description (Usher, 1954:178). The code is recognized as a fifth century work composed between A.D. 438 and 441. There is confusion about the actual date, but the watermill was introduced by the Romans in England around the third century. The first mention of a watermill in English dates from 762 A.D. in a charter of Ethelbert of Kent (Storck and Teague, 1952:99). Saxons were using mills during the seventh to tenth centuries.

The Domesday Survey, completed in 1086, is a significant point in the culture history of milling. The quite accurate survey indicates watermills played an important part in the economy of eleventh-century England (Darby, 1971:72). A total of 5624 mills is recorded in the Domesday Survey, but with no mention of the mechanics of the mills; hence, little true idea of the ratio of horizontal to vertical mills.

A gap in the history of milling that sorely needs filling is the lack of precise information to date about the types of mills present in England at the time of the Domesday Survey. It is conjecture when authors refer to English mills as Norse (horizontal) on small streams and Roman (vertical) on larger streams (Bennett and Elton, 1898, II:101). Another source simply states that the majority of the mills was certainly water-powered, whereas the rest were animal-driven or slave-driven (Storck and Teague, 1952:99). Yet other scholars feel that the majority was vertical mills (Forbes, 1955:107; Hodgen, 1939:262), but offer little in the way of substantial proof. A recent survey of milling on the Isle of Wight (Major,
n.d.) indicated that the Domesday mill sites were still in use, but it could not be inferred that the mills themselves were of such antiquity. It is assumed that they were corn mills and most probably would have been vertical mills.6

It is not known if tide mills, those mills using the daily rise and fall of tides as the power source, were used at the time of the Domesday Survey (Major n.d.:11). The earliest tide mill on Wight dates to 1170, and others appeared during the Middle Ages. They were certainly in wide use throughout England in the Middle Ages (Bennett and Elton, 1898, II:218) and probably throughout Western Europe where conditions warranted.

The earliest watermills in Ireland probably were introduced from Scotland in the third century A.D. (McCutcheon, 1967:67). These mills were the horizontal type and referred to variously as the Greek, Norse, or Danish mill (McCutcheon, 1967:67). The vertical watermill probably was introduced from north Britain, as evidence from the excavations of the Roman Wall seems to indicate, and by the seventh or eighth centuries A.D., both types were distributed throughout Ireland (McCutcheon, 1967:68). Through the centuries the larger, more efficient, and more sophisticated vertical wheel replaced the small horizontal wheel. By the time of colonial emigration, the vertical wheel appears to have been the mode in mill construction.

Despite the uncertainty of an exact origin for the water mill, we do know this: both horizontal and vertical mills had been firmly established in the minds of artisans throughout Europe by the time of European colonial emigration. What then, is the significance of
this information for American grist mills? At the time of colonization, most of Europe had a well established technology of milling that included knowledge of a variety of mills powered by water and using a number of different types of wheels, depending upon local conditions. It is reasonable, therefore, to assume that at least a portion of this milling technology was transmitted to America during the establishment of the early colonies and increasingly thereafter.

The Move to America

The question of exactly when milling technology reached American shores is unanswered. It might reasonably be assumed that the first settlers at Jamestown in 1607 would have brought their own equipment for grinding grain. Supply lists for colonial expenditures might, at first glance, appear to be a good starting point for establishing a base date for milling in America. The report of the supplies for the Berkeley Hundred, an early Virginia colonial expedition, around 1619 lists millstones for the grinding of corn (Craven, 1949:94). The conjecture that it appears to be much the same as that of Somers' supply list in the spring of 1609, that was headed for Jamestown, cannot be taken as seriously. In fact, Capt. John Smith wrote in July, 1607, that "It pleased God to have the Indians bring us corn" and in September, "...brought us great store of both corn and bread ready made." (Carrier, 1923:118). This might imply that the Jamestown settlers had limited provisions for grinding corn. Other estate records of the period 1607 to 1650 generally fail to mention mill supplies (Bidwell and Falconer, 1941:33-34; Demos,
1972:42-43), consequently, earliest milling activities in America are still largely conjectural.

An important aspect to consider is that wheat, the favored European cereal, did not do well initially and only became well established after 1630. Prior to the widespread growing of wheat, milling needs were smaller and could be better managed at home. The use of the hand-mill (quern), mortar and pestle, or similar means of grinding corn preceded the sophisticated milling technology and indicate that, in early America, milling was a home industry once again before it became a specialized occupation (Earle, 1898:132-133; Pursell, 1969:5; and Fletcher, 1950:325).

A water-powered mill built in the Port Royal settlement of Nova Scotia as early as 1607 (Clark, 1968:79) appears to be the first in North America. The first mill in what would later be the United States dates from 1621 and was built in Jamestown. The earliest reliable dates for American mills span the third decade of the seventeenth century. Tide mills were present in the Boston vicinity around 1630; a pounding mill is recorded for Plymouth in 1631; there were mills at Dorchester in 1633-34 and at Ipswich in 1635; and there was a water mill at Portsmouth, Rhode Island, in 1638. Though evidence is lacking as to the mechanics of these mills, it is assumed from accurate, current reconstructions that they were mostly vertical mills.

Outside New England, mills also made a rapid appearance. The earliest mill in Pennsylvania is thought to have been a horizontal mill. The mill, built in 1643 by John Printz, Governor of New
Sweden, was located on Cobbs Creek (now in Philadelphia) (Fletcher, 1950:323-324). The Germans took a more active interest in the milling industry centered near Philadelphia; their level of technology was very sophisticated.¹¹ Most of their impact, however, dates to the eighteenth century. Crevecoeur (1782) attributes to their mechanical knowledge and patience the finest mills in all America.

Southeastern Pennsylvania became an important area of milling for the entire Atlantic seaboard. Grist mills literally peppered the area, especially Lancaster and Chester counties, as early as 1758 (Lemon, 1972:200-207). The process had undoubtedly been in progress for nearly a century. Although little is available on the hydraulics of these mills, they were probably vertical water mills because only this type would have produced the power and efficiency necessary for merchant milling. Most mills in the area were engaged in milling for home use, as well as for trade; some exclusively as merchant mills. Philadelphia County could boast 107 grist mills in 1773, an extremely large number for a county of only 127 square miles (Bridenbaugh, 1950:60).

The maps of Christopher Colles (1789) show grist mills, among other features, along the entire length of the post road from York, Virginia, to Albany, New York. Thirty-five mills are shown; only features within sight of the road were included, hence one must assume that a more thorough survey of the area would have revealed numerous other grist mills. Few people were any considerable distance from grist mills (Bourdin, et al., 1972:145-46).

Elsewhere along the Atlantic seaboard, mills were no less
numerous. Mills were abundant in Tidewater Virginia. Just prior to the American Revolution, twenty-three mills were counted by Robert Carter within twelve miles of his country estate (Bridenbaugh, 1950:19).

Colonial records sometimes mention petitions for grist mill lands or laws concerning rights of milling. Some colonial governments encouraged mill building; in Virginia, the General Assembly passed bills in 1693 encouraging the building of fulling and grist mills (Morton, 1960:343). States were also helpful in establishing milling as a business and encouraged mill construction by passing mill laws relevant to tolls, water rights, fishing rights, and the like (Handlin and Frug, 1947:74-78).

Mill history in the western lands during colonial times has received little attention. The coves and isolated valleys of the Appalachian Mountains are, however, reservoirs of information about pioneer industries. Several varieties of mills occur in this region from western Maryland to Georgia. Settlements were well established before the American Revolution, and certainly, mills were important parts of at least some of these communities.

The Carolinas also had their share of mills. During the period of Scotch-Irish settlement, corn and wheat grinding mills were constructed on every available stream in the Carolina piedmont. In the mountains of Kentucky and Tennessee, numerous examples of types of mills could be found as late as 1900. Among the types were the horse mill, the sweep mill (much like a pounding mill), the overshot mill, the rotary hand-mill, and the tub mill (Fox, 1901:390,
The latter type, the tub mill, is known to have been present in Guilford County, on the North Carolina piedmont, as early as 1745 (Straughan, 1972:44). Other corn mills were in coastal North Carolina as early as 1710 (Lefler, 1967:xxx, fig. 2) (Map 2). Some of these were windmills, others possibly were tide mills. Tide mills of the Southern area centered on Charleston and spread as far south as Savannah (Meigs, 1970:463). South Carolina has records of corn mills (Plate I-fig. D) as early as 1732 (Hirsch, 1928, map facing p. 42) and rice mills operated by tides at least by 1795, if not earlier (Brown, 1948:80-92).

More than a century after the first mill in New England, the Salzburgers constructed a mill in Ebenezer, Georgia. The mill was begun about 1735 and completed on December 29, 1740 (Thompson, 1935: 5; Candler, 1907:465). Early maps of the Savannah-Ebenezer area show only sawmills; grist mills were probably more numerous but taken for granted and not listed.

The Colonial Records of Georgia contain references to mills in the minutes of the meeting of the Governor and his Council. As early as 1747 Thomas Ross petitioned for 200 acres on Mill Creek near Augusta, the stream name implying that there was a mill there prior to the petition (Thompson, 1953:6). The period from 1763 to 1769 contains even more petitions. A petition in 1763 from Burgon Bord sought 100 acres of land about a mile from Black Creek on the great Ogeechee River where a grist and sawmill had been erected (Candler, 1907:31). In December, 1764, the Council received a petition from Edward Barnard, Esq., to build a mill on Butler Creek.
The site was near the road from Savannah to Augusta and about seven miles below Augusta (Candler, 1907:255). A petition in January, 1765, asked for 200 acres on Stony Creek, three miles above Augusta, for a grist-mill site (Candler, 1907:265). In January, 1766, Benjamin Moore of North Carolina was granted 150 acres on both sides of Briar Creek for the convenience of a grist mill (Candler, 1907:522). 12

None of the petitions contain information on the type of mill, i.e., whether horizontal or vertical. The fact, however, that most petitions requested from 100 to 200 acres of land for the grist mill and often a saw mill indicates that the mills were probably vertical. The acreage would provide timber for the mill, the dam, and for sawing, only the vertical wheel would have produced enough power for sawing. Other combinations of services were possible, depending upon the advantage of the site.

Numerous documents reveal milling to have been an important and widespread trade during colonial times. What is lacking is detailed information about the mechanical operations of the mills. We do know from these records that all major types of water-powered machinery were being used in America by the close of the colonial period and that Georgia was no exception. Some engineering works of the period give detailed instructions for construction of every type of water-powered mill; one in particular is the only scholarly source showing that all varieties of watermills were known in the United States by 1800 (Evans, 1795).
Mechanics of Milling

Five major types of water mills migrated from Europe to America: the tub mill, breast mill, overshot mill, undershot mill (includes the tide mill), and turbine. The turbine, developed in France, appeared in America in the early nineteenth century. Although water was used as the power source for all of these types of mills, the mechanics of gearing for each differed in some respects. Generally, the difference manifested itself in percentage of efficiency. The tub mill was the least efficient, followed by the tide mill, the undershot, breast, overshot, and turbine, in order of increasing efficiency. Some knowledge of the mechanics of each of these types of mills is germane to an understanding of milling as an art.

Tub Mills. Cheap and relatively easy to construct, the horizontal mill fit both the pioneer and the frontier well. Apparently the tub mill changed little in form since its invention. Slightly more sophisticated in America, it was enclosed in a wooden hoop, called a "tub" (Plate I-fig. E). A slight increase in efficiency was the result. In both Europe and America, this type of mill remained the peasant mill, found along the leading edges of the frontier or in isolated peasant communities. The mill was a community owned service, and each farmer did his own grinding. Tub mill buildings were small, generally only large enough to hold the run of stones and hopper, the wooden bin above the stones into which the grain was poured (Plate I-fig. F). Some variations in the blades of the wheel can be found from southern to northern Europe, but the
The principle of operation is unchanged. Water was directed against the blades of the wheel by a flume. Both the wheel and the runner stone were mounted on the same shaft, hence the stone revolved at the same speed as the wheel. Speed was adjusted by controlling the flow in the flume.

The tub mill was widely used in America (Reynolds, 1970:59) though it was often useless during part of the year because of poor judgment in selecting a mill site (Evans, 1832:162).\textsuperscript{14}

**Undershot Mills.** Energy for an undershot mill comes mainly from the impact of the current upon the blades of the wheel (Evans, 1832:152; and Storck and Teague, 1952:107). Water was impounded behind a mill dam and then brought to the mill by a raceway (Plate II-fig. A). The maximum efficiency of the undershot wheel was about 22 per cent (Burstable, 1965:243; Wilson, 1955-57:27). The undershot wheel was best suited to sites having either little fall or great quantities of water; this generally was in the lower, wider reaches of a stream.

Tide mills generally had undershot wheels. Water was impounded at high tide and then used to operate the mill at low tide. This gave two periods per twenty-four hours when the mill could be active (Storck and Teague, 1952:113). The larger the reservoir, the more hours a mill could operate between tides. Photographs (Plate II-fig. B) and descriptions (Meigs, 1970:462-464) further indicate wheels were vertical.

**Breast Mills.** Breast mills improved efficiency over both the tub and undershot mills. Breast mills receive their name from the
waters being shot onto the wheel, either just above or just below the axle (Plate II-fig. C). If the water strikes above the axle, it is referred to as a high-breast wheel; if below, a low-breast wheel. Greater efficiency is derived from the use of percussion and gravity. Efficiencies exceeding 50 per cent could be obtained. Preferred locations were those with a minimum six-foot fall (Evans, 1832:168). The breast mill seems to have been a substitute for the overshot mill if a large fall, or head, could not be obtained.

**Overshot Mills.** Overshot mills were the most numerous large mill type in Europe and in America until the introduction of the turbine in the early nineteenth century. Efficiencies of greater than 60 per cent made the overshot mill a practical choice where conditions permitted (Singer, 1958:203; Wilson, 1955-57:27). Efficiency is dependent upon size and construction of the wheel, the head, amount of back splash, and related mechanical factors.

The term "overshot" derives from water's striking the wheel tangent to its circumference (Plate II-fig. D); the power results from the effect of gravity on free-falling water. Using gravity, relatively large wheels were operable with small amounts of water. Typical locations were in upper reaches of a stream, below a dam (Storck and Teague, 1952:107).

**Turbines.** Peak efficiency from water power arrived with the turbine. The discovery of the modern turbine in 1827 represents a major turning point in mill history. By 1840 in America a number of turbines had been manufactured, a result of a growing need for a prime mover of larger capacity and better efficiency (Safford and
Hamilton, 1922:1250). During the 1840s James B. Francis introduced an inward-flow turbine (Plate II-fig. E). The water entered the turbine through a series of movable vanes (the "guide blades") and powered a set of vanes known as the "runner", the runner vanes being attached to the shaft. After doing work on the runner, the water escapes beneath the turbine, leaving closer to the center of the machine than the point of entry (Singer, 1958:529-30). The radial inward-flow turbine became the most popular in America (Usher, 1954:392).

Rates of efficiency vary according to size, volume of water, condition of equipment, and the like. Most estimates by knowledgeable millers are supported by mechanical experiments and show turbine efficiency around 80 per cent.¹⁶

**Gearing**

The gearing of all vertical mills is based upon the principle set forth by Vitruvius in the early years of the Christian era. The wheel is mounted on a horizontal shaft, having a vertical gear on the end opposite the wheel. The gear in turn meshed with a smaller horizontal gear that was connected on the shaft supporting, and thus turning, the mill stones. The main adjustments through the centuries have been to improve the gearing by changing from cog gears to bevel gears (Plate II-fig. F). Later, wooden and iron gears would be used in combination in an effort to increase the longevity. Although the use of cast iron in machinery construction was contemporary practice before 1754, the use of wood in the earliest watermill gears persisted in some areas until well into the nineteenth century (Wilson,
The arrangement of gearing in a typical flour mill of 1791 (Plate III-fig. A) was equally representative of small grist mills; the scale was different. The arrangement is a type known as double-gearing, implying that two runs of stones are employed. The single-gear mill (Plate III-fig. B) was more representative of the country grist mill; the double-gear was typical of merchant mills. Both arrangements operate on the same principles of motion and counter-movements.

