LAND UTILIZATION IN THE NEW AND WATAUGA
RIVER BASINS OF NORTH CAROLINA

DISSERTATION

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By

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CHAPTER I

INTRODUCTION

The upper New and Watauga river basins, located in the extreme northwestern part of North Carolina in Ashe and Watauga counties, occupy a small portion of the extensive upland resting between the crests of the Blue Ridge and the Unaka mountains. This region constitutes the highest and most northerly portion of the plateau-like upland of the older Appalachians. North of the New River basin the Unakas and Blue Ridge converge to form a single northeast trending range of mountains, the Blue Ridge of Virginia; whereas to the south there is a progressive broadening and lowering of the intermountain area.

The two basins are considered as a unit because of common economic and cultural ties. The drainage divide separating the two basins is breached by several low and easily accessible wind gaps, and constitutes no real barrier to movement. Intercourse between the two has been carried on from the earliest settlement of the mountain region. Illustrative of the close ties binding the two segments of the region, the town of Boone, located on a tributary of New River, serves as the principal trade center for the entire Watauga basin as well as the southern part of the New River basin.

Few places in America have a more interesting history of human occupancy than this mountain region. This is the home of the Appalachian mountaineer whom physical barriers isolated from his first occupation of the land, fostering a culture that persisted essentially unchanged for more than a century and a half and impressed upon the
character of the present inhabitant many customs and traits presently found only in the mountain South. The original settlers were largely men of Northwest European stock who were seeking only the chance to own land and to be free of the oppressive tax burdens imposed by their respective governments. Land that provided easy subsistence and relative isolation was desired by many, and while difficult to enter, the New-Watauga region abounded in resources considered at that time to be adequate for an abundant life. The lowlands bordering the small streams were filled with fairly deep, fertile soil; forests covering both ridges and valleys provided a seemingly unlimited supply of wood for construction and fuel, and at the same time were an easy source of numerous wild fruits, nuts, and wild game, including turkey, grouse, quail, rabbit, deer, ground hog, oppossum, and bear. All streams abounded in fish and most could be used as a source of power for grist mills; fresh water springs for domestic needs could be found near all building sites.

Well endowed with most of the essentials for easy subsistence and separated from surrounding lowlands by rugged slopes, the inhabitants had little reason for active commerce with the outside. A few wagon loads of merchandise consisting of salt, spices, gunpowder, cotton goods, and a few other staples, provided their needs. Consequently, for several generations the rough, winding wagon roads, serving as the only outlet for intercourse with the outside, were used only by those few who considered it commercially worthwhile to make the long trip to the lowlands.
In the original settlement of the land relatives clustered together, and this close family association, combined with relative independence from outside needs, gave rise to a clannishness that is prevalent in many areas even today. Expressions of family pride are still quite pronounced among the mountain people, although the blood feud is largely a thing of the past.

In the early part of the present century several moves began which were instrumental in removing the shackles of isolation from the New-Watauga and many other similar mountain regions. One of the first of these was made by the lumberman who built railroads in order to lay waste the virgin forests which covered large parts of the region. He completed his "rape of the woods" in due time and then moved on to conquer other fields, but he left with the mountain people their first easy means of communication with the lowlands. This outlet was greatly supplemented in the 1920's by automobiles. In this decade the state of North Carolina instituted a progressive road building program which in the course of twenty years moved almost all farms of the area to within easy reach of an all-weather road.

Although customs and habits long established are slow to give way to new ideas, change is inevitable when there is easy intercourse between areas of different cultures, and so in recent years the mountain South has undergone a great change. At present, generally speaking, one might say that the New-Watauga region reflects not only a past of long isolation and close community association, but also the changes recently brought about through closer communication with the rest of the
country.

From the beginning of settlement in the New-Watauga region, subsistence agriculture dominated land use. A great variety of products was produced on every farm, though few could be considered as cash crops. Every farm had general purpose cattle for home needs in milk, butter, and beef; swine were raised to provide meat and lard for the farm; chickens, geese, turkeys, ducks, and other poultry supplied eggs and meat to the family larder as well as feathers for pillows and mattresses. All farms were self-sufficient in domestic fruits supplemented by many wild varieties. The home garden satisfied vegetable needs for the entire year, some crops being stored in root cellars and others canned or preserved. Cash products were few, consisting largely of those which could withstand a long haul without too much damage. Among the animal products sold were cured pork, eggs, wool, hides and skins. Cash field crops were few in number, consisting largely of potatoes and cereals, although the latter were raised principally for animal feed. Agricultural yields were generally poor, and average farm income remained at a low level.

A change in land use began soon after the region was reached by railroads. At first the railroads were concerned only with the transportation of lumber and other forest products, but after the major part of the virgin timber was removed, they began to serve as a transportation medium for all types of products coming in and going out of the area. In the 1920's the development of the highway system encouraged the use of trucks, and along with existing railroad facilities, offered access to new markets for products of the region.
With the newly developed transportation system providing easy access to all parts of the region, the New-Watauga area began a land-use revolution that is continuing today. In the last thirty years farm incomes, still below the national average, have increased by a percentage far greater than that of the rest of the nation. The tourist trade, limited earlier to a few hotels, has become regionwide with facilities and tourist lures increasing annually. Retail trade has more than tripled, and manufacturing, though still relatively handicapped by inaccessibility, has made remarkable progress.

Examples of the change that has taken place may be seen most clearly in agricultural land use. Prior to 1930 production of cereals for sale was of somewhat greater importance than at the present time (much of which was marketed in the liquid form). Sheep were more numerous, representing the most important animal product. Before 1930 the commercial production of tobacco, dairy products, and beef, the three principal sources of farm income at the present time, was essentially non-existent.

That a marked change in land use has taken place is evident. Some of the reasons for this change are also quite evident, but there are many factors responsible. The pattern of land use over the past two or three decades has been strongly shaped by elements of both the physical and cultural landscapes. Climate, slope, soils, vegetation, and parent rock comprise the physical elements of importance. The

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1Between 1935 and 1945 the number of sheep in Ashe and Watauga counties dropped by approximately one-fourth, although they still rank first and second in the state.
cultural elements include new and improved farming methods which have altered the farm pattern and increased production, improved transportation facilities, governmental financial aid and educational instruction, and the general prosperity of the nation which has helped financially to support the changes necessary. More difficult to evaluate but also important are cultural background and the continual human adjustment to changing conditions. It is clear that land use of today is the result of various combinations of all these physical and cultural factors. It is the aim of this study to interpret present patterns, to ascertain the more important factors responsible for them, and to evaluate recent trends with respect to future possibilities.
CHAPTER II

THE PHYSICAL LANDSCAPE

In few other regions is land use more completely dominated by the physical environment than in a mountain region. The New-Watauga region is mountainous and the land use patterns that have developed are typical. Human settlement and transportation lines are markedly channeled along narrow valleys and through gaps in the ridges. Agricultural production varies with changes in slope and elevation. Leeward and windward exposures show sharp contrasts which are reflected in natural vegetation and agricultural land use, and even greater contrasts are often apparent between north and south exposures. From the lower valleys upward there is a procession of changes caused by the constant decrease in temperature. Subtropical plants (magnolia, catalpa) are found in the lowlands, while vegetation common to the Subarctic (Frazer fir, spruce) occupies the crests of the higher mountains. The best land, the largest farms, and the finest homes are found in the lowlands of the larger streams. Here agriculture is a machine operation, whereas on the smaller hillside farms of the higher slopes human labor plays a more important part.

A. Physiography

Physiographically, the New-Watauga region is included within that division of the Southern Appalachians known as the Blue Ridge Plateau. The plateau surface, here called by Guyot the Plateau of the Grand-
father because of its association with Grandfather Mountain, is highly irregular, containing many monadnock-like residuals which rise conspicuously above the general surface. In all parts of the region the plateau is imperfectly developed. It consists of a series of valleys 2500 to 3500 feet in elevation, lying between mountain ranges with summit elevations often exceeding 5000 feet. The more rugged parts of the surface are at the extreme southern and western margins of the upland, and the smoothest of the lowlands are found adjacent to the larger streams in the interior portion of the area. Cross valleys and ridges present, in almost all instances, a haphazard, irregular alignment. Drainage lines are dendritic in pattern with no marked zones of weakness apparent. Every main stream is joined by hundreds of smaller ones and these by multitudes of still smaller brooks and rivulets, all of which have combined to carve the plateau surface into a complicated system of ridges, valleys, spurs, and hollows (Figure 1).

1. **Structural Materials.** The rocks comprising the area are among the oldest on the American continent consisting of metamorphics, so changed by time, heat, and pressure, that it is difficult to establish the original form of the rock material, whether igneous or sedimentary. It is quite certain that most of the underlying rocks are Pre-Cambrian in age, and the intricate faulting, folding, and twisting which the rocks show is proof that this region was subjected to many

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Figure 1. The New-Watauga Region of North Carolina.
mountain building disturbances throughout its geologic history. These disturbances projected summits which at times were probably far higher than those existing at the present time.3

The more extensive formations include the Carolina Gneiss, Cranberry Granite, Roan Gneiss, and the Unicoi Formation. Each formation is composed of a variety of rock materials, most of which are crystalline in type. The Carolina Gneiss, which occupies the southeastern portion of the region, comprises the oldest rocks in the Appalachian area. This formation is cut by all the igneous rocks and is overlain by all the sedimentaries. In the New-Watauga region it consists largely of mica schists, mica gneisses, and granitoids. Layers of white granite are not uncommon and pegmatite lenses and veins are quite abundant. The Cranberry Granite formation is quite extensive in the west central part of the region and is made up of granitoid schists and gneisses and light colored granites. The coarser granites seldom outcrop due to the rapid weathering of the feldspars. The Roan Gneiss, found in the southwestern part of the region, consists of hornblende gneisses, hornblende schists, and diorite. Probably the most resistant of the formations is the Unicoi. It is composed largely of quartzites, sandstones, shales, and conglomerates. The presence of Grandfather Mountain, the highest summit of the Blue Ridge, and the Stone Mountains indicates the great resistance of the

The extent to which land use is affected by structural materials in the region is difficult to determine. All formations of large extent possess both rugged mountain crests and productive valley lowlands. In general, the Unicoi Formation and Carolina Gneiss form the higher and more rugged mountain summits and are generally covered with thinner, less productive soils; while the surfaces of the Roan Gneiss and Cranberry Granite present a slightly more subdued aspect with deeper and more productive soils covering them.

2. Physiographic Features. The physiography of the New-Watauga region falls into three main units; the Blue Ridge at the eastern margin, the Unaka ranges at the western margin, and the cross ranges and valleys extending between these.

The Blue Ridge. Viewed from the east, the Blue Ridge stands out as a bold, forest covered escarpment with occasional peaks and wind gaps breaking the continuity of the crest. The highest portion of the ridge is at the southernmost margin of the New-Watauga region, the crest becoming progressively lower toward the north. A closer look from the east reveals numerous streams, occupying straight, narrow beds. These have carved the eastern slope of the ridge into a maze of narrow defiles and steep faced, sharp crested mountain spurs (Figure 1). Seen from this angle, one can well understand why good transportation facilities were slow to develop.

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4 Structural data from Arthur Keith, Cranberry Folio, No. 90, United States Geological Survey, 1903.
A view from the crest of the Blue Ridge reveals marked east–west contrasts. The escarpment that appears so rugged from the Piedmont presents an even more spectacular aspect from above. Nearly vertical walls descend from the crest of the ridge hundreds of feet into the narrow valleys below. Here is the Blue Ridge in its wildest, most scenic aspect. Here a mountain man wishing solitude once found it in abundance. Not any more—the tourist has taken over his wilderness. Hotels climb like grapevines over rugged mountain faces and tourist homes and vacation cabins cling to precipitous valley walls. Enterprising real estate men are here selling cool air and a look at the mountain scenery by the lot, and even more enterprising operators are selling only the latter (the very famous Blowing Rock is now fenced off and a look at the Johns River Gorge below is now secured only through the purchase of a ticket).