Large, modified, single-geread movement used improvements in gearing to permit easy expansion of grinding capacity. In the example (Plate III-fig. C) from Somerset, England, the great spur wheel (D) represents underdrive as opposed to overdrive gearing (Plate III-fig. D). As many as eight runs of stones could be operated with underdrive gearing. The improvement of the crown wheel (E) increased the possibilities for arrangements of gears to run sack hoists, bolters, and the like. Other modifications, particularly in America, include mill machinery operated by pulleys and leather belts (Plate III-fig. E). It would be different to assess all the types of gearing arrangements; only the more frequently used were described.

Millstones

Millstones were essentially of two kinds: locally cut stone and imported burr (buhr). Europe offered a number of stones favored by millers, but only the French burr was commonly imported to America.
The diameter of a stone depended upon the amount of grinding to be done, as well as the head. The top, or runner, stone was generally thicker than the bottom, or bedstone. Thickness was based upon the available rock to quarry and the miller's desire for a stone having weight for grinding power and balance.

There were standard patterns of dressing, as well as special designs preferred by certain millers (Straight, 1973:14; Sloane, 1955:36). The two-quarter, three-quarter, and four-quarter dressings (Plate IV) were mostly nineteenth century patterns (Singer, 1958:212). The pattern on each stone consisted of a series of "furrows", the ridges in between being referred to as the "land". Sharpening millstones, called dressing, was a tedious job. The stones were separated either by varying sizes of wedges forced between the runner and bedstone or by a stone crane, a device resembling large ice tongs. The furrows were chipped out by means of a mill bill, a hard iron cutting tool in the form of a double-ended wedge, mounted in a turned wooden handle, or thrift. The process was long, often taking the better part of a day. Frequency of dressing depended on the use of the stone, as well as the stone quality. French burrs were desired because they wear very slowly and retain a good cutting edge, hence fewer dressings.

**Summary**

Milling has undergone significant changes since its early beginnings in the eastern Mediterranean. Two major forms developed: the "horizontal", with a vertical shaft and horizontal wheel and the "vertical", with a horizontal axis and a vertical wheel. Both forms
appear to have originated shortly before the Christian era. The vertical mill surpassed the horizontal in efficiency and spread rapidly throughout Europe, arriving in North America with, or shortly after, the first colonists. The earliest definite American records are from New England, but the art of milling became rapidly dispersed throughout colonial America. The earliest mills in Georgia date from the Ebenezer settlement around 1740.

Modifications of gearing schemes were legion, but the traditional American arrangement was the underdriven gear with the great spur wheel beneath the grinding stones. Combination iron and wooden gears were widely used after 1750, but wooden gears persisted in some areas until the late nineteenth century.

Millstones were either imported French burr or locally quarried granite. There were numerous specialty designs, as well as standard patterns of dressings; the two-quarter, three-quarter, and four-quarter dressings were the most common nineteenth-century patterns.
Notes - Chapter II

1. Avitsur (1969) appears to be in agreement with Moritz that the well-known epigram of Antipater of Salonika may be in error concerning its authorship. Avitsur attributes the poem to Antipater of Sidon during the 2nd century B.C. The origins claimed by Avitsur are not substantiated by any proof and the whole argument remains in essentially the same state of insolubility as presented by Moritz (1958:131-134).

2. The watermill in Gaul is described by Ansonius who wrote around 370 A.D. His description of corn mills and saw mills leads one to suppose that the mills were of the Vitruvian type, although no clear evidence exists (Curwen, 1944:132; Claas, 1958:51). Class remarks that, soon after (370 A.D.), watermills were built in the area of the Ruhr; documentation is lacking (Claas, 1958:51).

3. This would be in agreement with more current works on the area, most notable McCutcheon's (1967) essay on water power in the north of Ireland.

4. McCutcheon (1967:67-68; 1970:72) generally agrees with this time, but states no source as do Storck and Teague. Reynolds (1970:15) places the first records as Saxon charters dated from the tenth century, but his work is somewhat weakly documented. Usher (1954:179-81) claims that the horizontal mill, at least, was known in parts of Britain as early as the beginning of the sixth century, and that by the ninth century there are large mills of six runs of stones. This would, of necessity, imply a well-developed milling system based on the Vitruvian principle. The standard reference for milling for many years was the four-volume set History of Corn Milling by Bennett and Elton (1898). Volume II is devoted to a full discussion of the history of watermills and windmills and contains much useful information, though the dates need revising in some sections.

5. Surprisingly, Darby (1948, 1952, 1954, 1962, 1967, 1971) devotes nothing to an analysis of the mechanism of the Domesday mills. This is disappointing, as there is abundant data on laws, rights, rates, and the like. To get some idea of what types of mills were extant in 1086, one must glean bits and pieces from other sources. The fact that they are listed as true watermills (Reynolds, 1970:15) does not really get at the issue. There is no indication of what a "true watermill" actually looks like.

6. Corn in European terminology refers mostly to wheat, though in general to small grains of all types.

7. Sir George Somers commanded a fleet of nine ships that headed for Jamestown, Virginia, in the early summer of 1609. Somers and several other leading men of the expedition lost contact with the
fleets in a severe storm and were subsequently to land later on Bermuda. They passed the winter in Bermuda, built two new ships, and completed the voyage to Jamestown in the following spring.

8. Although wheat was brought to Mexico by Spaniards in 1529 and was grown on Roanoke Island in 1585, it is not known exactly when the watermill was introduced into the lower portions of North America. See Storck and Teague, Flour for Man's Bread (1952) for further discussion.

9. Storck and Teague (1952:146) state that this mill was a windmill. Kuhlman (1929:30) claims it was a watermill and used only for Indian corn, not wheat. The date is, therefore, suspect and must be viewed with caution.

10. For Boston, see Meigs (1970:463); for Plymouth see Hamilton (1964:4); for Dorchester and Ipswich see Earle (1898:133), Kuhlman (1929:5); for Portsmouth see Carrier (1923:192).

11. See Lemon (1972) for a more complete analysis of German industry in southeastern Pennsylvania.

12. Other petitions were variously granted or refused for the building of mills (Candler, Vol. 9, 1907:557; Vol. 10, 1907:340, 480).

13. Efficiency is defined as the ratio of the energy output of a machine per unit of time to the energy supplied to the machine in the same time interval (Higdon and Stiles, 1955:481-482). It is impossible to eliminate friction in a machine. Hence, the power output is less than the energy supplied. Theoretically, therefore, it is impossible to obtain 100% efficiency. In terms of water wheels, efficiency is determined by the type of wheel. Accurate measurement of the velocity of the flow and construction of a head commensurate with the wheel diameter would result in the greatest efficiency. An overshot wheel, therefore, with a head approximately equal to the diameter of the wheel would deliver the greatest efficiency. The most efficient "wheel" would be the turbine because of the additional pressure exerted by water in the penstock. Most mills apparently did not follow strict engineering standards as concerned construction and efficiencies varied greatly.

14. Poor judgment in choosing a mill site is interpreted as meaning that the miller selected a stream that lacked a year-round flow or that was so shallow that it was susceptible to freezing over in the winter.

15. The modern turbine was discovered by Benoit Fourneyron, a young French engineer, during a contest run by the French government; a contest to improve the efficiency of turbines. Fourneyron combined elements of hydraulics from numerous sources, dating
as far back as Medieval times, to create the first really efficient turbine. His first wheel was 87 per cent efficient; a very successful result. The principles of hydraulics were well understood as far back as da Vinci (See Reti, 1965, 1972).

16. The Francis Wheel has a computed efficiency of 79.31 per cent and an observed efficiency of 79.37 per cent. Other turbines operated between 71 and 80 per cent. The Francis Wheel, and others, was the forerunner of the mixed-flow turbine. One type, the Leffel, was popular in north Georgia.

17. Flour and grist mills may be one and the same or different industries. A flour mill ceases to be a grist mill when it begins to produce flour exclusively, or nearly so, for a commercial market rather than doing custom work.

18. David Jones (1971) has illustrated that a large number of gearing schemes were evolved in England and presumably were also in use in America. The exact scheme of gearing depended a great deal upon local circumstances, but Jones (1971:312) feels that Oliver Evans had established the double-gear as the traditional American arrangement.

19. Europeans favored the French burr as well as the German cullin. The former comes from La Ferte-sons-Jovarre and Bergerao in the Paris Basin. It is a freshwater quartz and much preferred for its longevity. The cullin, or blue, stone comes from the vicinity of Cologne, Germany, being quarried at Nieder Mending in the Rhineland. It is a dark bluish gray lava with even pores. In England, peak stones were widely used, being quarried in the Peak district of Derbyshire. American stones were most frequently local granites. For a further discussion see Russel (1943-45).

20. Sometimes a small sack filled with bran or sand, the bist, was used as an arm cusion by the millwright.
CHAPTER III

THE ESTABLISHMENT AND DIFFUSION OF MILLING IN GEORGIA

About 1740, the Salzburgers at Ebenezer, a group of German immigrants, established the milling trade in Georgia. Settlement in colonial Georgia spread up the Savannah River toward Augusta, fanning outward into the surrounding lowlands. August became an important center for numerous Georgia activities, in particular for people and goods moving into the Cherokee Indian Territory of northwestern Georgia. Spreading up the Savannah River to Augusta, milling continued its westward and northward movement with peoples from Augusta.¹

The major routes used by settlers moving into northwest Georgia are discussed in an effort to determine exactly how and from where the major milling activities entered Georgia. Population origin for the area is analyzed to determine if Georgians were primarily responsible for the spread of milling.

There were few recognized roads in Georgia during the colonial period. A complex pattern of Indian trails (Map 3) did exist, and these formed the basis for movement through the area, as well as the foundation for a future road network.² The northern half of Georgia was traversed by a number of major trails, more so than southern Georgia. In fact, the piedmont region of North and South Carolina, as
MAJOR INDIAN TRAILS:
NORTH GEORGIA

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well as the Appalachian mountain system, was laced with Indian paths.

Major Indian trails focused on present-day Chattanooga. The Great Indian Warpath was a major route mentioned by white visitors to the Cherokee Nation. The Unicoy Trail crossed into Georgia after crossing portions of Tennessee and North Carolina and terminated at Tugaloo, Georgia. The Lower Cherokee Traders Path, prior to 1775, originated near present-day Charlotte, North Carolina, and culminated near Tugaloo, where it joined the path that connected Tugaloo with the Coosa River in Alabama. The Cisca and St. Augustine trails ran from Nashville, through Chattanooga, to Augusta, a principal focus of Indian trading paths. These trails existed prior to any Federal negotiations for road privileges.\(^3\) A number of other significant trading paths crossed northern Georgia and later became settlers' routes. The Hightower Trail was one of the best known of these routes (Goff, 1953:127). The Middle Cherokee path is of special significance because a large segment of it became the Federal Road in 1805 (Goff, 1953:124) (Map 1).

Active settlement of northwest Georgia was delayed for some years. The area was Cherokee country, and it was firmly held by these Indians until the 1820s. By 1820 the first gold rush in the United States had begun; gold had been discovered near Dahlonega, Georgia. Settlers began to press into Cherokee country.

Prior to the gold rush, several important roads crossed north Georgia. One of the earliest of these, and possibly the most important for white movement, was the Federal Road. The road resulted from the Treaty of Tellico, Tennessee, where in 1805 the Cherokees
ceded important lands to the whites and granted the right to lay out a road (Goff, 1957:150). The road eventually ran from Nashville to Augusta, the main route passing through Chattanooga with a second trace branching northward from Ramhurst, Georgia, and culminating in Knoxville. The Federal Road is clearly indicated as a major artery in the land appraisal for the Creek Indians in 1814 (Starrett, 1957). The Bethune Map, prepared in 1831, of the Cherokee lands clearly shows the Federal Road as a major road in the area (Bethune, 1831) (Map 1).

Other important roads on Bethune's map include the Brainerd Road, the Unicoi Road, and the Alabama Road. The same basic roads were in use in 1814 at the time of the Creek land cessions (Goff: 1958). The basic routes present at the time of the Creek cessions had been added to by 1831, but few of the additional roads shown had names (Bethune, 1831). By the 1860s, when the area was well settled, there was a dense network of roads criss-crossing in every direction. Many of the important roads were the same ones traveled by the earliest settlers filtering into northwest Georgia.4

Settlers moved into the area of northwestern Georgia from the neighboring states of Tennessee, North Carolina, and South Carolina.5 The Coosa and Etowah river valleys in Floyd County received most of their population from other parts of Georgia, as did the other counties of northwest Georgia. Of 377 families, 224 (53 per cent) showed Georgia as their birth state. South Carolina provided 59 families (16 per cent) of the total. North Carolina was represented by 36 (10 per cent) and both Tennessee and Alabama contributed 6 per
The large contingent from South Carolina probably moved through Augusta and entered Floyd County by one of the several "Alabama Roads." Some reverse movement into the area is indicated by Alabama's contingent.

Farther east, Cass County (later, Bartow) had a population fairly equally proportioned between native Georgians and South Carolinians, 47 per cent and 43 per cent, respectively. North Carolina accounted for 7 per cent with a wide assortment of origins for the remainder, including Ireland. No doubt, most of these North Carolina settlers entered the area by the Federal Road and some of the Alabama roads.

Murray County, which in 1850 also included Whitfield, had a more balanced population element. Georgia natives still accounted for the majority, 48 per cent, but Tennessee and South Carolina each provided 15 per cent, and North Carolina ranked a close fourth with 11 per cent. Interestingly enough, England and Ireland are very well represented with approximately 7 per cent. The remaining few per cent hailed from Canada, Virginia, and Kentucky.

Milling was carried by these peoples into northwestern Georgia. Little is known about the millwrights of this period. The census returns are incomplete with regard to occupation; the designation "farmer" appeared most commonly. Most millers were farmers who simply had mills as extra facilities on their properties. Despite sophisticated treatises published on mill engineering, more mills were built by farmers with rudimentary carpentering skills than by professional millwrights. Most American mills were improperly
constructed and did not run very efficiently (Evans, 1832). These
cruder mills, however, dotted the landscape and, inefficient or not,
annually ground hundreds of thousands of pounds of meal and feed. 7

The common mill house was built of timber. An enterprising
farmer could construct a mill building and, with the help of an
itinerant millwright, hang a wheel, gear the operation, and quickly
open for business. Itinerant millwrights were, in all likelihood,
far more common than settled professionals.

Most mills in northwestern Georgia probably served a limited
number of people. Although a farmer might travel all day to have his
corn ground, his reason for doing so was personal as mills were not
scarce. A small mill might serve three to seven families, on the
average. Concentration of several mills along a short stretch of
the same water course does not necessarily imply an abnormal demand
for grinding; frequently it is nothing more than competition.

Milling spread gradually across northwestern Georgia, beginning
in earnest with settlement following the Cherokee land cessions in
the 1830s. A number of major thoroughfares were used, including
several that essentially followed former major Indian paths.
Notable among these routes were the Federal Road, the "Alabama Roads,"
the Unicoi Road, and Brainerd's Road. Lesser routes probably
abounded.

The earliest and simplest mills were built by farmers having
little more than a basic knowledge of mill techniques, but recog-
nizing a demand for milling and a good business opportunity. The
last type of mill to arrive in most of the areas was the merchant
flour mill, a type indicative of a prosperous and thriving community.

Settlement in northwest Georgia tended to localize in river valleys and coves. There were numerous foci of settlement resulting in some large villages and towns, but the greater portion of the populace was dispersed throughout the intervening areas. Demand for milling was ubiquitous, and mills sprang up across the landscape in response to the market.
Notes - Chapter III

1. There was certainly an active milling trade around Augusta. This can be deduced from the number of petitions to the Georgia Assembly for water rights and land grants for mill construction in the immediate Augusta area (see Chapter II).

2. Although Myer's map is old and many of the trails are speculative, enough of them have been verified to indicate that the map is reasonably accurate. Comparison of Myer's map with several similar maps prepared by Goff shows essential agreement for several of the trails in the northwest Georgia area. Trail names do not always agree.

3. These "roads" through the Indian lands are such in the loosest sense of the word. Most were less than two feet wide (Myer, 1923:743), but they were used by whites to move into the area.

4. The campaign maps of the Civil War (1958) are excellent sources for examining the road patterns of localized areas as well as certain other cultural features. Mills are one of the more common items mapped further substantiating their widespread commonness.

5. Percentages are based on random samples of place of birth from the 1850 Georgia Census. Samples were taken by tabulating the birthplace of people listed in the census. Every fifth page was taken until approximately 400 entries had been tabulated. Percentages were calculated from the totals extracted. While they cannot give an entirely accurate picture of where settlers were prior to entering Georgia, they at least give some indication of the possible sectional composition of the local population.