Westward from the summit of the ridge the terrain presents a far different aspect. Instead of a sharply defined escarpment, spurs and cross ranges extend outward from the main body of the ridge to form a rolling sea of mountains. One can best see the plateau form of this region where the great escarpment overlooking the Piedmont is visible on the one side and the more subdued terrain of the New and Watauga river basins on the other. Once inside this maze of mountains there is a prevailing awareness of slope—gentle here, rugged there; each

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*One of the best examples of such isolation is found in Doughton Park where one can look down 1500 feet upon what was once the homestead of the Caudill family. Such isolation still favors the "moonshine" trade.
bend of the road bringing a new and different aspect to the traveler, and all roads bend constantly.

Throughout much of its extent the Blue Ridge is anything but a ridge (Figure 1). Streams with base levels on the Piedmont have the entire eastern margin of the upland in retreat. In many places the streams have completely cut through the main body of the ridge and are now attacking what remains from three sides. Wherever these incisions have been accomplished, the so-called ridge takes on even more of a plateau escarpment appearance. At numerous places the slope gradient to the west of the divide is so low that crop agriculture extends all the way to the summit.

The portions of the Blue Ridge with the greatest carrying power are the more rugged portions. Tourists favor the spectacular in mountain scenery. Among the more outstanding features in this respect are Grandfather Mountain, Blowing Rock, Tompkins Knob, and the entire east facing escarpment of the ridge. Grandfather Mountain (elevation 5964 ft.), the "Grandstand of the Blue Ridge," located at the southern margin of the region, is the highest of the summits included in the New-Watauga realm and, moreover, the highest of the entire Blue Ridge chain. During the time of the Blue Ridge Peneplain (early Cenezoic) the Grandfather stood as one of the more conspicuous monadnocks over-

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looking the gently rolling surface of the land.\(^7\) Approached from any angle, the Grandfather presents a rugged picture (Figure 2). Bold, vertical cliffs fringe the higher summits on all sides and outcrops of bedrock and talus show through the overlying forest cover in places throughout the entire extent of the mountain. The name "Grandfather" is best understood when it is viewed from a considerable distance to the northwest. With distance the rugged spurs and escarpments blend together to form the profile of a man with a long forehead, heavy brow, a long arched nose, and a firm, heavily bearded chin - truly the Grand Old Man of the Mountains.

Northeast of the Grandfather, overlooking the Johns River Gorge, is Blowing Rock. Considerably lower in elevation than the Grandfather, Blowing Rock forms part of an escarpment which resembles, in many respects, the biscuit-cut of a glacial cirque. It looks as though the rounded hills and mountains here have been undermined, and a huge chunk of the upland surface broken away, leaving a rugged, scarred upper edge. This effect has been created by the erosive action of the Johns River as it tumbles eastward and downward onto the Piedmont. A stone tossed fifty feet outward may travel ten times that distance vertically. Numerous vertical cliff exposures overlook the valley floor far below, giving rise to such romantic names as Lovers' Leap and Suicide Rock. In few places are valley and mountain breezes more constant or stronger. On a warm summer day light objects tossed out over the cliffs are blown backward over the head of the thrower (hence Blowing Rock). At night

\(^7\)Sharp, op. cit., pp. 304-308.
Figure 2. Grandfather Mountain from the southeast.
this strong valley breeze becomes a mountain breeze as the cool mountain air drains into the valleys below. The upper walls of the Johns River Gorge are dotted with tourist homes, often three to four floors deep, representing the change in elevation from front to back of the house. Exposed in this way to the constantly moving air, comfortable sleeping is always assured even in the hottest days of summer.

Tompkins Knob, just north of Deep Gap (occupied by the main road between Boone and the Piedmont section), offers good views both to the east and to the west, emphasizing the contrast between the rugged east slopes and the more subdued terrain of the New River basin. Tompkins Knob is easily reached by way of the Blue Ridge Parkway.

The three wind gaps, through which most of the traffic enters the region from the east, are Deep Gap, between North Wilksboro and Boone; Horses Gap, between North Wilksboro and West Jefferson; and Mulberry Gap, between North Wilksboro and Laurel Springs. While forming the means of easiest access from the east, these gaps are not easy thoroughfares. Road construction here was an engineer's headache and the present routes through them follow rather tortuous courses from the Piedmont below. A fourth route, following no particular gap, winds southward from Blowing Rock. This is the major route south to Lenoir and the west central Piedmont.

The Unaka Ranges. The Unaka Ranges, forming the western boundary of the New—Watauga region, are here called the Stone Mountains. They consist of a series of rugged northeast—southwest trending ridges broken frequently by wind and water gaps. Viewed from either side, the Stone Mountains present a rugged picture with summit elevations aver—
aging about 4500 feet. Surrounding slopes are greater than 60 percent in most instances. Forests cover the greater part of the upper slopes as the gradient is generally too steep for agriculture.

Unlike the Blue Ridge, the Stone Mountains seem to have little attraction for tourists. There are two possible reasons for this. First, the slopes on all sides are too steep to be easily accessible, auto roads seldom reaching anywhere near the summits. Hiking paths are available in most cases, but relatively few mountain tourists are hikers. Secondly, once the summit is attained the scenery, though beautiful, lacks the spectacular quality so characteristic of the east facing escarpment of the Blue Ridge. The result is that most tourists entering from the west pass through the gaps of the Stone Mountains and drive to the so-called crest of the Blue Ridge to view the sheer drop into the Piedmont below.

While the Stone Mountains serve, throughout most of their extent, as the water divide separating the drainage of the two basins from that of the Roane and Laurel creeks of the upper Tennessee system, they are breached in many places by streams heading east of the main body of the mountains.

Among the more outstanding features in the Stone group are Buck Mountain, near the southwest margin of the region; Bald of Stone Mountain, overlooking the State Line Gap between Boone and Mountain City, Tennessee; Pine Mountain and Bald Knob, in the west central part of the region; and Pond Mountain, at the junction of boundaries between North Carolina, Virginia, and Tennessee. Just north of the state line between North Carolina and Virginia the New River basin is overlooked by
Whitetop Mountain and Mount Rogers (elevation 5719 ft.), the latter the highest summit in the state of Virginia.

**Cross Ranges and Valleys.** Cross ranges and valleys extend outward into the New and Watauga basins from both the Blue Ridge and Stone mountains. The drainage patterns in both river basins are dendritic and the ridges serving as water divides between the tributary streams follow, in general, the same type of alignment, though greatly differing from place to place in height, ruggedness, and continuity.

Two cross ranges extend all the way from the Blue Ridge to the Stone mountains. These are the Beech Mountains, which form the drainage divide along the southern margin of the Watauga system, and the Rich Mountains, which form the divide between the New and Watauga systems. Wind gaps cut the Beech into three sections, the Hanging Rock segment resting between the crest of the Beech and the Grandfather.

Throughout most of their extent the Beech Mountains are rugged and forest covered with numerous cliffs and bedrock exposures. Crop land is in all cases limited to the lower slopes. The Rich Mountains extend from the Blue Ridge near Blowing Rock to the Stone group near the northwestern tip of Watauga County. The main body of the range follows a course due north from the Blue Ridge junction. The southern part is relatively low and accessible with crop land extending over the crest of the divide in most areas. The northern three quarters, by contrast, is high and generally surrounded by steep slopes. Two of the more outstanding summits in the Rich group are Snake Mountain and the Bald of Rich Mountain, commonly referred to as Tater Hill.
Snake Mountain (elevation 5594 ft.) is the highest summit in the cross ranges and is the most inaccessible, being surrounded on all sides by very steep, forest covered slopes. The Tater Hill is one of the better known and more interesting mountains of the region. It is the perfect example of the many mountain balds found throughout the Southern Appalachians. Tree vegetation near the upper summit of the mountain gradually gives way to shrub forms, shrubs to heather and heather to wild mountain grasses. Future improvements in transportation facilities may make the Tater Hill one of the more popular mountains for tourists. The summit already is accessible by auto even though the road is poorly constructed and steep, but once attained few mountains offer a greater variety of mountain scenery.

Other conspicuous cross ranges found throughout the region include, from south to north, Flattop Mountain, Sugarloaf Mountain, Elk Ridge, Bluff Mountain, The Peak, Three Top Mountain, Mulatto Mountain, Paddy Mountain, Nigger Mountain, and Phoenix Mountain, all of which range in summit elevation between 4500 and 5500 feet.

Though it is for mountains that this region is best known, it is the valleys between the mountains that form the heart and circulatory system of this mountain province. Here are found the roadways, fields and farm homes, and towns and villages.

The more extensive valley areas, and consequently, the more densely settled and agriculturally productive, are adjacent to the larger streams. In the Watauga basin the major areas are the Middle Watauga near Valle Crucis, and the northern tributaries of the river, Cove Creek and Beaver Dam Creek. In the New River basin the more
important valleys are as follows: The South Fork of the New near Boone, Naked Creek near Jefferson, Beaver Creek south of Jefferson, Helton Creek in the northern part of Ashe County, and the valley area at the junction of the south and north forks of the New. Although of relatively small extent, these valleys are the centers of major agricultural activity and surplus production.

3. **Slope.** Throughout the entire New-Watauga region slopeland is the dominant feature of the landscape. There is practically no level land. Slopes range from less than two percent to more than 60 percent, with the average probably between 30 and 40 percent. Slopes become progressively steeper from the alluvial bottoms upward to the higher summits with the steepest slopes generally located just below the mountain crest.

Using the T. V. A. land classification maps of the Watauga basin as a guide, probably more than 80 percent of all the land has a slope greater than 30 percent, and about five percent has a slope greater than 60 percent.\(^8\) Less than ten percent of the land has a slope of less than 15 percent, normally considered to be the upper limit for row crop agriculture (Figure 4). In an area with so much of the land in relatively steep slopes row crop agriculture will naturally extend far above the optimum limits. This has resulted in badly eroded fields in many areas and in a large number of poor subsistence-type farms. At present there is a trend toward reforestation,

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Figure 3. Terrain Features of New-Watauga Region
PERCENT OF SLOPE

- 0 - 7
- 8 - 15
- 16 - 30
- 31 - 60
- 61 AND OVER

Figure 4. Slope Map of the Watauga Basin
limited strip cropping, and an increased acreage in hay and pasture.

B. Climate

While the climate of the New-Watauga region is best classified as Humid Continental Long Summer in type (Trewartha), it is far from representative. Winter temperatures, though averaging only slightly above freezing, are characterized by wide variations, ranging in January extremes from a low of -6 degrees to a high of 74 degrees. Extreme cold is often followed by periods of mild weather. Individual snows may accumulate to as much as a foot in depth, but seldom do they last for more than a few days. Winters are shorter than in most Humid Continental areas and the spring and autumn seasons are generally longer. The elevation control of temperature in this area is most apparent during the summer season. While cities in the Corn Belt are sweltering during the summer season, stations in the New-Watauga region are enjoying summer temperatures of less than 70 degrees. Summer conditions in this area are, indeed, more representative of the Marine West Coast than Humid Continental in both temperature and rainfall. Rainfall during the three summer months averages more than five inches per month with as much as 21 inches having been recorded in a single month (August).

1. Temperature. With an average elevation between 2500 and 3000 feet, the New-Watauga region experiences few extremely high temperatures.

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10All temperatures are given in Fahrenheit degrees.
The warmest month at Boone shows a mean temperature of 68.9 degrees (20 year record, 1930-49). The minimum July temperature recorded was 38 degrees, and temperatures as low as 40 degrees occurred two other years. The maximum July temperature in this period was 96 degrees. Temperatures above 90 degrees were recorded in only three of the 20 years. The frost-free period, though varying considerably from year to year and from place to place within the region (depending upon elevation), averages between 160 and 170 days. The January mean maximum and mean minimum at Boone are 63 and 6 degrees, respectively, a range of about 57 degrees. The absolute minimum recorded at Boone in the 20 years of record is -7 degrees (February, 1936). Minimum temperatures as low as zero have been recorded in all months from December through March, occurring most frequently in January.