6. On most of the maps dating from the Cherokee land cessions through the Civil War, numerous routes bore the designation "Alabama Road." There was movement across the Cherokee lands to Alabama prior to the land cessions of the 1830s. Until 1820 any person desiring to pass through any Indian lands had to be issued a passport by the Governor of Georgia attesting to the character of the individual (Bryan, 1964). Without a passport, safe passage through Indian land could not be guaranteed. Alabama had been opened for white settlement for a number of years; settlers frequently sought lands in the Tennessee River Valley of northeastern Alabama. Little doubt then, any good road heading toward available land west of Georgia became known as an "Alabama Road."

7. See the 1880 Census of Manufacturing, State of Georgia.
CHAPTER IV

A BASIC GEOGRAPHIC MODEL FOR MILL RESEARCH

Enough sites have persisted to demonstrate a widespread milling industry in northwest Georgia. Despite local differences in adaptation to terrain, all of the mills exhibit a certain commonness of form. If mill research is to progress beyond mere description of individual sites, however, the common traits must be solidified into a basic model useful for comparisons and generalization.

The Model

It has been stated that most roads locate on stream interfluves (Newton, 1970:138). In like manner it can be demonstrated that mills are always associated with stream bottoms. Although such a statement is obvious, experience has shown that the obvious is often the most overlooked. Valley bottom location narrows the area of investigation of milling activity to those streams having sufficient flow to keep a mill operating. This does not account, of course, for those streams that have silted up since milling activity ceased to exist.\(^1\) Within the study area, however, most streams that had had milling operations in the past could still operate a mill, if one desired to build.

The core of the model is the grist mill. Activity centers
around the mill, mill dam and pond, and ancillary mill buildings.

Adjacent to the grist mill is the mill dam and pond. Arrangement of ancillary buildings is haphazard and largely a function of available space. A saw mill is the most frequently encountered secondary service. Location is most commonly above the mill and its pond on the same stream. Cotton gins were often operated off the same waterwheel as the grist mill; a line shaft and series of bevel gears transmitted the power. Location, therefore, is adjacent to the mill and close to the waterwheel.

Any of a number of other services may cluster around the mill depending upon demand and space. Blacksmith shops and general store-post office units located adjacent to the road and are thus peripheral to the mill complex. In the same manner, hostleries locate away from the center of milling activity. The miller's house would be located within sight of the mill but upon the valley side.

Several variations are common enough to warrant mention. The saw mill may be located adjacent to the mill dam and pond, opposite the grist mill. Another variant occurs when the mill dam and pond are not adjacent to the mill. Because of property lines it might not be possible to have the dam and pond on one's land. In these cases the owner must seek water rights from neighboring farmers. The mill dam and pond are then some distance from the mill and a means of bringing water to the mill must be incorporated. The common manner of bringing water to the mill over any distance was to use a mill race. Its form was commonly a ditch several feet wide and deep that followed the contour of the valley wall alongside the creek. A head
is thus created at the mill downstream by gravity flow (Map 4).

Enough mill sites and accounts of mills within the northwest Georgia area agree with the basic model or its variants to insure its being applicable in other field areas. Analysis of each known mill site within the four-county area indicates the degree of compliance. Descriptions of mills from traveler's accounts further substantiate that the model is valid.\(^2\) The basic geographic model, therefore, should prove useful in analyzing mill sites from areas outside northwest Georgia.

**Floyd County**

Approximately half of the mills once present in Floyd County were built prior to the Civil War.\(^3\) A large percentage of the remaining mills may be older than the available dates indicate, but data are inadequate to establish that fact. The years prior to the Civil War certainly saw great activity and a large demand for corn meal. Numerous streams with constant flow abound throughout the county.

One of the oldest and most substantial mills in the county was the Old Brick Mill in Lindale (Plate V-fig. A), although the extant building is not the original mill facility (Map 5). The land lot was drawn in the lottery of 1832 and the first deed recorded in 1833. The first mention of mills on the site is in 1837 (Deed Book C, p. 383) when Larkin Barnett purchased one-third of the land lot and "one half the mills now on said property." The following year Barnett purchased the remaining two-thirds of the land lot and the remaining half interest in the mills (Deed Book C, p. 442).\(^4\) The first indi-
A GEOGRAPHIC MODEL OF A MILL COMPLEX

Legend

GRIST MILL
initial occupancy features
Cotton Gin
Secondary features

Map 4

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Map 5. Old Brick Mill site showing mill, mill race, and mill dam. Silver Creek, Floyd County, Georgia.

cication of the kinds of mills on the property appears in a deed of 1854 (Deed Book J, p. 603) which states that the land contains "the grist and saw mills sites and the site whereon the old carding machine stood." Apparently none of the mills was on a major road as later deeds clearly indicate that a right of way to and from them was included. Barnett probably was not a miller or millwright. Deeds mention a miller's house and yard; the Barnett homestead was located away from the mill.
The present building is unusual in that it is constructed of brick. (No other brick mill exists in the research area.) Comparison of architectural style with other buildings of known origin suggests a construction date circa 1845. Whether the other mills on the site were brick or wooden is conjectural, but since no ruins are present, they were probably wooden. The mill is two and one-half stories over a basement. A large overshot wheel (12 to 15 foot diameter), turned by water from Silver Creek, operated the machinery. The extraordinary mill race tapped the creek well over a half-mile above the mill. A ditch, dug along the contour of the mountain, carried the water by gravity flow to an elevated wooden mill race that spanned a lower part of Silver Creek for a distance of several hundred feet. Although exact location of the saw mill is not discernable, it stood somewhere above the grist mill (Deed Book N [1810], p. 485).

Other evidence of outbuildings is scarce. An early photograph includes a small wooden building to the northeast of the mill; its function is unclear. The mill itself has been modified so extensively that little of a conclusive nature can be said about its contents. The original wheel was wooden (the later wheel is known to have been iron), and was shifted at some later date from the east end of the building to the north side. In all likelihood it had two runs of stones and was grinding both wheat and corn. A sophisticated gearing system operated sack hoists, bolters, spreaders, and elevators.5

The Jeffery Mill site on Dykes Creek (Map 6) is more representative of an integrated milling operation. Records indicate that
a mill was operating at the site prior to the early months of 1846 (Deed Book H, pp. 17-18). The present site has only a few logs of the mill's foundations in the creek and some traces of a mill dam. Apparently it was a small mill probably having only one run of stones and a breast or overshot wheel. The mill site is only a hundred yards or so from the Kingston Road, a major thoroughfare between Kingston and Rome; the Jeffery Mill probably served a local clientele as well as travelers.

In addition to the mill, there was a mill-yard dwelling house, a garden, a distillery, and a still-yard hog lot (Deed Book F [1847], p. 198). By 1853 the site had expanded to five acres and also included a saw mill and a house for carding wool (Deed Book N, pp. 296-297). Each time the mill changed hands, right of way for carriages to and from the mill was included. Although the mill site obviously embraced a thriving complex, nothing significant remains, and statements on the relationship of mill to outbuildings would be highly speculative. One sure fact is that the saw mill was a short distance above the grist mill on the same creek (Deed Book F, p. 198).

The site apparently had an operating mill as early as 1845; last mention of the mill is in 1889 (Deed Book MM, p. 420). The 1880 Census of Manufacturing, however, does not list Jeffery Mill as an operating business as of May, 1879; hence, there was an operating span of not less than thirty-five years, between 1845 and 1879.

The Cave Spring grist mill (Plate V-fig. B) was one of the major mills in the lower section of the Coosa Valley. The mill is somewhat unique in that its water supply flowed from a natural spring.
about one-half mile above the mill. The mill is situated on the outskirts of the small town of Cave Spring and was only one of several in the community. The first definite mention of a mill at the site dates to between 1856 and 1866. In 1866 there was only one mill, owned by Richardson and Carroll. By 1872, however, a cotton gin had been added (Deed Book S, p. 143). There is neither mention nor evidence of other associated industries.

The grist mill remains in fairly good condition. It is a two-story, frame building having a shed porch attached across the front. The overshot wheel is twenty feet in diameter and four feet wide; the original was wooden and was replaced with the present metal wheel manufactured by a company in Hanover, Pennsylvania. The building itself is rectangular (approximately 30 x 32 feet) with end gables. The mill building is at the foot of an elongated hill; the raceway brings water to the wheel in the same fashion as at Silver Creek with the Barnett Mill, i.e., by following the contour of the hill.

The mill had two runs of stones, one for wheat, the other for corn. Although wheat was ground, corn was the principal product.\(^7\) Production of cornmeal in 1879 alone amounted to 152,000 pounds whereas wheat flour totaled less than one-third that of cornmeal (Table II).\(^8\) The stones used for wheat were three and one-half feet in diameter, those for corn four and one-half feet. Both runs were encased in wooden vats, a common practice in early milling operations (later changes in some mills included encasing the stones in iron). Numerous elevators, belt-driven gears, bolters, and sieves survive.
<table>
<thead>
<tr>
<th>Owner</th>
<th>Location</th>
<th>Type C-H</th>
<th>Operating Full Time</th>
<th>No. Run Stones</th>
<th>Type Wheel</th>
<th>Bush, Wheat (1,000)</th>
<th>Bush, Other Grains (1,000)</th>
<th>Lbs. Cornmeal (1,000)</th>
<th>Lbs. Feed (1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed Smith</td>
<td>Rome, Ga.</td>
<td>1/4 C</td>
<td>12</td>
<td>3</td>
<td>3</td>
<td>40.0</td>
<td>25.0</td>
<td>1,345.0</td>
<td>610.0</td>
</tr>
<tr>
<td>Gill Brice</td>
<td>Cestanaula River</td>
<td>C</td>
<td>12</td>
<td>3</td>
<td>Steam</td>
<td>30.0</td>
<td>30.0</td>
<td>1,020.0</td>
<td>480.0</td>
</tr>
<tr>
<td>Robinson &amp; Co.</td>
<td>Both</td>
<td>12 (1/2 time)</td>
<td>3</td>
<td>Steam</td>
<td>30.0</td>
<td>30.0</td>
<td>162.0</td>
<td>426.0</td>
<td></td>
</tr>
<tr>
<td>Wm. D. Jones</td>
<td>Armuchee Creek</td>
<td>C</td>
<td>Varied throughout year</td>
<td>2</td>
<td>Leffel</td>
<td>2.0</td>
<td>3.0</td>
<td>156.0</td>
<td>34.0</td>
</tr>
<tr>
<td>Fuller &amp; O'Bryon</td>
<td>Armuchee Creek</td>
<td>C</td>
<td>6</td>
<td>2</td>
<td>Leffel</td>
<td>4.0</td>
<td>5.0</td>
<td>260.0</td>
<td>66.0</td>
</tr>
<tr>
<td>Abner Echoles</td>
<td>Armuchee Creek</td>
<td>C</td>
<td>12</td>
<td>3</td>
<td>Turbine and Paddle</td>
<td>3.2</td>
<td>.8</td>
<td>43.2</td>
<td>46.4</td>
</tr>
<tr>
<td>Thomas R. Early</td>
<td>Conners Creek (Coosa)</td>
<td>7/8 C</td>
<td>12</td>
<td>1</td>
<td>Breast</td>
<td>--</td>
<td>2.5</td>
<td>135.0</td>
<td>.5</td>
</tr>
<tr>
<td>A.J. King</td>
<td>Conners Creek (Coosa)</td>
<td>C</td>
<td>6</td>
<td>2</td>
<td>Breast</td>
<td>.7</td>
<td>.7</td>
<td>38.9</td>
<td>9.6</td>
</tr>
<tr>
<td>Owner</td>
<td>Location</td>
<td>Type</td>
<td>No. Custom</td>
<td>No. Merch</td>
<td>Mo. Operating</td>
<td>No. Run</td>
<td>Type</td>
<td>Bush, Wheat (1,000)</td>
<td>Bush, Other Grains (1,000)</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>------</td>
<td>------------</td>
<td>-----------</td>
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<td>------</td>
<td>-------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>J.T. Turner</td>
<td>Cobbins Creek (Coosa)</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Overshot</td>
<td>--</td>
<td>1.5</td>
<td>81.0</td>
<td>.3</td>
</tr>
<tr>
<td>Thomas and Kinard</td>
<td>Big Cedar Creek</td>
<td>C</td>
<td>6</td>
<td>1</td>
<td>Curve (?)</td>
<td>--</td>
<td>24.0</td>
<td>130.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Foster and Brothers</td>
<td>Big Cedar</td>
<td>C</td>
<td>12</td>
<td>3</td>
<td>Turbine</td>
<td>3.0</td>
<td>5.0</td>
<td>27.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Baker and Lee</td>
<td>Cedar Creek</td>
<td>7/8 C</td>
<td>12</td>
<td>3</td>
<td>Tub Wheel</td>
<td>3.0</td>
<td>4.0</td>
<td>21.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Carroll and Harper</td>
<td>Cedar Creek</td>
<td>7/8 C</td>
<td>12</td>
<td>2</td>
<td>Overshot</td>
<td>2.0</td>
<td>3.0</td>
<td>152.0</td>
<td>34.0</td>
</tr>
<tr>
<td>C.F. Powers</td>
<td>Silver Creek</td>
<td>1/2 C</td>
<td>11</td>
<td>1</td>
<td>Turbine</td>
<td>--</td>
<td>3.0</td>
<td>162.0</td>
<td>.6</td>
</tr>
<tr>
<td>Samuel B. Chambers</td>
<td>Silver Creek</td>
<td>C</td>
<td>8</td>
<td>2</td>
<td>Breast</td>
<td>6.0</td>
<td>14.2</td>
<td>766.8</td>
<td>111.2</td>
</tr>
<tr>
<td>Holder &amp; Hunt</td>
<td>Silver Creek</td>
<td>1/2 C</td>
<td>12</td>
<td>3</td>
<td>Overshot</td>
<td>31.2</td>
<td>62.4</td>
<td>336.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Joshua McGuire</td>
<td>Silver Creek</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Turbine</td>
<td>--</td>
<td>12.0</td>
<td>648.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Owner</td>
<td>Location</td>
<td>Type</td>
<td>Hours Operating</td>
<td>No. Run</td>
<td>Type</td>
<td>Bush, Wheat (1,000)</td>
<td>Bush, Other Grains (1,000)</td>
<td>Lbs. Cornmeal (1,000)</td>
<td>Lbs. Feed (1,000)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------</td>
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<td>-------------------------</td>
<td>----------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>John B. Tippen</td>
<td>Silver Creek C</td>
<td>C</td>
<td>12</td>
<td>2</td>
<td>Turbine</td>
<td>12.4</td>
<td>25.0</td>
<td>1,350.0</td>
<td>260.0</td>
</tr>
<tr>
<td>Henry Chubb</td>
<td>Lake Creek C</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Turbine</td>
<td>—</td>
<td>1.2</td>
<td>66.9</td>
<td>74.8</td>
</tr>
<tr>
<td>Johnson's Mill</td>
<td>Spring Creek</td>
<td>both</td>
<td>12</td>
<td>2</td>
<td>Turbine and Tub</td>
<td>4.5</td>
<td>6.0</td>
<td>324.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Rounsaville and</td>
<td>Spring Creek</td>
<td>both</td>
<td>12</td>
<td>3</td>
<td>2 Turbine, 1 Tub</td>
<td>3.0</td>
<td>6.5</td>
<td>354.0</td>
<td>52.0</td>
</tr>
<tr>
<td>Brothers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John C. Eve</td>
<td>Cedar Branch</td>
<td>3/4 C 1/4 M</td>
<td>?</td>
<td>2</td>
<td>Left Turbine</td>
<td>.5</td>
<td>1.8</td>
<td>56.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>
The mill race is between two and three feet deep and is four to six feet wide. The portion of the race approaching the wheel is channeled between concrete walls though these were formerly wooden (Plate V-fig. C). As one moves up the race it deepens, often to a depth of four feet. Much silting has taken place and the exact depth of the original race is uncertain. At any rate, a large volume of water still flows through the channel, only to be diverted to Mill Race Creek before reaching the waterwheel.