Locally, temperatures vary considerably with elevation and exposure. Variations in temperature with elevation may be illustrated by comparing the records compiled at Jefferson (2900 feet), Boone (3333 feet), and Banner Elk (3800 feet), the latter a town just south of the Watauga basin on the southern slope of Beech Mountain (Table 1). Average temperature for the winter months (December, January, February, and March) at Jefferson is 38.3 degrees, at Boone 37.3 degrees, and at Banner Elk 35.9 degrees. Summer temperatures (June, July, August, and September) average 67.3 degrees at Jefferson, 66.9 degrees at Boone, and 64.3 degrees at Banner Elk. Variations with
exposure are reflected in native vegetation and agricultural land use. Northern conifers, such as spruce, fir, white pine, and hemlock, are far more common on north facing slopes, while the southern exposures are dominated almost altogether by hardwoods such as poplar, ash, white oak, and formerly, chestnut. Cleared north slopes are less extensively used for row crops, generally the hardier types such as potatoes and cabbage. On the other hand, these northern slopes tend to maintain a thicker, more luxuriant stand of grass and are far less eroded than south facing fields. This is the result of less freeze and thaw action on the north slopes, with the ground often remaining frozen for the colder part of the winter season. The northern slopes are used chiefly for hay production and pasture (Figure 5).

2. Precipitation. Precipitation in the New Watauga region is abundant and well distributed throughout the year. The annual rainfall throughout the region averages between 50 and 60 inches with the more elevated areas receiving the greater amount. In the twenty years of record from 1930 through 1949 the station at Boone recorded an average annual precipitation of 55.40 inches. Seasonal variations are not extreme. July, the rainiest month, records an average of 6.95 inches. Despite the heavy summer totals, periodic drought appears to be one of the greatest hazards to agriculture within the area. Summer rainfall fluctuates greatly from month to month and from year to year. August, for example, recorded totals greater than 10 inches in three years and less than three inches in five of the years, the extremes ranging from 1.36 inches in 1946 to 21.40 inches in 1940. Heavy convectional rains
### TABLE I

**MEAN MONTHLY AND ANNUAL TEMPERATURES FOR BANNER ELK, BOONE, AND JEFFERSON, NORTH CAROLINA**

<table>
<thead>
<tr>
<th>Elev.</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner Elk</td>
<td>3800'</td>
<td>34.4</td>
<td>34.4</td>
<td>40.6</td>
<td>43.6</td>
<td>56.3</td>
<td>63.4</td>
<td>66.8</td>
<td>65.7</td>
<td>61.4</td>
<td>50.9</td>
<td>41.6</td>
<td>34.5</td>
</tr>
<tr>
<td>Boone</td>
<td>3333'</td>
<td>36.1</td>
<td>36.1</td>
<td>41.9</td>
<td>49.4</td>
<td>58.7</td>
<td>65.9</td>
<td>69.9</td>
<td>68.1</td>
<td>63.7</td>
<td>52.2</td>
<td>42.7</td>
<td>35.8</td>
</tr>
<tr>
<td>Jefferson</td>
<td>2900'</td>
<td>36.1</td>
<td>36.7</td>
<td>43.6</td>
<td>51.2</td>
<td>59.8</td>
<td>65.9</td>
<td>69.8</td>
<td>68.4</td>
<td>64.2</td>
<td>53.0</td>
<td>43.3</td>
<td>36.6</td>
</tr>
</tbody>
</table>


### TABLE 2

**MEAN MONTHLY AND MEAN TOTAL PRECIPITATION FOR BANNER ELK, BOONE, AND JEFFERSON, NORTH CAROLINA**

<table>
<thead>
<tr>
<th>Elev.</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner Elk</td>
<td>3.72</td>
<td>3.78</td>
<td>5.33</td>
<td>4.24</td>
<td>4.53</td>
<td>5.37</td>
<td>6.26</td>
<td>5.85</td>
<td>4.43</td>
<td>4.91</td>
<td>2.60</td>
<td>4.69</td>
<td>55.71</td>
</tr>
<tr>
<td>Boone</td>
<td>4.59</td>
<td>2.19</td>
<td>5.48</td>
<td>4.63</td>
<td>4.65</td>
<td>3.98</td>
<td>6.06</td>
<td>5.02</td>
<td>4.35</td>
<td>5.73</td>
<td>4.49</td>
<td>4.20</td>
<td>55.37</td>
</tr>
<tr>
<td>Jefferson</td>
<td>3.20</td>
<td>3.40</td>
<td>4.20</td>
<td>3.80</td>
<td>4.40</td>
<td>5.00</td>
<td>4.90</td>
<td>5.20</td>
<td>4.20</td>
<td>3.90</td>
<td>2.60</td>
<td>4.20</td>
<td>49.00</td>
</tr>
</tbody>
</table>

are characteristic of the summer season. The greatest 24-hour total, 5.55 inches, occurred in August 1940, and 24-hour totals greater than three inches have been recorded in six of the 20 years of record. Heavy rainfall of the thundershower type aggravates the erosion control problem caused by a forced cultivation of many excessively steep slopes.

Winter precipitation, partially in the form of snow, is noticeably smaller than that of summer. February, the driest month, averages only 3.42 inches. Snowfall is normally very light and most storms rather short-lived, the ground seldom remaining covered for more than two or three days at a time. Snowfall at Boone averages 28.8 inches per year. The snowiest months are December and March, both averaging just under seven inches per year. The maximum for a single month at Boone was recorded in March, 1936, when 25 inches of snow fell.

Sleet and glaze occur occasionally during the winter season. Hail, a destructive warm-season phenomenon, occurs infrequently, but may cause tremendous damage, especially to leaf crops such as tobacco (Figure 6).

3. **Cloudiness.** Cloudiness is relatively high in all seasons of the year (Figure 8). However, winter has the highest percentage of clear skies (less than 3/10 cover) with more than 40 percent of all days reported clear from November through March. The clearest month at Boone is January with clear skies expected on almost 50 percent of all days. By contrast, May through August experiences clear skies on only about 20 to 30 percent of all days. The cloudiest month is July.
PRECIPITATION REGIME
BOONE, NORTH CAROLINA
PERIOD OF RECORD: 1930-49

Figure 6
MEAN AND EXTREME MONTHLY SNOWFALL

BOONE, NORTH CAROLINA

PERIOD OF RECORD: 1930-1949

Figure 7
with more than 55 percent of all days having more than 8/10 cover and with clear skies to be expected on only about 20 percent of all days. It is likely that the high percentage of cloudiness may have an adverse affect on the summer tourist industry, but to what extent is not known.

4. Winds. The prevailing westerlies dominate the wind circulation in the New-Watauga region, although frontal disturbances cause numerous short term variations. All months of the year show a prevalence of westerly winds. More important locally than the prevailing winds are the mountain and valley breezes. These make up the natural air conditioning that is so important to the tourist trade. Air in this region is constantly in motion. Strong valley breezes sweep constantly up slope during the warm summer days and the mountain breezes at night are just as persistent in their downward movement. Home builders, especially summer tourist home builders, construct their buildings to take advantage of this gift of nature. Porches and daytime living rooms, when possible, are located down-slope to take advantage of the daytime updraft of air, while the bedrooms most frequently occupy the up-slope portion of the house to take advantage of cool air that descends from the higher slopes at night.

There are few calm days in this region, but seldom do the winds reach destructive force. Damage to agriculture, however, may be accomplished by winds of far less than gale force. This is often effected by strong winds blowing over grain fields at a time when the heads are heavy or by whipping the branches of fruit trees when the
fruit is nearing maturity.

C. Vegetation

1. Forests. Blessed with an abundance of moisture and with warm summer and cool winter temperatures, the New-Watauga region was originally covered by a dense, mixed deciduous hardwood forest. At the time when white man first entered this region some of the finest specimens of forest trees in the world were found here. Chestnut trees, often with diameters exceeding six feet, formed heavy stands along the lower slopes and constituted one of the more important varieties in all areas of deciduous growth. Some of the world's best stands of cucumber, yellow poplar, mountain ash, linden, buckeye, hickory, wild cherry, maple, beech, black birch, white, red, and chestnut oak, sourwood, and many other hardwoods covered the slopes of this area. On north slopes were fine stands of hemlock, white pine, and short leaf pine, and at elevations exceeding 4000 feet were occasional groves of spruce and fir. Only occasional mountain balds interrupted this expanse of forest splendor and even these seemed in retreat.

The forest situation today is far different from that found by the region's early settlers. While about fifty percent of the land is forested, only a few small plots of virgin timber remain. Most of the rest has had all timber of commercial quality removed. The magnificent stands of chestnut are gone due to the infestation of the European chestnut blight and work of the commercial lumberman. Only bleached skeletons remain to indicate the forest that once existed. The beautiful stands of white pine, once quite common, are no longer to be found.
Only small cut-over plots remain and in many cases not even a single tree is left as a monument to the past. Red, chestnut, and white oak, yellow poplar, cucumber, and ash formerly reached their greatest size in this area. Now it is difficult to find trees of good saw timber size.

Today the forested portions of the region are largely those areas too steep, too rocky, or too inaccessible for agricultural use. Most of the higher mountains are still forest covered and forest patches occupy the least desirable farm land throughout the rest of the region. Northern exposures have a larger percentage of forest land than the warmer southern slopes. Many fields have reverted to forest because of their inability to produce agriculturally. Some of these have been carefully reforested while others have been allowed to follow the natural succession. The result of the latter is that plots originally covered with fine stands of white pine or chestnut are now occupied by a complex of horseweed, ragweed, blackberry brier, broom sedge, scrub pine, scrub oak, and numerous other worthless plants. It will be many decades before good timber trees will reoccupy such areas unless aided by man.

Commercial Forest Trees. Though badly damaged in the past by lack of forest management, the forests of the region remain as one of the most important of all natural resources. There is a great variety of trees used commercially in this area. Frothingham lists about 60 for the whole of the Southern Appalachian region.11

Perhaps an estimate of 50 would be more nearly correct for this smaller and higher region. Hardwoods are the more important, producing more than two-thirds of the timber cut in the New-Watauga region.

The most important commercial tree is the yellow poplar. In the moist mountain valleys it grows rapidly and produces wood of first quality which is in great demand for lumber, furniture, and veneer. Because of rapid growth, ease of production, and ready sale it will probably continue to hold the most important place in future hardwood production of the region. The chestnut, though killed by blight, is still one of the more important hardwoods with many of the dead standing trees still solid. White oak, originally second to chestnut in lumber production, is still a major lumber producer and is one of the more important woods entering the furniture industry. In this area, with most of the remaining forests on the higher and steeper slopes, chestnut oak has replaced the white oak as the most abundant of the oaks. It is used for lumber and the bark is one of the more important sources of tannin extract. Hickories are plentiful throughout the region, and while not preferred by lumbermen because of shake and a predominance of heartwood in the older trees, they are in demand for production of wagon spokes, handles, ski stock, and other special wood products. Ash, another of the more common hardwoods, has a considerable market in the manufacture of furniture, sports equipment, veneer, handles, cooperage, and crating. On the lower slopes black locust is common and from the standpoint of home use, it is probably the most important tree in the area. Because of its lasting quality and hardness most farmers prefer locust for fence posts, homemade sleds, wagon
tongues, singletrees, and for structural timbers in farm outbuildings. Commercially, locust is used for railroad ties, telephone insulator pins, and rough lumber. Associated with poplar at lower elevations and important for similar uses is basswood. Other important commercial hardwoods include red and sugar maple, black cherry, sweet birch, sweet cherry, and walnut. All of these are valuable species but are less abundant than the hardwoods mentioned earlier. Beech, one of the little used hardwoods of the region, is becoming more important commercially, with a growing use in the furniture industry.