Assuming that the mill began operation shortly before the Civil War, it enjoyed a lengthy span of activity with operations ending in the 1950s. The returns for the 1880 Census of Manufacturing list it as a viable enterprise with net profits of that year greater than $5000. There were other mills, however, in the same vicinity that competed heavily with the grist mill in Cave Spring. The two more important of these were the Baker and Lee Mill and the Foster Mill complex. The latter complex was located on Big Cedar Creek, while the former was located where Little Cedar Creek runs into Big Cedar Creek (Deed Book R, p. 567).

The Baker and Lee Mill complex was an integrated and functioning unit by 1853. A deed of the period (Deed Book J, p. 405) states that there were mills (presumably grist and saw), a cotton gin, and other fixtures. Little is known about the site. There is no evidence of a mill dam or pond though later deeds speak of falls of twelve and fourteen feet (Will Book E, p. 95). A fall of only four feet was recorded in 1880, one tub wheel, and three runs of stones. Nothing is left of the buildings and the site is now covered with
dense thicket. The mill property repeatedly appears in the deed books but without indication of when the mill ceased to operate.

The Foster Mill complex (Plate V-fig. D) was originally built by Judge George W. Thomas. It was known locally as the Thomas Mill until bought out by the Foster brothers, John C. and Green. The mill was located on one of the old routes to Alabama, the Black Bluff Road, and was a substantial complex. Judge Thomas built a grist mill, saw mill, blacksmith shop, planing mill, threshing machine, and cotton gin. In addition, there was a store and post office and a covered bridge over Big Cedar Creek. The mill complex was certainly fully operational during the 1880s, showing a profit of $8000 in 1879.

Today, the only remaining element of the complex is the store, still operating as a crossroads grocery, and the ruins of the mill in the creek. The mill building finally collapsed in 1971, after remaining idle for over twenty years. The span of operation lasted about one hundred years. It began and ended as a turbine-powered mill.

In addition to the Barnett Mill at Lindale, Silver Creek sported a number of other mills. The creek's rapid flow seems to have prevented that extraordinary silting that has occurred on other small streams. Yet, the creek hardly seems large enough to have supported two major merchant flour mills in addition to several other smaller though impressive mills. Not a stone remains of any of these mills, save the brick structure at Lindale. The mills performed either merchant and custom work or all custom work. They averaged two runs of stones and slightly over thirteen feet of head. Exactly why all
these mills concentrated in this area is a mystery. The Silver Creek community was never a population focus and had no large towns. Indeed, it was more of a crossroads community with farmers scattered liberally throughout the area. The market developing around Rome may have been a deciding factor.

Field data and information gleaned from deeds has allowed for some notion of the types of activities involved. The Porter Mill complex at Silver Creek eventually contained a grist mill, cotton gin, and press. The Chambers Mill complex, as late as 1886, contained a grist mill, saw mill, and cotton gin. The mill was operating in the 1930s and was destroyed by fire in the 1950s.11

East of the Silver Creek mill community, business was good but more localized. The Johnson Mill complex on Spring Creek was a large, two-story frame building. The mill site lay where a local wagon road crossed Spring Creek. There was only one other mill in the Chulio District (as it is known locally) and the two apparently had ample business. In addition, these two mills, Johnson and Rounsaville, served the Wax community of southeastern Floyd County.

The Johnson Mill site contained a store and post office. The mill was situated on a steep bank on the east side of the creek. A rather substantial wooden dam backed up a large mill pond and raised a head of eighteen feet. Originally having a water wheel, the mill was converted prior to 1880 to a turbine operation. The mill was built before the Civil War and finished grinding corn about 1935-36.12 Wheat was also ground at the mill, but it in no way approached the totals in corn. A total value in 1880 of $13,510 gives some indica-
tion of the success of the operations.

Less is known concerning the Rounsaville complex on Spring Creek. If the census records can be treated as accurate, a value of $11,000 indicates some measure of success. The turbine-powered mill used three runs of stones. Not a single trace of this mill remains today, and its duration of grinding cannot be determined.

The city of Rome had several mills, mostly merchant flour and steam operated. Total values in 1880 of $30,000, $50,000, and $80,000 are proof of the thriving economy and the demand for fine flour in and around Rome.

The northern sections of the county contained fewer mills and those present appear to have been smaller operations than those south of the Etowah and Coosa rivers. Armurchee Creek seems to have been the major milling area north of Rome with three mill complexes: Jones, Echols, and Fuller and O'Bryons. Each of these mills was a combination of grist, flour and sawing operations.

Bartow County

Few of the mill sites in Bartow County are recognizable as such and valuable deed records used to substantiate and further support field data were destroyed during Sherman's March through Georgia.

The only operating mill in the county is Jones Mill (Plate V-fig. E and Table III). The mill is located on Pettits Creek (Map 7) within the fringe of suburbs surrounding Cartersville. The mill is off the main highway, both historically and presently, and had
### TABLE III

RATON COUNTY - MILL STATISTICS (1880)

<table>
<thead>
<tr>
<th>Owner</th>
<th>Location</th>
<th>Type</th>
<th>Mos. Operating</th>
<th>No. Run Stones</th>
<th>Type Wheel</th>
<th>Bush, Wheat (1,000)</th>
<th>Bush, Other Grains (1,000)</th>
<th>Lbs. Cornmeal (1,000)</th>
<th>Lbs. Feed (1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.M. Ford</td>
<td>Etowah River</td>
<td>3/4 C</td>
<td>12</td>
<td>2</td>
<td>Turbine</td>
<td>12.0</td>
<td>10.0</td>
<td>480.0</td>
<td>260.0</td>
</tr>
<tr>
<td>T.A. Rogers &amp; Son</td>
<td>Euharlee Creek</td>
<td>C</td>
<td>12</td>
<td>4</td>
<td>Tub</td>
<td>1.2</td>
<td>.8</td>
<td>38.4</td>
<td>25.1</td>
</tr>
<tr>
<td>Camas &amp; Lewis</td>
<td>Two Run Creek</td>
<td>1/6 C</td>
<td>12</td>
<td>3</td>
<td>Bernum (?)</td>
<td>35.0</td>
<td>10.0</td>
<td>540.0</td>
<td>345.0</td>
</tr>
<tr>
<td>Susan Howard</td>
<td>Connasena Creek</td>
<td>C</td>
<td>5</td>
<td>?</td>
<td>Turbine</td>
<td>.2</td>
<td>.6</td>
<td>28.8</td>
<td>7.6</td>
</tr>
<tr>
<td>J.M. Veach and Company</td>
<td>Adairsville</td>
<td>M</td>
<td>8</td>
<td>4</td>
<td>Steam</td>
<td>60.0</td>
<td>10.5</td>
<td>588.0</td>
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<tr>
<td>C.H. Manning</td>
<td>Oothesologs Creek</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Overshot</td>
<td>.2</td>
<td>.6</td>
<td>28.8</td>
<td>7.8</td>
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<td>Noah King (?)</td>
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<td>C</td>
<td>6</td>
<td>7</td>
<td>Howell's</td>
<td>.2</td>
<td>1.1</td>
<td>55.2</td>
<td>12.9</td>
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<td>Location</td>
<td>Type</td>
<td>Operating</td>
<td>No. Run</td>
<td>Type</td>
<td>Bush, Wheat (1,000)</td>
<td>Bush, Other Grains (1,000)</td>
<td>Lbs. Cornmeal (1,000)</td>
<td>Lbs. Feed (1,000)</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------</td>
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<td>--------------</td>
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<td>--------------------------</td>
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<td>------------------</td>
</tr>
<tr>
<td>Enoch Gaines</td>
<td>Pine Log Creek</td>
<td>C</td>
<td>Varied throughout</td>
<td>2</td>
<td>Turbine</td>
<td>1.2</td>
<td>1.5</td>
<td>72.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Bibb and Co.</td>
<td>Cedar Creek</td>
<td>C</td>
<td>8</td>
<td>3</td>
<td>Overshot</td>
<td>6.0</td>
<td>3.0</td>
<td>144.0</td>
<td>114.0</td>
</tr>
<tr>
<td>Mosteller</td>
<td>Cedar Spring</td>
<td>C</td>
<td>Varied throughout</td>
<td>2</td>
<td>Overshot</td>
<td>1.6</td>
<td>8.0</td>
<td>384.0</td>
<td>88.0</td>
</tr>
<tr>
<td>William &amp; Co.</td>
<td>Salacos Creek</td>
<td>C</td>
<td>2</td>
<td>2</td>
<td>Center Kind</td>
<td>1.2</td>
<td>1.4</td>
<td>67.2</td>
<td>29.2</td>
</tr>
<tr>
<td>A. Johnson</td>
<td>Pine Log Creek</td>
<td>C</td>
<td>2</td>
<td>1</td>
<td>Turbine</td>
<td>--</td>
<td>3.0</td>
<td>144.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Parrot and Hollinshed</td>
<td>Pine Log Creek</td>
<td>C</td>
<td>2</td>
<td>?</td>
<td>Center Kind</td>
<td>2.0</td>
<td>.5</td>
<td>220.0</td>
<td>34.0</td>
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<td>Gilreath Holton</td>
<td>Pettits Creek</td>
<td>3/4 C</td>
<td>6</td>
<td>2</td>
<td>Turbine</td>
<td>2.5</td>
<td>6.0</td>
<td>324.0</td>
<td>44.5</td>
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<tr>
<td>Best &amp; Weems</td>
<td>Two Run Creek</td>
<td>1/2 C</td>
<td>6</td>
<td>2</td>
<td>Leffel</td>
<td>7.5</td>
<td>8.0</td>
<td>348.0</td>
<td>72.0</td>
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<tr>
<td>Thomas Mann</td>
<td>Allatoona Creek</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Bucket</td>
<td>--</td>
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<td>49.5</td>
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<tr>
<td>Owner</td>
<td>Location</td>
<td>Type of Operation</td>
<td>No. of Run Stones</td>
<td>Type of Wheel</td>
<td>Bushel, Wheat (1,000)</td>
<td>Bushel, Other Grains (1,000)</td>
<td>Lbs. Cornmeal (1,000)</td>
<td>Lbs. Feed (1,000)</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
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<td>-------------------</td>
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<td>---------------</td>
<td>-----------------------</td>
<td>---------------------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>Jones Maddox (?)</td>
<td>Etowah River</td>
<td>C</td>
<td>4</td>
<td>Bucket</td>
<td>--</td>
<td>1.0</td>
<td>48.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Joseph William</td>
<td>Branch runs into Etowah River</td>
<td>C</td>
<td>4</td>
<td>Turbine</td>
<td>--</td>
<td>1.0</td>
<td>48.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>John Willa Long</td>
<td>Stamp Creek</td>
<td>C</td>
<td>12</td>
<td>Overshot</td>
<td>--</td>
<td>2.5</td>
<td>135.0</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Goodston</td>
<td>Messon Creek</td>
<td>C</td>
<td>12</td>
<td>Turbine</td>
<td>--</td>
<td>.5</td>
<td>24.0</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>John Rogers</td>
<td>Branch into Stamp Creek</td>
<td>C</td>
<td>12 (half time)</td>
<td>Bee Turbine</td>
<td>--</td>
<td>1.6</td>
<td>78.8</td>
<td>12.8</td>
<td></td>
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<tr>
<td>John Lawson</td>
<td>Stamp Creek</td>
<td>C</td>
<td>12</td>
<td>Overshot</td>
<td>2.0</td>
<td>2.5</td>
<td>140.0</td>
<td>30.0</td>
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BARTOW COUNTY: MILL SITES

Map of Bartow County showing mill sites and Georgia highway markers. Locations include Andrews, Kingston, Cassville, Best and Weems, Ganes and Lewis, Lowry's, Auchmutes, and Euharlee. Map credits are included.
special rights of way specified in deed transfers.

The mill building is the only unit on the site. The mill apparently served the Cassville area, although the extent of its service is undetermined. It lacked both a saw mill and gin. The building is a two-story frame structure with one turbine-powered run of stones. From the mill pond some half mile up the creek, water was carried across a pasture by the race (Map 8). Shortly before reaching the mill, the water was channeled into a concreted race before emptying into the penstock of the turbine, a large cylinder of iron resembling a cistern. The mill is on a bank some fifteen to twenty feet above the creek; water carried from the pond to the mill across the pasture has a large head for powering the turbine.

Map 8.--Jones Mill site showing mill, mill race, and mill pond. Fettits Creed, Bartow County, Georgia.
The Ganes and Lewis Mill complex (Plate V-fig. F) was located on Two Run Creek, 1.5 miles east of Kingston. The five story building contained an automated system for transporting, cooling, sifting, bolting, and similar flouring operations. There was a miller's house, a tool shed, and the mill on the site (Map 9). The mill was originally built around 1870 by H. S. Crawford. Louis Pendleton Ganes bought the mill from Crawford. There was a feeder line from the Western and Atlantic Railroad and carloads of wheat and corn were regularly bought. Flour operations stopped in 1910, and corn grinding stopped in 1955. The mill was a turbine-operated unit.

Map 9.—Ganes and Lewis mill site showing mill, mill race, and mill pond. Two Run Creek, Bartow County, Georgia.
Mostellers Mill is similar to the Cave Spring grist mill and the Foster Mill complex of Floyd County. Operated from a number of natural springs, this industrial complex embraced the mill, a saw mill, a furniture mill, and a woolen and carding mill. The complex was located on Cedar Spring, 5 miles east of the settlement of Adairsville. While Mostellers Mill was important to the community, it was not the focus.\(^{14}\) It was important because one could get wheat, corn, wool, wood, and furniture all in one location.\(^{15}\) The complex drew people from a wide area, even as far away as Kingston, a long trip in ante-bellum days.\(^{16}\)

The Auchmutey Mill (Plate VI-fig. A) is located on Euharlee Creek, near Stilesboro. The mill building stands thirty yards from the creek. The former penstock for the turbine is next to the creek and there are pieces of the old mill dam. The millstones in the building were powered by a shaft extending from the penstock and supported on stone pillars (Map 10).

**Murray County**

The Dennis Mill site is located on Rock Creek in the south-eastern corner of the county (Map 11). It is located only a few miles from Ramhurst, the point at which the old Federal Road forks, one fork leading northwestward to Chattanooga, the other heading northward to the Cherokee villages in eastern Tennessee. The Dennis Mill mostly served the Ramhurst Community.

In addition to the mill (Plate VI-fig. B) there was a saw mill, a blacksmith's shop, a general store and post office, and, further
up the creek, an old cotton mill. There was a mill dam and pond a half-mile farther up the creek. The creek itself is broad (10-15 feet) and shallow (8-10 inches) and flows rapidly over a rock bottom. The concrete dam, about fifteen feet high, was destroyed about ten years ago along with the mill pond.

One of the amazing aspects of the Dennis Mill is its mill race. From an opening in the dam, water flowed through a wooden trough for about ten yards before flowing into the race itself. The race is about eight to ten feet wide and six to eight feet deep at the start. As the race follows the contour around the ridge behind the

Map 10.--Auchmuteys Mill site showing mill, penstock and line shaft supports. Euharlee Creek, Bartow County, Georgia.
MURRAY COUNTY: MILL SITES

Legend
- Mill sites
- Georgia highway markers
- Former routes

Map 11

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mill, it reaches a depth of over twenty feet and has been carved or blasted through solid rock (Plate VI-fig. C and Map 12).

Map 12.--Dennis Mill site showing mill, blacksmith shop, and other associated features. Rock Creek, Murray County, Georgia.

Dennis Mill had two runs of stones, one each for wheat and for corn. It was a custom mill and, in 1879 alone, ground 4,264 bushels of wheat in addition to 408,000 pounds of cornmeal (Table IV). The Dennis community, as some local people refer to the mill site and its environs, was certainly thriving. The general store and its post
<table>
<thead>
<tr>
<th>Owner</th>
<th>Location</th>
<th>Type</th>
<th>C-Custom</th>
<th>W-Merchant</th>
<th>Horse</th>
<th>Operation</th>
<th>Full Time</th>
<th>No. Run</th>
<th>Stones</th>
<th>Type</th>
<th>Wheel</th>
<th>Bush, Wheat (1,000)</th>
<th>Bush, Other Grains (1,000)</th>
<th>Lbs. Cornmeal (1,000)</th>
<th>Lbs. Feed (1,000)</th>
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<td>C.F. Waterhouse</td>
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<td>C</td>
<td>12</td>
<td>2</td>
<td>Turbine</td>
<td>4.0</td>
<td>5.0</td>
<td>270.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Campbell</td>
<td>Conasauga</td>
<td>C</td>
<td>12</td>
<td>2</td>
<td>Kilgore</td>
<td>2.0</td>
<td>2.5</td>
<td>135.0</td>
<td>33.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J Fagan</td>
<td>Holly Creek</td>
<td>C</td>
<td>9</td>
<td>2</td>
<td>20 ft. Overshot</td>
<td>.3</td>
<td>.5</td>
<td>26.3</td>
<td>6.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>King &amp; McHan</td>
<td>Holly Creek</td>
<td>C</td>
<td>12</td>
<td>2</td>
<td>24 ft. Overshot</td>
<td>.2</td>
<td>.5</td>
<td>20.0</td>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dennis Johnson</td>
<td>Rock Creek</td>
<td>C</td>
<td>12</td>
<td>2</td>
<td>22 ft. Overshot</td>
<td>4.2</td>
<td>8.5</td>
<td>408.0</td>
<td>86.5</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Vospergh &amp; Hury</td>
<td>No</td>
<td>C</td>
<td>6</td>
<td>1</td>
<td>?</td>
<td>--</td>
<td>7.0</td>
<td>336.0</td>
<td>42.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M.R. Chastain</td>
<td>Mill Creek</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>Tub</td>
<td>--</td>
<td>3.0</td>
<td>144.0</td>
<td>18.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith Treadwell</td>
<td>Conasauga</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>2 Undershot (3 ft.)</td>
<td>.5</td>
<td>2.0</td>
<td>96.0</td>
<td>22.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Jno. L. Edmondson</td>
<td>Holly Creek</td>
<td>C</td>
<td>12</td>
<td>1</td>
<td>2 Turbines</td>
<td>.4</td>
<td>.9</td>
<td>43.2</td>
<td>14.1</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
office were owned by John Gregory. In 1905 Gregory moved his operation to Chatsworth. The mill continued to grind corn, however, until 1953.

Two other sizeable mill complexes, besides the one at Ramhurst, existed in Murray County. The older of the two was the Hassler Mill complex. The Hassler Mill site was on Holly Creek, several miles north of the settlement of Fort Mountain. The road passing just to the north of the mill wound upward and through the Blue Ridge Mountains to Ellijay and points beyond. David Hassler built his mill in 1822. Hassler, a German millwright, migrated to Georgia from North Carolina and despite the small white settlement in the area, built a mill.

Hassler's first mill on the site, a pounding mill, operated for nearly a year while the big mill was being constructed. The finished mill was a three and one-half story frame building with a twenty-two foot overshot wheel. Eventually a general store, cotton gin, saw mill, and blacksmith's shop joined the big mill. As the only wheat mill at the time for miles, Hasslers Mill drew customers from a large area.

The Hassler Mill and environs is one of the few in the county that developed into a regular milling community of any consequence. There were four mills almost within sight of one another: Hasslers, Rogers, Windlers, and Isenhowers. Competition was keen and based primarily upon the quality of grind. If a customer felt he was cheated or unfairly treated, he would deliberately ride past his regular miller to use another.
The only mill standing is the Rogers Mill. It was a saw mill and grist mill combination, originally operated by an overshot wheel, but more recently by a turbine. The mill is now idle, the raceway silted up, and the penstock eroded away. The Rogers Mill was originally built by David Hassler.

About three miles west of Cisco, on the Conasauga River, is the Gregory Mill site. Only a portion of a concrete dam is left. According to local peoples, the river was constantly shifting at the site, and the mill owner was perpetually repairing and expanding his dam. Trouble with the dam is blamed for a share of the demise of the complex. Located in a sort of cul de sac, there being no evidence of a road's crossing the river to the west, there was, nonetheless, a thriving complex at one time. There was a flour and grist mill, saw mill, cotton gin, blacksmith's shop, and general store and post office. In addition to the remnants of the dam, there are portions of the gin building, used as an equipment shed, and the old general store converted into a residence. The site is incorporated within a private farm in an otherwise seemingly economically depressed area. The only date on record concerning the mill is 1874 at which time right of way for the mill race, dam, and associated water privileges were transferred to C. S. and G. O. Pangle (Deed Book M, p. 384). Local informants vaguely remember corn grinding in the 1930s.

There were numerous other mills scattered throughout the county. Few remains can be found. Records are spotty, and too few people recall anything significant in the way of details. The Chastain Mill on Mill Creek succumbed to a new road; the Carter Mill
on the Coosawattee River has been obliterated by a Federal dam proj-
ject. The two mills at the former Fort Mountain settlement have been
replaced by a subdivision. The Boatwright Mill and another mill on
the upper reaches of Holly Creek have long since disappeared. Only
a portion remains of the mill race that served the two mills on Rock
Creek north of Holly. A portion of the mill at Cohutta Springs on
Sumac Creek still exists. The stones, encased in iron, as well as
a few gears remain. It was a turbine operated mill and apparently
of late origin. The other sites on Sumac Creek and the North Prong
of Sumac Creek have disappeared.

The Chabble Mill site on the Jacks River is important because
of its dam. The mill building is still standing but is empty. A
local resident stated that it had at one time been a turbine oper-
ation. The dam, however, remains in fair condition and is a fine
example of how the common wooden mill dam was constructed (Plate VI-
fig. D). The dam is constructed along guide lines suggested in Evans' work (1832). The dam is approximately thirty-five feet wide and ten
feet high. The basic construction material is 10-inch and 12-inch
square heart pine timber; the backing is corrugated iron, but was
probably wooden shingles or shakes originally. The bracing is both
mortise-and-tenoned and nailed with ten-inch and twelve-inch square
spikes. The ruins of this type of mill dam have cropped up through-
out the four counties surveyed.

John Greens Mill on Sumac Creek is now in ruins. Local resi-
dents could add nothing to illuminate any of its history. It was
a small mill, perhaps fifteen by twenty feet, and was single storied.
It was constructed of logs, but the penstock for the turbine was concrete. The mill had an exceptionally long (nearly one mile) mill race paralleling Sumac Creek. The race averaged four feet wide and seven feet deep, really a large race for so small a mill. The mill, which collapsed during the winter of 1972, sits just at the edge of a large garden, no other remnants of buildings are extant. The road to the mill does not continue along or across the creek.  

Occasionally one happens upon a rare old-timer with a sharp mind for details. Such a person is the son of Smith Treadwell, who owned a mill on Conausauga River. The Treadwell Mill was the only undershot mill in the four-county study area. The single story building was anchored to the bank and extended out over the river. Two huge wheels, twenty feet high and twelve feet wide, were turned by the constant and swift current of the river. In addition to the flour and grist mill, there was a gin and saw mill. The saw mill could make shingles, as well as dress lumber. The mill was built around 1868; the wheels were replaced by a Davis turbine in 1903, and the whole operation ceased between World War I and II. Interestingly, the Treadwell Mill was the only site adjacent to a ferry, although the ferry appeared after the mill.  

Whitfield County

For all of the importance of milling in Whitfield County (Map 13 and Table V) only one mill remains active. Praters Mill is located on Coahulla Creek, some seven miles north of Dalton, the
WHITFIELD COUNTY:
MILL SITES

Legend
• Mill sites
① Georgia highway markers

Map 13

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<table>
<thead>
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<th>Owner</th>
<th>Location</th>
<th>Type</th>
<th>Mos. Operating Full Time</th>
<th>No. Run</th>
<th>Type</th>
<th>Bush, Wheat (1,000)</th>
<th>Bush, Other Grains (1,000)</th>
<th>Lbs. Cornmeal (1,000)</th>
<th>Lbs. Feed (1,000)</th>
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<td>Benjamin F. Smith</td>
<td>Swamp Creek</td>
<td>C</td>
<td>9</td>
<td>1</td>
<td>12 ft. Breast</td>
<td>2.4</td>
<td>4.0</td>
<td>216.0</td>
<td>41.6</td>
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<tr>
<td>Henry Yeager</td>
<td>Spring Creek</td>
<td>C</td>
<td>12</td>
<td>2</td>
<td>20 ft. Breast</td>
<td>1.2</td>
<td>2.5</td>
<td>135.0</td>
<td>24.6</td>
</tr>
<tr>
<td>Rufus L. Fletcher</td>
<td>Sugar Creek</td>
<td>1/2 C</td>
<td>1/2 M</td>
<td>4</td>
<td>7 ft. Paddle</td>
<td>--</td>
<td>2.0</td>
<td>107.5</td>
<td>4.0</td>
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<tr>
<td>David H. Collins</td>
<td>Coydbee</td>
<td>1/8 C</td>
<td>7/8 M</td>
<td>6</td>
<td>13 ft. Breast</td>
<td>--</td>
<td>2.4</td>
<td>120.2</td>
<td>5.0</td>
</tr>
<tr>
<td>J. &amp; E. Vomack</td>
<td>Conasauga</td>
<td>1/8 C</td>
<td>7/8 M</td>
<td>12</td>
<td>2 Turbines</td>
<td>--</td>
<td>4.8</td>
<td>259.1</td>
<td>9.6</td>
</tr>
<tr>
<td>Wilson Norton</td>
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<td>C</td>
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<td>2</td>
<td>8 ft. Paddle</td>
<td>1.2</td>
<td>3.8</td>
<td>203.0</td>
<td>26.4</td>
</tr>
<tr>
<td>Samuel A. Keith</td>
<td>Coahulla</td>
<td>C</td>
<td>6</td>
<td>2</td>
<td>1 Turbine</td>
<td>4.0</td>
<td>6.3</td>
<td>342.9</td>
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<td>S. &amp; S.C. Treadwell</td>
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<td>4.5</td>
<td>242.0</td>
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<td>8 ft. Paddle</td>
<td>1.0</td>
<td>2.0</td>
<td>107.8</td>
<td>18.0</td>
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<td>Owner</td>
<td>Location</td>
<td>Type</td>
<td>No. Operating</td>
<td>No. Run</td>
<td>Type</td>
<td>Bush, Wheat (1,000)</td>
<td>Bush, Other Grains (1,000)</td>
<td>Lbs. Cornmeal (1,000)</td>
<td>Lbs. Feed (1,000)</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------</td>
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<tr>
<td>Mills &amp; Keith</td>
<td>Spring Creek</td>
<td>C</td>
<td>8</td>
<td>2</td>
<td>20 ft. Overshot</td>
<td>1.5</td>
<td>1.2</td>
<td>64.0</td>
<td>23.0</td>
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<td></td>
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<tr>
<td>John Haskins</td>
<td>Mill Creek</td>
<td>2/3 C</td>
<td>12</td>
<td>2</td>
<td>20 ft. Overshot</td>
<td>2.0</td>
<td>4.5</td>
<td>243.0</td>
<td>37.0</td>
</tr>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Michael Hassler</td>
<td>Mill Creek</td>
<td>1/8 C</td>
<td>12</td>
<td>2</td>
<td>11 ft. Breast</td>
<td>2.0</td>
<td>3.0</td>
<td>161.4</td>
<td>34.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7/8 H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John B. Donna</td>
<td>Chickamauga</td>
<td>1/8 C</td>
<td>12</td>
<td>2</td>
<td>Tod Turbine</td>
<td>2.0</td>
<td>3.0</td>
<td>161.6</td>
<td>34.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7/8 H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
county seat (Plate VI-fig. E). The site was originally a saw mill (Deed Book A [1851], p. 42). Benjamin F. Prater and Tilmont H. Pitner bought the property in 1858 (Deed Book B, p. 160) and the large complex stemmed from this transaction. The site included 80 acres and was located where the local wagon road crossed the bridge over Coahulla Creek. At its peak the complex consisted of a flour and grist mill, cotton gin, blacksmith shop, saw mill, wool carder, and general store. The mill also had a hostelry for patrons who stayed overnight (Map 14).

Map 14.--Praters Mill site showing mill and association of other services. Coahulla Creek, Whitfield County, Georgia.
Praters Mill served a large community. It was by no means the only mill in the vicinity, but it was one of the very largest mills in Whitfield County and is often referred to as the oldest commercial business. As far as records can be traced, it does appear that it was the earliest mill; Praters Mill operated for nearly one hundred years. It changed hands frequently with the last milling done around the early 1950s. The mill is now operating on a limited basis during the summer months as part of a craft festival held at the site.

Few other mill sites approached the integrated mill patterns established by Praters. There were, however, other mills in abundance that had more than a single operation. The Norton Mill complex is an example. Wilson Norton originally bought the property from the King family, and the complex was known for a number of years as the King-Norton Mill. The mill was located on Spring Creek about a mile above its junction with the Conasauga River. The mill began operations prior to 1861 (Deed Book D, pp. 550-51) and eventually had a flour and grist mill, corn shellers, saw mill, blacksmith shop, and post office. The post office is still standing, though abandoned, and was named in honor of Wilson Norton, Esq. The mill was variously run from time to time by either a waterwheel or turbine. In 1920 the mill, saw mill, and blacksmith shop burned down. The grist mill was rebuilt with a turbine for power and continued to operate until the 1940s. There is no indication of the size of the mill's service area, but returns for 1880 are rather impressive (Table V).

The last mill building was a two-story frame building. Presently, the only remains are the impressive mill race and a few
concrete columns. The mill race winds approximately 475 yards northward along the creek before its juncture with the main stream (Plate VI-fig. F). Although no remains were found, it appears that the mill race was purposefully begun where the creek made a wide meander; the race begins just below the cut bank. There must have been some form of dam across the race and a sluice gate to control the flow of water. At its juncture with Spring Creek, the mill race is approximately four feet deep and twelve feet wide. Its deepest portion reaches twelve feet and its width ten feet. At the mill, the race would have delivered an effective head of ten feet.

Another huge mill complex owned by the Hasslers was the site on Mill Creek. The mill was in operation in the 1870s, but it is unknown when operations actually began. Originally there was the flour and grist mill. As business expanded, other operations were added, including a hammer mill for feed, a saw mill, and a cotton gin.

The mill site is one of the few that might be called strategic. Mill Creek, at the site of the complex, flows through a water gap between Rocky Face Mountain to the north and Johns Mountain to the south. Roads east and west of the mountains converged at this gap, increasing the amount of traffic and the potential business of the mill. A portion of the business for Hasslers Mill therefore, was certainly from travelers.

Today, only the mill race and dam remain. A new dam was built in 1953, and the mill race repaired. The original mill had a large overshot wheel, later replaced by a turbine, the standard procedure in northwest Georgia. Unfortunately, the mill and gin burned in
The mill race parallels the creek for nearly one-half mile, crossing under the highway. Width and depth vary from four feet deep and eight feet wide at the dam to eight feet deep and ten feet wide at the penstock. A ten foot head of water could be obtained to run the two turbines in the penstock.

Most of Whitfield County's mills are but memories. Yeagers Mill, for example, has succumbed to industrial expansion on the outskirts of Dalton. Dunns Mill has been replaced by a factory. Remnants of mill races, fragments of wooden dams, and a few broken stones or supports reveal an all too common plight.

Conclusions

The counties surveyed exhibited only minor differences in milling techniques and facilities. Although variations occurred in the number of services offered, milling was essentially the same wherever one traveled throughout the area.

Floyd County's milling industry was concentrated in several locales with smaller mills interspersed throughout the county. The Silver Creek area, the Cave Spring area, and along Armurchee Creek are the locales where milling activity was thriving. A few notable merchant mills existed, but aside from the Chambers Mill on Silver Creek, these were concentrated in Rome, the county seat.

Bartow County had a number of large merchant mills. J. M. Veach and Co. at Adairsville, Best and Weems outside of Kingston, and Ganes and Lewis of Kingston are examples (Table III). J. M. Ford Mill on the Etowah River and the Mosteller Mill near Adairsville also handled large quantities of wheat. Of these companies,
only the Mosteller Mill survives, but there are considerable ruins of the Ganes and Lewis Mill.

Mills in Bartow County were not as diversified in operation as in Floyd County. The Mosteller Mill seems to have been the exception. There seems to be no grouping of mills into recognizable milling communities. Several mills were supposed to have been at the Euharlee settlement, known as Burges Mills, as early as 1844 (Cunyus, 1933:25), but this cannot be substantiated. Local historians agree that mills were scattered around Bartow County on nearly every water course having a settled neighborhood (Cunyus, 1933:264). It is interesting that so few ruins exist from the large number of mills formerly present. Some have been lost because of the Allatoona Reservoir project, others because of industrial expansion from Cartersville, the county seat. Most, however, simply have not been able to withstand the ravages of time. They have been dismantled for building material, or, more frequently, mills have rotted away on their foundations. Dense thickets, erosion, and silting have, in too many instances, destroyed traces of mill races, dams, and mill ponds.