Of the conifers, white pine, shortleaf pine, eastern hemlock, and red cedar are among the more important varieties. White pine was once one of the most important sources of lumber in the region. Though still important commercially, it is no longer found in quantity, with production constantly declining. Eastern hemlock is found on the cooler, moist north slopes. The New-Watauga is one of the more important areas of hemlock lumber production in the Southern Appalachians. Shortleaf pine is produced throughout the region and ranks with hemlock as the more important conifers. Eastern red cedar, though limited in quantity, is used in the manufacture of furniture, closet lining, house shingles, and on the farm for fence posts.

In addition to the larger trees mentioned above, a number of smaller species are also of commercial importance. Dogwood, locally abundant and largely used as an ornamental tree, is important in the manufacture of shuttles for the textile industry and in making certain types of game boards and sports equipment. Dogwood bolts (the point of
junction between the roots and the trunk of the tree) were used locally in earlier periods in making shoe pegs, shoe lasts, mauls, and other handmade tools requiring heavy, hard, and extremely tough wood. Another of the smaller species, rhododendron, is quite important as an ornamental tree. And, in addition, during the war years (1938-1946) farmers received good prices ($10-12 per ton) for rhododendron and laurel bolts which were used in the manufacture of tobacco pipes. Rhododendron is one of the better substitutes for the English briar in pipe making, and with the European supply cut off, the demand for the local product increased tremendously. Decline set in shortly after World War II and at present only a small quantity is produced each year.

Forest acreages in the two counties within the region are evenly divided. Cruikshank reported in 1952 that the latest figures available at that time gave the forest acreage of Ashe county as 95,700 acres, and that of Watauga as 95,000 acres. The major part of the Ashe county forest land is deciduous hardwood in type, while in Watauga about 75 percent is hardwood and the rest conifer, largely pine and hemlock (Table 3).

Forest Conditions. As has been indicated, very little old-growth saw timber remains in the New-Watauga region. A large part of what remains has the size but is frequently of lower quality and is composed of trees that are less desirable commercially. Very little old-growth timber is found in lowland areas and that growing on the high, dry ridges, is, in general, inferior in quality. Much of the
<table>
<thead>
<tr>
<th></th>
<th>Million board feet of saw timber</th>
<th>Thousand cords of all timber 5.0 inches d.b.h. and larger</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Softwoods</td>
<td>Hardwoods</td>
</tr>
<tr>
<td>Ashe</td>
<td>7.9</td>
<td>84.3</td>
</tr>
<tr>
<td>Watauga</td>
<td>40.8</td>
<td>115.4</td>
</tr>
</tbody>
</table>

old-growth timberland has in recent years been picked over for select size and species. Practically all that remains is hardwood.

The major part of the present forest stand is unevenly aged. The forest complex includes reproduction, saplings, pole timber, and saw timber trees. The exceptions to this general rule are the old-growth stands and second-growth stands that have occupied the clean-cut land and abandoned fields. Stands of reproduction are generally less than 20 years old. Second-growth under saw-log size is usually between 20 and 50 years old and most second-growth of saw-timber size is between 50 and 100 years old. The old-growth stands are generally between 100 and 350 years old. Close to 50 percent of all forest land is occupied by stands less than 40 years old, and less than 20 percent is stocked by trees more than 80 years old.\textsuperscript{12}

The Lumbering Industry-History and Present Structure. The lumbering industry became important in the New-Watauga region early in the present century, reaching its peak about the time of the First World War (1915-20). Heavy production continued throughout most of the 20's and by 1930 most of the first class timber had been removed. The first real lumber boom came in 1915 with the construction of a branch of the Norfolk and Western Railroad between Bristol, Virginia and Elkland, North Carolina in the New River valley of Ashe

\textsuperscript{12}Based on report of J. W. Cruikshank, Forest Resources of the Mountain Region of North Carolina, U. S. Department of Agriculture, Forest Service, Forest Survey Release No. 7, Appalachian Forest Experiment Station, Asheville, North Carolina, April 1, 1941.
County. Shortly after that time the East Tennessee and Western North Carolina Railroad extended their line from Cranberry, North Carolina, in Avery County, to Boone in Watauga. The E. T. and W. N. C. was originally constructed between Elizabethton, Tennessee and Cranberry in 1882 to serve the Cranberry Iron Mines (no longer in operation). However, throughout the later years of its operation it served a more important role as an outlet for timber cut in the mountain region. Though originally established in 1917 as a lumber road for the upper New and Watauga basins, the E. T. and W. N. C. served as a general purpose road for a region long devoid of easy contact with the lowlands. The line to Boone ceased operations in 1940 when a destructive flood swept away many of the larger fills and buckled many miles of track. Competition by autos and trucks made it impractical for the company to reconstruct the line. The Elkland extension of the Norfolk and Western ceased operations during the Second World War but the branch continues to operate between Bristol and West Jefferson. This line now serves as a general carrier but lumber and forest products are still the most important items of freight. Only a small percentage of the lumber produced in this area is marketed locally. The larger part is moved by truck to the Piedmont of North Carolina and by truck and rail to the Great Valley cities of Tennessee and Virginia.

The small portable sawmill has always been characteristic of the New-Watauga region. While there were over 100 sawmills operating in Ashe and Watauga counties in 1938, only three mills had a 10-hour
day capacity of between 10,000 and 19,000 board feet. The other mills had a capacity of between 1000 and 10,000 board feet per 10-hour day.  

As could be expected, the major part of the lumber produced in this region is by the smaller mills (Figure 9). In equipment and operating organization, these so-called "one-horse" sawmills are typical of portable mills throughout the south. Practically all use circular saws, less than one-half have edgers, and only a very few have planers. About half the mills are powered by gasoline motors and most of the rest use steam boilers. The average operating force of such a mill consists of four men at the mill and another four in the woods cutting and logging. Most logging is done by horses with the logs skidded directly to the mill.