Mills in Murray County did not differ significantly from those in Floyd or Bartow counties. There were few merchant mills in the area; most of the mills were custom operations with an average of two runs of stones per mill. Of several important concentrations of mill activity, none became the focus of a town.

Saturday seems to have been regular mill day in Murray County, generally so in the other counties also. People were served on a
first-come basis. A local customer might bring his wife and children; only men came from long distances. When a man's grain could not be ground in the same day, he had two options. He could either buy flour and meal from the miller, or he could stable his animals and stay in a hostelry provided by the miller until his grain was ready. Not every mill's business warranted providing a hostelry, only the larger complexes had them.

The majority of the mills in the Murray County area began to decrease operations around 1900, finally closing their doors shortly before or during the Depression of the 1930s.

Whitfield County was a major milling area in northwest Georgia. The quantity of cornmeal ground in 1879 averaged 150,000 pounds per mill and every mill did not have all of its returns tabulated. There were merchant operations, and also a number of large, integrated complexes that offered a wide assortment of services. Praters Mill, Norton Mill, and others were key sites of milling activity. Today, little remains to tell the story. The same mill pattern recurs over the county; the mills are gone. What is left is a portion or all of the mill race and possibly some of the mill dam, just a brief hint at the bustling activity of days gone by.

Throughout the four-county area, mills generally agree with the basic model posited earlier, or with one of its significant variants. The description of mill sites has shown that operations centered on the grist mill and that associated services were added as market demanded. Using the basic model, several patterns of land use associ-
ated with mills can be ascertained. These are discussed in detail in the next chapter.
Notes - Chapter IV

1. Streams within the study area do not appear to have silted up to an appreciable extent. Even if there was silting to a certain extent, of which there probably was, there does not appear to be any indication that it adversely affected milling operations. The power for running a mill wheel depended upon water striking the blades of the water wheel. As long as water was striking and causing the wheel to revolve, the same appreciable power was delivered to the other working parts of the mill. Seasonality in milling was more a factor of the water source drying up rather than silting.

2. See note 1, chapter 1.

3. Precise dating of mill construction and operation is subject to great error. Deed searches have, however, somewhat narrowed the probable beginnings of some of the mills. Not a single document was found to substantiate the exact date for the construction of any mill in the study area. Although the dates are tentative, they do coincide well with the general periods of major population influx.

4. Barnett migrated to Floyd County from Fayette County. His family, mysteriously, is unlisted in the 1840 census, though registered in Fayette County in 1830 and Floyd County in 1850. Although his origin is in question, a cursory glance at the deed indexes for Floyd County undoubtedly establishes him as a significant land holder, buying extensively over the county almost immediately upon his arrival.

5. A photograph belonging to Mrs. J. B. Duval of Decatur, Georgia, clearly shows the elevated mill race on the east end of the mill. Later photographs show the iron water wheel on the north side of the mill. Mrs. Duval is a granddaughter of Larkin Barnett. Evidence for bolters, elevators, and the like can be seen by observing the ceiling of the first floor. Various sized and shaped openings indicate copious machinery at one time.

6. Site reconstruction in Bartow and Floyd counties is greatly hindered as a result of several severe floods of the Etowah River and its tributaries. Extensive damage was done by the flood of 1889.

7. Interview with owner, Russel Carnes, October 14, 1972.

8. Table II presents data for mills in Floyd County as extracted from the 1880 Census of Manufacturing for the State of Georgia. The census record is incomplete because some mills are not
represented. The data available are subject to errors in recording; however, it represents specific material about operating mills and thus indicates milling activity in the county. Similar tables from the same source have been prepared for the other counties in the study area.

9. Such tabulation indicates one of the weaknesses of the manufacturing census. There is no possible way to verify. Possibly "tub" really meant Turbine to the census recorder. It would certainly be more logical.

10. Figures, averages, and the like are taken from the 1880 Census of Manufacturing for the State of Georgia.


12. Interview with Mr. R. Stevens August 13, 1972. The mill was built by A. Stevens and Robert Stevens, relatives of Mr. R. Stevens.

13. Local people were totally unaware that the Roundsavilles had a mill on Spring Creek. The same family originally built the mill on Silver Creek later owned by Samuel Chambers.


15. Unfortunately, the caretaker of the property was under strict orders to allow nobody near the mill buildings. Overtures to the owners never resulted in my gaining permission to photograph or sketch the site.


19. Interview with Mr. H. S. Hix, owner of the mill, May 6, 1973. Chatsworth, Georgia.


23. Interview with Mr. Pat Dunn, May 6, 1973.

25. This site is paradoxical. The mill is quite small compared to the race and penstock. From the numbers of mill stones at the site it appears that the log building was original and that the race and penstock were enlarged at some time to accommodate more business.


27. Ibid., June 2, 1973.


29. According to family members, the fire is presumed to have been started by a tourist who accidentally dropped a cigarette into cotton lint. Both the gin and mill were in operation, but making little profit. Tours of the facilities had been instituted to bring in additional revenue.
CHAPTER V

THE LANDSCAPE, SOCIAL, AND ECONOMIC SIGNIFICANCE OF MILLS AND MILLING

Milling activity produced a semi-permanent settlement pattern on the northwest Georgian landscape; the era began in the early 1830s and 1840s, waxed and waned through the remainder of the nineteenth century, and suffered its demise through the 1930s. A short historic span, barely encompassing a century, saw the birth, maturity, and death of the milling industry in northwest Georgia.

The landscape image of grist milling in northwest Georgia has evolved more than one would first suspect. The rather romantic image of the rustic old mill with the sound of its wheel creaking and the water gently splashing has basis in fact. If one delves long enough, evidence comes to light that begins to alter the basic image. A far more realistic construct begins to take form in which the mill is only one feature of a broader complex of service-oriented structures. The quiet and tranquility of decay is replaced with the hustle and bustle of an active service center that was a common and essential component of the local cultural landscape. Four basic mill patterns evolved: the single grist mill; the grist and saw mill combination; the grist, saw, and flour mill operation; and the integrated mill complex offering a variety of services, other than milling.

89
The Single Grist Mill Pattern

The solitary grist mill represents the earliest type of mill in the study area. Such mills, seldom the mainstay of the farmer, were more commonly a means of adding income above and beyond the returns of his farm labors. The tub mill is most commonly the focus of this pattern.

The pattern is simple; these mills were small. Built first of logs and perhaps later with clapboard, the single grist mill evoked little feeling of status. Generally of one room, the interior was mostly filled with the hurst, stones, and hopper. Corn was ground by the customer or by the farmer-miller himself. Lack of storage necessarily meant no other associated buildings.

Capacity was limited in the single mill. With a small capital investment, usually a few hundred dollars, the mill was operable. One run of stones was employed, most commonly of local origin. Although it was possible to grind both wheat and corn with one run of stones, a single run usually indicates corn grinding only. Large quantities of meal were produced by these single mills, however, the totals fell below those of larger mills having two or more runs of stones.

The single grist mill initially was the most abundant form of mill in northwest Georgia. As larger mills evolved, and more services were added, the single mill unobtrusively faded from the landscape. Having completely disappeared from the broader, more settled valleys, the single mill pattern survived in more remote coves and valleys within mountainous areas, particularly the Blue Ridge of northwestern
Georgia.

Of the four patterns of mill landuse, the single grist mill left the least impression upon the landscape. Erasure by nature through time has eradicated all traces; sites are discernible only with the assistance of knowledgeable local residents.

The Grist-and-Saw Mill Pattern

The second pattern in the landscape evolution of milling activity is the grist and saw mill combination. Extracts from deeds indicate a considerable frequency in historic times, although no examples are extant; for example: "...formerly a grist mill, but now a grist and saw mill..." (Deed Book N 1853, p. 297, Floyd County); "...one acre and a half of the land lying immediately around the saw and grist mill ..." (Deed Book N [1879], p. 356, Murray County).

Some deeds indicate that the sawing operations in this pattern would locate upstream from the grist mill, above any mill dam and pond. Jefferys Mill, for example, was located downstream from a saw mill. Water rights as outlined in the deed prohibited backing up the water of Dykes Creek onto the water wheel of said saw mill (Deed Book F [1847], p. 198, Floyd County); the saw mill later associated with the Jefferys Mill (Deed Book N [1853], p. 297, Floyd County) is presumed to have been this same mill.

The grist-and-saw mill pattern is likely transitional. It is probable that the majority of the milling was corn with only occasional grinding of wheat. Provided two runs of stones were available, wheat grinding may have been more common. The grist-and-saw mill
complex would antedate the single mill pattern; the demand for sawed lumber indicates higher population density and hence a time later than initial settlement.

The Grist-Flour-Saw Mill Pattern

The pattern of grist and flour milling associated with saw milling represents the typical northwest Georgia mill. Sufficient locally grown wheat (see Tables II-V, Chapter IV) in all the counties provided abundant work for millers. Bushels of wheat flour produced annually ranged from 200 in smaller mills to 40,000 in the larger merchant mills. Wheat was grown primarily for wholewheat flour; some buckwheat was also milled. Greater than 70 per cent of the mills in northwest Georgia, in the 1880 Census of Manufacturing, reported grinding both wheat and corn.

Virtually every mill producing both cornmeal and wheat flour operated two or more runs of stones. A mill producing for local consumption was termed a "custom mill," as opposed to a "merchant mill," producing flour for a commercial market. Merchant mills commonly had three or more runs of stones, changing to steel rollers in the late 1800s. Stones varied in quality; many stones were of locally quarried granite, while others were imported. The favored stone for wheat was burrstone, imported from France. French burrs held a dressing longer and produced a finer grind. These stones were expensive and normally purchased only by the larger mills. Smaller mills normally used local granites.

A number of merchant flour mills were established in northwest
Georgia. The Ninth Census of the United States (Vol. 3, 1872:646) lists nineteen merchant mills for the nine counties of northwest Georgia. Of these nineteen mills, three were in Bartow County, two in Floyd County, and five in Whitfield County.

Mill buildings in the grist-flour-saw mill complex were commonly initially built of timber or log construction, though frame buildings are more numerous today. Most buildings were two stories with an occasional building having a partial basement, usually for gears. The first floor served as the meal floor with the hurst in one corner or across one end, depending upon the number and arrangement of the runs of stone. The second floor was used variously for storage, bolting, sifting, and related milling processes.

Surviving structures indicate an elevator was commonly used in moving grain, meal, or flour from one floor to another. The elevator consisted of metal cups attached to a leather or woven belt. The device was encased in a wooden box and driven by a series of pulleys and belts. Some of the larger mills had wooden augers encased in a box that carried meal from one area of the floor to another or to the upper floors.

The Integrated Mill Pattern

The integrated mill pattern differs from the others in the number of services incorporated into the complex. Mill buildings changed very little, except for an addition of a third story when business warranted. The overall number of buildings also increased.

The integrated mill pattern represents the peak of evolution of the milling industry in northwest Georgia. In addition to grist and
flour milling and a saw mill, other services which joined the core included a cotton gin, a blacksmith shop, and a general store. Depending upon the road system of the area, the general store might also serve as a post office, or at least a postal station. Provided there was available space at the site and market demand, a carding mill, furniture mill, or distillery might be added. The economic advantage that this large complex held was to offer so many varied, and necessary, services within a rural area. In essence, this pattern represents a rural hamlet.

Milling activity in northwest Georgia then has evolved through four stages during the short span of its growth. Table VI is offered as a summary of these phases to show the association of services from phase to phase.

Effects upon the Landscape

A false image of the mill as a landscape modifier has been perpetuated. One myth states that mills served as the foci for later towns. Although plausible, it is, in reality, too simplistic and cannot be substantiated for northwest Georgia. Several authors, established and otherwise, have helped to perpetuate the myth.

Relatively little has been published concerning grist mills in Georgia. The only major work states emphatically that the grist mill and associated store frequently became the nucleus of a small town, of which the miller was likely to be the leading citizen (Thomson, 1950:10). Neither of these statements is completely true. Dennis Johnson of Murray County, Benjamin Prater of Whitfield County, Larkin
### TABLE VI
SUMMARY OF MILL EVOLUTION IN NORTHWEST GEORGIA

<table>
<thead>
<tr>
<th>Phase</th>
<th>Milling Activity</th>
<th>Milling Type</th>
<th>Wheel</th>
<th>Stone</th>
<th>Mill Size</th>
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<tbody>
<tr>
<td>I (Single Grist Mill)</td>
<td>grist</td>
<td>private and custom</td>
<td>tub</td>
<td>local</td>
<td>1 room</td>
</tr>
<tr>
<td>II (Grist and Saw Mill)</td>
<td>grist and saw</td>
<td>custom</td>
<td>overshot to turbine</td>
<td>local, imported</td>
<td>1 room each, 2 buildings</td>
</tr>
<tr>
<td>III (Grist-flour-saw Mill)</td>
<td>grist, flour, and saw</td>
<td>custom and merchant</td>
<td>overshot, breast undershot, turbine</td>
<td>local, imported</td>
<td>2-4 stories, 2 buildings</td>
</tr>
<tr>
<td>IV (Integrated Mill)</td>
<td>grist, flour, and saw, plus some of: Blacksmith Carding Furniture Holterly Post Office General Store Cotton Gin Distillery</td>
<td>custom and merchant</td>
<td>overshot, breast undershot, turbine, steam</td>
<td>local, imported, or steel rollers</td>
<td>2-4 stories, 3-10 buildings</td>
</tr>
</tbody>
</table>
Barnett and John C. Foster of Floyd County, and Louis P. Ganes of Bartow County were all prominent citizens and mill owners in their respective counties. Yet, not one of the integrated mill complexes that these men built developed into much more than a crossroads service center, much less a town.

Other authorities continue in much the same manner, either stating precisely or implying that larger settlements often resulted from the magnetism of grist mills. Ralph Brown (1948:152) states that in the North, grist mills often occupied choice water-power sites, later acquired by other manufacturers. While not disputing the possibility that New England or mid-Atlantic merchant mills yielded place to larger manufacturers, thus perhaps forming large settlement nuclei, it is fallacious to presume that similar histories prevailed in other areas.

Popular works are perhaps more guilty of perpetuating the myth that those of recognized scholars. Tunis (1961:85; 1965:29) writes the following:

...below the best spot for a dam a town might start, attracting its own roads in defiance of the surveyors. An earlier pattern repeated itself: the gristmill or the sawmill was the nuceus around which craftsmen first, and then tradesmen, grouped to serve a sizeable area.

The settlement of the Midwest is claimed to have followed the same essential pattern (Storck and Teague, 1952:156). The supposition is perhaps even more far reaching when we read that "...mills must be scattered liberally over the roadless country to form centers from which farm communities might radiate" (Storck and Teague, 1952:156).
The settlement of Pennsylvania is attributed by some (Fletcher, 1950:323) to water-power sites for mills that determined the locations of most rural hamlets and the sites of many farm houses.

Local historians, often untrained in research methods, tend to muddy the water even more. Contrary to the opinion of A. T. Jackson (1971:15), a Texas historian, there is no evidence from northwest Georgia that would corroborate his statements for Texas that "Millers ...officiated at the birth of many mill settlements..." or that "...a mill acted as a magnet that drew settlers."

The general pattern that emerges from these various accounts is that of the mill site, by gradually expanding services, eventually became the nucleus of a village or town. Although this may indeed hold true in some areas, it is presumptuous to think that so many thousands of mill sites have resulted in thousands of towns and villages. In the northern sections of the United States where industry and manufacturing blossomed, more profitable grist mills may very likely have served as early foci for later settlements. The South, however, cannot be presumed to have followed that pattern.

Although northwest Georgia cannot claim an industrial heritage, it did develop into a localized center of light manufacturing and a marketing region for the corn, wheat, and cotton of the Coosa Valley and northeast Alabama (Callaway, 1948:121). Water-power sites were numerous, and mills sprang up on many of these available sites. Some communities even had several mills within short distances of one another on the same creek or river. Many of these mills developed into large integrated-mill complexes, but not a single one served as
a focus for a later village or town. Local urban areas have increased in population through time, but historically the settlement pattern was dispersed with small crossroad hamlets providing services locally. This pattern persists today; most of the mills used by these communities have long since disappeared.

Another factor of the landscape pattern concerning mills is roads. Mills were located on some type of road, whether a major wagon road or a simple access road through someone's property. Contrary to Tunis' (1961:85) statement that roads were attracted to mill sites in spite of surveyors, mills in northwest Georgia were not normally antecedent to roads. A number of major roads crisscrossed the Cherokee Territory of northwest Georgia prior to any significant white settlement (Bethune, 1831). In the short span from the beginning of active European and American settlement (circa 1835) to the Civil War, a complex system of primary and secondary routes developed; the major transportation network in use presently had been thoroughly established by 1864.² There was but a single recorded incidence of a significant mill's preceding a major wagon road. The Hassler Mill complex in eastern Murray County supposedly began in 1822. Settlement in the area did not become active for another ten to fifteen years. The mill, however, was only a short distance from the major road of the entire area, the Federal Road, and it is possible that there was enough traffic at the time to justify a large mill.

Rather than roads' being established because of mill sites, the reverse was more common. Although there is no direct evidence that a mill in the study area located because of a particular road, it is...
only reasonable to assume that some of the larger ones, particularly, were built to take advantage of location on a major artery. Praters Mill in Whitfield County is an example, as is the Jefferys Mill site just off the major road between Kingston and Rome in Floyd County. Other mills were on less frequented routes, served smaller areas, and declined more rapidly than the larger complexes. The single grist mill was usually located on private property or along or at the end of a route that was a road in the loosest sense of the term. The only roads that were built specifically because of mills were access roads to sites cut off from an established route by another person's property. These roads were common in the study area.3

Mills in northwest Georgia reveal little tendency to associate with ferries, fords, or bridges. The few examples from the study area provide insufficient evidence for generalizations. The Smith Treadwell Mill on the Conasauga is the only example from the area. The ferry was located about thirty yards above the mill where the river is narrow and swift. Bridges having failed because of numerous freshets, the more dependable ferry was built.4 The Prater Mill was described by deed as having been located where the wagon road crossed the bridge over Coahulla Creek (Deed Book A [1851], p. 42, Whitfield County). Roads sometimes crossed the creeks at fords near the mills. As streams in the study area are often rock- or gravel-bottomed, fords were numerous. Mills, however, needed a sufficient head for their operation, and this requirement most strongly influenced mill location. The majority of the mills, nonetheless, stood near a road and tapped the stream some distance above the mill, channeling the flow.

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through a race to the mill.

The Role of the Miller

Despite the importance of mills as landscape elements, little is known about the men who built or operated them. Mill owners were occasionally men of some local importance and hired millers to operate their business. Millers seldom became significant local figures. The millwright presents an even more mysterious category. Names are virtually non-existent, and statistics for the state are so general that they are meaningless. The occupation was apparently practiced in northwest Georgia by itinerants or as a secondary skill of a local craftsman. No distinguished millwright is known for the area.

The majority of millers in northwest Georgia were farmers for whom milling was a sideline, rather than the principal source of family income. Often the farmer was millwright, miller, and mill owner. In agreement with Hamilton (1964:19), many a mill was built by a reasonably clever handyman or carpenter without any millwrighting experience.

The Social and Economic Function of the Mill

The grist mill certainly played a role in the economy of northwest Georgia. In addition, the local mill served an equally important function as a social meeting place for travelers and customers. So many living people can remember the weekly trip to the grist mill that we know that mill day was as festive an occasion in 1935 as in 1840. The mode of transportation had changed and mills had become more automated, but the pattern was basically the same.
A typical mill day involved rising well before dawn. The grinding was done on a first-come, first-served basis, making an early arrival important. If the mill were near a town, other errands could be attended to while the corn was ground. Several chores could be accomplished in one place if the corn was taken to an integrated mill complex. Time passed with more leisure at the smaller mill. Children swam, fished, or played around the mill yard. The men spent their time talking politics, crops, hunting, or spinning yarns. Business, as well as pleasure, transpired. Apparently women rarely went to the mill. House chores kept most women and older children at home. Mill day was a man's day and a welcome diversion from obligations on the farm.

Most farmers used a mill relatively close to home. An ideal situation was one in which the farmer might rise at dawn, ride, drive, or walk to the mill, have his corn ground, and return near dark. Average distances traveled were between four and seven miles each way. Some of the larger mill complexes drew customers from distances greater than twenty miles; more than one day was needed to complete such a trip. Hasslers Mill, Praters Mill, Gregorys Mill, and other large operations provided hostelries for their customers. It was not uncommon, especially in the latter part of the milling era, for farmers to leave their corn at the mill and simply exchange it for meal that the miller had on hand.

A large mill might grind twenty-four hours per day in the peak season, as opposed to the average twelve-hour day. There was a constant stream of farmers to and from the mill during the summer months.
The mill then had an important economic function and also a significant social function. Romanticism, perhaps, leads writers and people in general to attribute too much importance to this type of local enterprise. It is understandable, however, since mills often persist as places of local interest long after other associated economic structures have disappeared.
Notes - Chapter V

1. Generalizations concerning capital investment, capacity, quantities of meal, and the like are based upon statistics from the 1880 Census of Manufacturing. The data have been condensed in Tables II - V found in Chapter IV.

2. An examination of the military campaign maps for the Civil War shows the road pattern in detail. Some of the lesser routes have undoubtedly vanished, but many of the roads used for troop movement are still in use. See The Official Atlas of the Civil War. Introduction by Henry Steele Commager, New York: Thomas Yoseloff, 1958. Check plates 48, 57, 58, and 59 (Atlanta Campaign) for details within the study area.

3. See the following deed books for examples: Book H (1846), p. 17-18, Floyd County; Book JJ (1879), p. 560, Bartow County; Book J (1853), p. 395, Floyd County; Book H (1852), p. 253, Floyd County.


5. The 1850 census, as an example, lists only one millwright in Floyd County, no millwrights in Bartow County, and eleven millwrights in Walker County near Chattanooga, Tennessee. It is presumptuous to think that these few men serviced an area of 307,482 square miles, the total area of the nine counties of northwest Georgia.

6. The generalization is based upon interviews with reliable informants; for example, Gordon Rogers, Roger Aycock, and J. Melton. Mill day seems to have changed little from their grandfathers' time.

7. Information based on interviews in the field.
CHAPTER V

SUMMARY AND CONCLUSIONS

Milling of grain is a nearly ubiquitous activity and appears to have its roots in the late pre-history of man. A variety of milling techniques was in operation long before the watermill was put into common use, most notably varieties of querns. The first watermill is attributed to Vitruvius, a Roman architect of the first century B.C. The geared-mill introduced by Vitruvius gradually replaced traditional milling techniques by the third century A.D. Rapid dissemination throughout Europe followed, accompanied by rapid innovation. By the time of European colonial emigration in the seventeenth century, a well-established milling technology and art had been developed.

Five major types of mills were eventually migrated to America: the horizontal, undershot, breastshot, overshot, and turbine. A modification of the Old World horizontal mill, the tub mill, seems to be uniquely American. Introduction into America was piecemeal and milling did not thrive until the mid-seventeenth and early eighteenth century. The first mills appeared in the Virginia tidewater and lower New England. Diffusion from these areas took place over a long period and along numerous routes, mainly the more significant routes used by pioneers pressing toward the interior of the country. By the time of the American Revolution grist mills peppered the land-
scape of the colonies and virtually no community was without its share.

Milling was introduced into Georgia by the Germans in 1740 when they settled at Ebenezer, north of Savannah. Mills spread up the river to Augusta, and by the end of colonial times, milling was widely established as a public service.

Of the five major types of mills introduced from Europe, the overshot and the turbine gained the most popularity. Both of these mills were more efficient than the others and represented increased potential earning power. Of the vast number of gearing arrangements, the double-gear and single-gear were most common. The double-gear could operate two or more stones and was frequently used in the merchant mills and larger grist mills. The single-gear is representative of the small, country grist mill.

Millstones included a wide variety, but were mostly locally cut stone or imported burrstone. Design, diameter, thickness, and the like depended upon the demand put upon them.

Grist mills diffused into northwest Georgia as pioneers moved into the area. Formerly Cherokee territory, the region was open to active white settlement after 1831, and settlers from North and South Carolina, Tennessee, and Alabama moved in, in addition to large numbers of native Georgians. Major roads established during Cherokee occupation served as major avenues of white travel. The Federal Road of 1805 was the most important of these highways. The various Alabama roads crisscrossing the region became locally important.

Settlers, as they moved in, blazed trails and used Indian paths that
could scarcely be classified roads.

By the 1840s milling was firmly established as a business in northwest Georgia. Four general patterns of mill landuse evolved in response to local demand. The single mill represents the most simple mill pattern in northwest Georgia. The capacity was limited, and the service area usually included only a few families. Provided that capital was available, the single grist mill was expanded to include a saw mill, the second phase of mill evolution. A significant jump in scale occurred with the transition from grist and saw milling to the addition of flour milling which required different gearing and additional, fine-quality stones. The peak of milling evolution, the integrated mill pattern embraced numerous associated services. Cotton ginning, smithing, and wool carding were most common. A general store with postal facilities was not uncommon. Additional services might include a hostelry, furniture mill, or a distillery.

Mills in northwest Georgia did have a significant impact upon the cultural landscape, semi-permanent though it was. It cannot be substantiated that grist mills served as the foci of later villages and towns: they frequently, however, served as the nucleui of rural hamlets, particularly the larger integrated complexes. The hamlets associated with mills served a number of vital business functions that were later absorbed by county seats and other urban settlements. Further, roads, ferries, bridges, and fords were but secondary factors in mill location; the primary factor was an available head of water for power.

The typical northwest Georgian mill was a two-story frame
building with either an overshot wheel or turbine. The building was utilitarian with little, if any, architectural embellishment. Two runs of stones would have been employed, one of local granite for corn and possibly one of imported burrstone for the wheat. The partially automated mill used sack hoists and cup elevators for carrying the grist and flour to the second floor for bolting. A typical work day was twelve hours, and the mill commonly operated six days per week all year. In addition to the services of corn and flour milling, there was a sawing operation for making shingles or clapboards. Lacking that, probable alternatives included a cotton gin or a wool carder.

There was apparently nothing remarkable about establishing a mill in northwest Georgia. Most mill owners and millers were farmers for whom milling was a second business. If his land had a good site for a mill, and if he had the capital, the farmer might consider a mill for secondary income. Millers were not necessarily prestigious, wealthy, or influential. Little, in fact, is known about these men.

The mill in northwest Georgia, therefore, represents a landscape feature having both economic and social importance to the area, but really no more than other public services. Oddly enough, although widespread, milling entered upon the cultural scene of northwest Georgia relatively unnoticed. A short historic span from approximately 1835 to 1940 witnessed an unobtrusive birth, brief maturity, and lingering demise of milling activity. Milling exited as unobtrusively as it had entered a short time earlier.

Ample opportunity abounds for further research into American
grist milling. Scholarly works in most all aspects of the industry are outdated or non-existent. More regional data must be gathered, and comparative analyses must be undertaken. Is there, in fact, an entirely different succession of mill associated activities in the northern manufacturing regions? Are settlement patterns of the northeastern United States truly reflective of former mill location?

Another avenue of research is the associated services attached to grist mills. The culture history of American saw milling is an open field. Tanyards were occasionally associated with mills; the subject is another that has received only the most limited attention. The era of the grist mill is past, but evidence lingers to entice the cultural geographer to record and assess its significance for the American landscape.
Notes to Plates

Plate I, p. 112
A. "Homeric" Bowl. Note the apparatus behind the donkey, assumed to be evidence of a rotary mill from the Greek era (from Mortiz, 1958:13).
D. Hillsboro Township, Colonial South Carolina. Mill setes (sic) are denoted by arrows (from Hirsch, 1928: facing page 42).
E. The American "tub" mill. Note that the wheel is encased in a hoop (after Tunis, 1961:40).

Plate II, p. 113
A. Example of an undershot water wheel. Note the sluice, race, and the angle of the blades on the wheel (from Evans, 1832:Plate 13).
C. Example of a breastshot water wheel. Note the point at which the water strikes the wheel and the angle of the blades on the wheel (from Evans, 1832:Plate 14).
D. Example of an overshot water wheel. Note the race, sluice, and the angle of the blades on the wheel (from Evans, 1832:Plate 15).
F. Example of bevel gears using both iron and wooden teeth. The lower gear is wood, the upper iron (photo by author).

Plate III, p. 114
A. A plan view of a portion of the lower floor of a typical flour mill of 1791. Note the gearing arrangement: (a) water wheel shaft with main cog wheel, (b) the little cog wheel and shaft, (c) the wallower gearing with the main cog wheel, (d) the cog wheel on a vertical shaft which drives the bolting reels, (e) the water wheel-18 feet in diameter, and (f) the trundle (lanter gear) and bridge tree for the burr stones. The arrangement of gears on the left side of the mill is similar and is intended for the country stones-those for grinding corn (from Evans, 1832:Plate 18).
B. Example of the gearing mechanism of a single-gear mill, typical early type found in rural areas (from Tunis, 1965:29).
D. Schematic diagram illustrating the gearing arrangement for (a) underdrive gearing and (b) overdrive gearing (from Jones, 1969: 312).

E. Example of belt-driven gears, typical of nineteenth century American mills. Mundys Mill, Fayette County, Georgia. The water wheel has a sprocket (A) fitted with a heavy link chain to drive a smaller sprocket (B) which in turn drives a large pulley (C). Belts then carry the power through the shaft (D) to a vertical pulley (E) which leads up through the floor to drive the upper grindstone.

Plate IV, p. 115

A. Millstone dresser at work. He is grooving the lands between the furrows, with his left arm resting on a sack of meal (bist) and his right hand guiding the mill pick. Above, some varieties of millstone dress. A, late Roman from the fourth-century A.D., Saalburg Castle. B, from Leupold's Theatrum machinarum molarium (1735). C-E, nineteenth-century dresses: C, two-furrow or "two-quarter" dress; D, "three-quarter" dress; E, straight or union dress. F and G, right-handed and left-handed stones, for clockwise and for counterclockwise rotation, in four-quarter dress; the arrows indicate the rotation of the stone when turned over. Upper and lower stones of a pair are dressed identically. H, enlarged view of the relation between lands and furrows during rotation (from Storck and Teague, 1952:104).

B. Examples of the piece-meal construction of burr stones (from Bathe and Bathe, 1935:59).

Plate V, p. 116

A. The Old Brick Mill, Silver Creek, Floyd County, Georgia, circa 1845. Front view. The mill race joined the building on the right initially, later on the rear side.

B. The Cave Spring grist mill, front view, Cave Spring, Floyd County, Georgia.

C. Mill race, Cave Spring grist mill, Floyd County, Georgia. Note the concrete sides. Photograph shows a portion of the race just behind the water wheel.

D. Foster's Mill, Big Cedar Creek, Floyd County, Georgia. Front view. Note the covered bridge to the left of the mill, also the large wagon yard in the foreground. Photograph dates circa 1890. (Photo courtesy of Roger Aycock, Rome Tribune News, Floyd County, Georgia).

E. Jones Mill, Pettits Creek, Bartow County, Georgia. Front view.

F. Ganes and Lewis Mill, Two Run Creek, Bartow County, Georgia. Ruins of the mill seen from the west showing the basement walls and support for the turbine. Barely visible to the right is a portion of the tool shed.

Plate VI, p. 117

A. Auchmuteys Mill, Euharlee Creek, Bartow County, Georgia. Rear view. Note the diagonal line where the roof of the milling room adjoined the building.
B. Dennis Mill, Rock Creek, Murray County, Georgia. Side view of the water wheel, east end of the building.

C. Mill race, Dennis Mill, Rock Creek, Murray County, Georgia. The mill race has been carved through solid rock to a depth of twenty feet.

D. Wooden mill dam, Chabble Mill, Jacks River, Murray County, Georgia. View looking eastward across the dam.

E. Praters Mill, Coahulla Creek, Whitfield County, Georgia. Rear and side view looking north. Turbines are located in the small shed on the back of the mill. Note the mill pond and dam. Smaller building to the right was the cotton gin.

F. Norton Mill, Spring Creek, Whitfield County, Georgia. Juncture of the mill race with the creek. Water in the foreground is standing in the mill race. Notice the meander of the creek in the background.
PLATE IV
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118

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APPENDIX I

A Glossary of Mill Terms

The following glossary is added in order that clarification of milling terms may be available. There is no standard milling glossary, and what exists varies from source to source; one problem recognized by molinologists is the lack of standardization of mill terms. This glossary is by no means complete, but offers a brief definition of the more commonly encountered words in mill literature. Words in this glossary were taken from the following sources: Oliver Evans, The Young Millwright and Miller's Guide, Philadelphia: Carey and Lea, 1832; W. A. McCutcheon, "Water Power in the North of Ireland," Transactions of the Newcomen Society, Volume 39 (1966-67); John Reynolds, Windmills and Watermills, New York: Praeger Publishers, 1970; and John Storck and Walter D. Teague, Flour for Man's Bread, Minneapolis: University of Minnesota Press, 1952.

Auger - an Archimedean screw revolving in a wooden trough and employed for the horizontal movement of grain or meal; also known as conveyor or creeper.

Back waterinng - the breaking effect caused by the immersion of the lowest floats of an overshot water wheel.

Balance weights - weights inserted in the runner stone to achieve perfect balance. Patent balance weights employed discs of lead or iron carried on a threaded screw.
Bed - in dressing millstones, the three lines running across a stone, forming an equilateral triangle, which were first trued to each other, in order to form base lines for trueing the entire surface of the stone.

Bed stone - the lower, fixed stone in a pair of millstones; also known as ligger.

Bill - a hard-steel cutting tool, in the form of a double ended wedge, used for dressing millstones; mounted in a turned wooden handle, or thrift.

Bins - storage compartments for grain, usually arranged on the top floor of the mill (bin floor).

Bist - a small cushion of bran, used by the stone dresser.

Blue stone - an imported German millstone.

Boat wheel - see floating mill.

Bolter - a device for dressing flour, employing a cylinder of cloth.

Bosom - area immediately surrounding the eye of a millstone. In a stone built up out of smaller pieces cemented together, the bosom includes the first circle of pieces around the eye.

Brayer (bray) - pivoting beam or lever supporting the free end of the bridge tree.

Breast (of a millstone) - the middle section of the grinding surface.

Breastshot wheel - a mill wheel driven by a positive head of water amounting to less than the diameter of the wheel. The water reaches the buckets on the circumference of the power wheel at about the middle of the wheel or just below. The wheel is therefore turned in part by the impact of the water, and in part by its weight.

Bridge tree - an adjustable beam supporting the thrust bearing at the foot of the stone spindle.

Buckets - floats, especially enclosed floats, employed in breast-shot and overshot wheels to retain water on the 'working' side of the wheel.

Bull nut or bull wheel - a small, sturdy, face-gear pinion meshing with the segment and transmitting the drive in through the mill gable by horizontal shafting.
Burr (buhr) stone - imported French millstones, of high quality, quarried in the Paris basin. A special type of quartzite.

Carry - a weir or dam across a river's course to impound water upstream and create an artificial "mill pond."

Clapper - a block of wood or stone used as a primitive regulator to control the flow of grain to the stones.

Cog - a wooden peg or tooth inserted into a spur wheel and other wooden mill gears. Power is transmitted by the meshing of cogs on the spur wheel and staves on the lantern pinion.

Cog and rung gearing - gearing in which power transmission is from a drum, or trundle, wheel by lantern pinion to a vertical spindle.

Cog hole (cog pit) - in watermills, the space enclosed by the hursting, containing the main gearing.

Composition stone - artificial millstone containing carborundum or similar abrasive material.

Cracking - a process in stone dressing involving the cutting of fine grooves in the surface of the lands; also known as "stitching."

Crown wheel - in watermills, a bevel gear wheel mounted near the top of the main vertical shaft.

Cullen (Cologne) stones - imported German millstones.

Damsel - an iron rod terminating in a fork, or crutch, which strattled the rynd of the runner stone; employed with under-driven machinery to agitate the shoe feeding grain to the stones; also known as "dandelion."

Dandelion - see damsel.

Descender - a device invented by Oliver Evans for the controlled downward movement of grain within the mill.

Draft - degree to which a millstone furrow departs from the radius of the stone by starting from one side or the other of the stone's center.

Draft circle - circle around the eye of the millstone from which the furrows run tangentially. The furrows are located in terms of this circle, rather than in terms of the eye, in order to give the proper cutting action. The larger the draft circle is, the more quickly the stock is carried to the circumference of the stone.
Drag stick - a stick inserted in the eye of a runner stone, to pre­vent the hoarding (or clogging) of grain.

Dresser - a device for grading flour, consisting of a cylindrical wire sieve containing rotating brushes; also known as "wire machine."

Dressing (of stones) - the preparation of grinding surfaces.

Drill - an endless strap revolving over two pulleys like an elevator, but set nearly horizontal, and having small rakes fixed to the strap which draw the meal along the bottom of the case.

Drum wheel - see trundle wheel.

Edge-block stone - one arranged to grind on the grain of the stone. The grain is perpendicular to the grinding surface, as in a cross-section of a log. This type of stone tends to be sharper, but more liable to crack, than a face-block stone.

Elevator - a device for raising grain by means of an endless belt; invented by Oliver Evans.

Ending stones - a pair of stones set well apart, employed in American mills to crack the bran as a preliminary to "low" grinding.

Eye - the central hole through the runner stone.

Face - level surface on a millstone, between the furrows. See Land.

Face-black stone - millstone cut so that the grain of the stone lies lengthwise to the grinding surface - like a log laid on its side.

Face wheel - a gear wheel cogged on the face, used in conjunction with a pinion.

Facing - trueing the surface of a millstone.

False board - upper section of the inclined hatch or sluice gate, used with undershot wheels of Poncelet type.

Fans, sieves, dusters, etc. - ancillary cleaning and dressing machinery in a grist mill, usually found at "meal" floor level, belt driven from the "stone" spindles alongside.

Feather edge - more gently sloping edge of a millstone furrow.

Fer-de-moline - heraldic term for the mill rynd.
Floating mill - a vessel containing milling machinery, moored in mid-stream and powered by one (or two) undershot wheels, known as "boat wheel".

Floats - blades of a water wheel.

Flood hatch - a hatch diverting water through the spillway, clear of the waterwheel.

Flume - head race in the form of a trough or channel carrying water to the wheel; also known as lade.

Forebay - the concrete housing found around turbines. Water is allowed to fill the forebay, thus creating a head for the turbine(s).

Furrows - grooves cut in the grinding surfaces or millstones.

Garner - see bin.

Glut box - top bearing of the quant which could be opened to disengage the stone nut.

Great spur wheel - spur wheel mounted on the main vertical shaft, transmitting the drive to two or more pairs of stones.

Grist - material ground in the mill; latterly applied principally to animal feeding stuffs.

Grutte - a bearing inserted in the bed stone of the Norse mill to receive the upper end of the vertical spindle.

Gudgeon - a metal journal mounted in the end of a wooden shaft or axle: cross head gudgeons were frequently used in mill work, in conjunction with iron hoops.

Harp - segment of the grinding surface of a millstone, containing a regular pattern of lands and furrows.

Head race - that section of the mill stream above the wheel.

High milling - grinding with the millstones widely separated. A number of grinds became necessary. The aim is to produce partially ground materials in the first grind which will yield more or better flour or meal in succeeding grinds. Similar to New Process.

Hoop - see tun.

Hopper - an open wooden container for the controlled discharge of grain to the millstones.
Hopper boy - a device invented by Oliver Evans for spreading freshly ground meal to cool prior to bolting.

Horizontal mill - a watermill driven by a horizontal rotor mounted on a vertical shaft; also known as Greek or Norse mill. See Norse mill.

Horse - wooden framework supporting the hopper above the millstones.

Hunting cog - a cog deliberately introduced on spur wheels to avoid simple gear ratios, thus ensuring even wear. The extra cog would engage the wooden stave behind the one which it took in the former revolution, thus wearing all cogs and rounds that work upon one another equally. The arrangement made for a more uniform motion throughout the whole work.

Hurst - the floor upon which the millstones rest.

Hursting - timber framework supporting the millstones, and enclosing the main gearing in the watermill.

Lade - see flume.

Lands - surface of a millstone between the furrows.

Lantern - variety of wallower in which the gear members are vertical wooden staves, held at the top and bottom by solid wooden discs. A lantern pinion looks like a round cage or lantern.

Launder - a trough carrying water to the wheel.

Lay, lying, line shaft - usually referred to in Britain as a "counter" shaft, this shafting passes along the "meal" floor of the grist mill and drives secondary bevel gears which in turn transmit the waterwheel drive to the millstones on the floor above.

Leat - mill stream.

Ligger - see bed stone.

Lightening tree - an adjustable wooden rod supporting the end of the sole tree in the Norse mill.

Locum - oversailing dormer enclosing the hoist in a water mill.

Logwood mill - a mill equipped for rasping logwood, used to produce a dark red dye.

Low milling - grinding with the millstones close together. This method of grinding was in general use before the New Process. The aim was to produce as much flour as possible at one grinding.
Mace Head - the head mounted on the upper end of a stone spindle, supporting (and driving) the gimbal bar (or rynd) of the runner stone.

Meal Floor - that floor of the grist mill to which the meal or flour descends by gravity (usually ground level, or below).

Meal House - the upper chamber of the Norse mill, containing stones and hopper.

Meal Spouts - wooden spouts conveying meal from the stones.

Mettle, to show one's - derived from metal, referring to small bits of stone which became embedded in the millstone dresser's hand and showed as blue specks. "To show one's metal" meant to demonstrate that one was a qualified stone dresser, a highly skilled profession.

Miller's Willow - a wooden spring employed to tension the shoe against the damsel, or quant.

Multure Bowl - the receptable used by the miller for taking toll; also known as "toll dish."

New Process - process of high grinding, with one or more lower re-grinds, that came into use in the United States just before the introduction of modern roller milling.

Noria - a vertical water wheel, turned by steam current or by animals, lifting water for irrigation by means of containers attached to the rim; also known as "Persian wheel" and "wheel of pots."

Norse Mill - the term employed in Northern Europe for the Greek or horizontal mill.

Oil Mill - a mill equipped with edge runner stones and stamps, for the extraction of vegetable oils.

Overdrift - millstones driven from above, by quant's.

Overshot - water wheel served by a head race discharging over its outer circumference.

Pair - a term used to describe the capacity of a mill by reference to the number of pairs of millstones installed; for example, "two pair mill", "three pair mill", and so on. See also run.

Peak Stone - British millstone of "millstone grit" from Derbyshire.

Penstock - a wooden trough carrying water to the wheel, or alternatively a sluice gate controlling the flow.
Pick - a pointed bill used for stone dressing.

Pitch back wheel - a waterwheel of the overshot type, with the launder modified to discharge on to the near side of the wheel, thus reversing the normal direction of rotation.

Pit wheel - primary gear wheel of the watermill, mounted on the inner end of the axle. It may be either a face gear (i.e., with transverse cogs or teeth across its outer circumference) or a bevel gear, with a sloped face to mesh with a complimentary bevel gear in a horizontal plane on a vertical spindle.

Poncelet wheel - an improved type of undershot waterwheel, fitted with curved metal floats, invented by General J. V. Poncelet.

Quant - the driving spindle used with overdrive stones.

Roller mill - a mill employing metal rolls in place of the traditional stones.

Rule of thumb - phrase derived from the old-fashioned way of testing the quality of the grind, between the miller's thumb and first finger.

Run (of stones) - American term for a pair of stones, used to describe the capacity of a mill; see also pair.

Rungs - the floats of a water wheel; also, in windmills, the transverse iron rods carrying the sail cloths.

Runner stone - the upper, revolving millstone.

Run with (against) the sun - said of a millstone which has its furrows cut so that the runner stone rotates in a clockwise direction.

Rynd - crosspiece in the eye of the upper millstone by means of which it is supported on its shaft. Balance rynds allowed the upper stone to adjust to the lower in grinding; stiff rynds held it firmly in a plane parallel to the lower stone.

Sack boy - a device for holding open the mouth of a sack.

Saddle quern - a primitive hand mill employing reciprocating motion.

Segment - a face-gear ring, with either outward or inward drive, usually bolted on to the wooden arms of the waterwheel.

Shoe - a tapering wooden trough, fed with grain from the hopper and discharging to the eye of the runner stone.
Shroud - a deep rim enclosing the buckets in overshot or breast-shot waterwheels.

Sile - rynd as used in the Norse mill.

Skaltkvarn - Scandinavian (Swedish) term for the horizontal, or Norse, mill.

Skirt - the outer section of the grinding surface of a millstone.

Skirting board - the low wooden curb scribed around the bed stone at floor level.

Slip cogs - removable cogs, secured by iron pins, permitting a pinion to be taken out of gear.

Soke (milling soke) - ancient custom regulating the conduct of milling.

Sold - a miller's sieve of punctured wholeskin, used in the Faroes.

Sole - timber or sheet iron lining to a waterwheel; a board forming the bottom of an individual bucket.

Sole tree - a pivoting beam carrying the thrust bearing of the vertical spindle in the Norse mill.

Sprattle box - a device for throwing a millstone out of gear, so that it will not continue to rotate.

Spreader - a device patented by Oliver Evans that was used to spread grain for cooling before it was stored in garners, or bins. The device was usually on the uppermost floor of the mill.

Starts - short spurs of wood or metal, projecting from the rim of a waterwheel to support the floats.

Stone - a millstone; often used in such phrases as "a mill of six run of stones."

Stone, flowing of - those parts of the surfaces of the millstones, near their rims, where they are close fit.

Stone nut - small pinion (gear) by which a millstone is driven. In a single-pair mill, this would be the same as the wallower. Where there is more than one pair of stones, the stone nut for each pair must stand on a separate shaft, geared to the main shaft (holding the wallower) through the great spur wheel.

Strike (strickle) - the straight edge used to level off grain or meal in a toll dish or measure.
Suspension wheel - a lightly built iron framed waterwheel, designed to drive through a cogged track fixed to the rim.

Swallow - alternative name for the millstone eye; apparently confined to England.

Sword - the key used in the Norse mill to secure the upper end of the lightening tree.

Tail race - that section of the mill race downstream of the wheel.

Temse - a sieve for dressing flour. See Thames.

Tentering gear - the mechanism for making fine adjustments to the gap between millstones.

Thames, to set the, on fire - corruption of the phrase "to set the temes on fire." The temes was constantly agitated by a boy. Since the mechanism was made of wood, too energetic movement might set it on fire.

Thrift - the turned wooden handle for a bill.

Thumb, miller's - phrase arising from the fact that through much testing of his grind, the old miller's thumb became flattened. Some held, however, that it got this way by being pressed against the weighing scale.

Tide mill - a water mill utilizing the rise and fall of the tide, and normally provided with a mill pond in the form of a tidal pound or reservoir.

Tirl - the impellor or rotor of the Norse mill.

Toll - payment in kind, taken by the miller in a toll dish, or mul-ture bowl.

Toll dish - see Multure bowl.

Trammel - a wooden gauge used to check the plumb of the stone spindle.

Tramp iron - American term for metal scrap (binder wire, etc.) hidden in the grain.

Trundle wheel - a variety of wallower in which vertical pegs held in a single wooden wheel take the place of the staves of the lantern. Such wheels were larger than the lantern pinions they replaced, and the pegs were shorter than the staves.

Tub wheel - horizontal mill wheel revolving in a circular wooden casing.
Tun - removable wooden casing enclosing the millstones; also known as vat or hoop.

Underdrift - millstones driven from below; the customary arrangement in the watermill.

Vat - see tun.

Vertical mill - the traditional European mill driven by a vertical water wheel.

Vitruvian mill - the Roman vertical mill, as described by Vitruvius.

Wallower - first driven wheel of a windmill or watermill. In a mill with a single pair of stones, it is found on the drive shaft of the upper millstone. Where the mill has more than a single pair of stones, it stands on the shaft which drives the stones through the great spur wheel.

Warbler - the clapper or bell in old mills which automatically sounded when the hopper was empty to prevent the millstones from running empty.

Winter mill - a class of mill mentioned in the Domesday survey, probably powered by small seasonal streams.

Wire machine - see dresser.

Yoke (of edge runner stones) - the timber mounting for a pair of stones, arranged to revolve around the foot of the vertical drive shaft.
VITA

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EXAMINATION AND THESIS REPORT

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Major Field: Geography

Title of Thesis: THE CULTURE HISTORY OF GRIST MILLING IN NORTHWEST GEORGIA

Approved:

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Date of Examination:

May 15, 1974