Two of the three mills with operating capacity of between 10,000 and 19,000 board feet per 10-hour day are semi-permanent installations using steam engines as the source of power. The third, a water-powered, permanent mill, located on the lower Watauga River in the western edge of Watauga County, is one of the more unusual mills in the south. It is fully equipped with band saws, edger, trimmer, and log turner, and every operation involved at the mill is fully mechanical.  


\[14\] This mill was designed and built by a World War I veteran whose formal schooling stopped at the seventh grade and who had had no organized technical training.
Figure 9. Small portable sawmill typical of New-Watauga region.
10 to 12 men at the mill and various numbers, ranging between four and 40 men, in the woods.

Recent reliable figures for lumber production are difficult to obtain due to the questionable reliability of production figures for many of the small mills. While the production figures provided by the United States Department of Agriculture Forest Service are out of date, they are reliable and should serve to indicate something of the extent of the present lumber industry and the relative importance of hardwoods and conifers. According to lumbermen in the area, production in 1954 is considerably lower than in 1946 but higher than in 1942 (Table 4).

Forest Conservation Program in the New-Watauga Region. The forest resource in this region, as in so many other parts of the southeast, has been badly treated. All forested areas are owned by private landowners (an exception is that included in the Blue Ridge Parkway right of way), the majority of which are farmers. Because of their pressing need for supplementary income, the small landholders have liquidated a large portion of the timber on their farms. Constant logging over the past fifty years, many plots having been logged several times, has reduced the growing stock to small trees and old-growth of poorer quality. Forest fires have burned over large areas. Insect pests and plant diseases have further reduced timber stands, and man has cleared fields only to be forced to let them revert to forest growth, a second growth, poor in quality and
TABLE 4

LUMBER PRODUCTION FOR ASHE AND WATAUGA COUNTIES

IN 1942 AND 1946

<table>
<thead>
<tr>
<th>County</th>
<th>Softwood M. bd. ft.</th>
<th>Hardwood M. bd. ft.</th>
<th>Total M. bd. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1942</td>
<td>2,285</td>
<td>6,284</td>
<td>9,569</td>
</tr>
<tr>
<td>1946</td>
<td>3,275</td>
<td>8,652</td>
<td>11,927</td>
</tr>
<tr>
<td>Watauga</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1942</td>
<td>5,340</td>
<td>4,306</td>
<td>9,646</td>
</tr>
<tr>
<td>1946</td>
<td>6,159</td>
<td>12,437</td>
<td>18,596</td>
</tr>
</tbody>
</table>

small in size. In effect, the forests have been so heavily cut, culled, and burned, that their productivity has been drastically reduced. Restoration must be a slow and costly operation.

In recent years, both Watauga and Ashe counties have worked out a fire control program. Originally, both counties worked in cooperation with the North Carolina Department of Conservation and Development. This cooperative program is still functioning in Ashe County, but Watauga dropped the state program in 1952 and started a program of their own. The program functioning in Ashe consists of maintaining fire towers which are manned constantly during dry periods and a home control program which requires every individual to report planned brush burning and other fires that might be considered dangerous to the general welfare and which might be mistaken for an uncontrolled fire. The independent Watauga program is similar in operation to the cooperative program in Ashe County.

In addition to cooperating with the counties in fire control, the North Carolina Department of Conservation and Development provides a district forester and a farm forester, both of whom are technical foresters, to all counties in the district. These foresters give advice and service to landowners in all counties in the district. This may go so far as marking timber for sale, with a maximum time limit of five days to be spent on any one property.

The reforestation program, sponsored by the State Conservation and Development Department, has been going on for some time, and through the planting season 1950-51, 223,000 seedlings were planted
The Recreational Use of Forest Land. To establish the recreational value of forest land in this region would be most difficult or impossible. However, without the beautiful forest cloak that softens the lines of the rugged terrain, that gives color to the landscape, that provides shade for the homes and roadways and protection for wildlife, most of the recreational value of this region would be lost. Denude the land of its forest cover and it would be difficult for the New-Watauga region to compete with other highland areas in tourism. The forests are one of the chief selling points for the recreational industry, which is certainly one of the most important sources of income for the New-Watauga area. People travel through these mountains, in part, to see blooming clusters of rhododendron, mountain laurel, and flame azalea, the many shaded greens of the mixed hardwood and coniferous forest, which, with distance, turns to a smoky blue, and many gage their visits to see the remarkable color array that fills the landscape in the autumn season. From the early spring until autumn some form of blooming plants are to be found in the forest, beginning with the trailing arbutus which blooms in March and ending in September with the witch hazel. Almost all visitors to the mountains have their favorite time to "see the woods at their best." However, speaking as native, the writer feels that the best season is a long one, beginning with the first budding of

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spring and ending with the dying colors of fall. Even in winter, the forests add beauty to the landscape. One of the most beautiful scenes of any season occurs whenever the trees are covered with snow or ice. Sunlight transcribes them into mountains of sparkling diamonds. The most popular season for mountaineers and visitors alike, however, is probably in late June or early July when the rhododendron are in their richest blossom and when the cool shade of the forest is in greatest contrast to the sweltering heat of the lowlands.

There are many recreational benefits of the forests other than shade and scenery. Many of the small, tree-shaded streams of the region are ideal spots for the trout fisherman and a wide variety of game abounds for the hunter. The forest shelters coveys of birds, numerous rabbits, opposums, raccoons, foxes, squirrel, woodchucks, and other small animals, and smaller numbers of larger game such as deer, bears, wildcats, and bobcats.

With most of the land in the New-Watauga region in private ownership, forest use programs must necessarily be privately initiated. A considerable amount of private land in this area is used for recreational purposes in the form of hunting and fishing clubs, private estates, and summer camps. One of the largest commercial concerns in the whole southeast, devoted to the recreational use of forest land, is the Linville Development Company which operates in the Grandfather Mountain area. This concern is largely devoted to the promotion of the tourist industry. Local hunting and fishing clubs are found in most of the larger communities. Largely through their
efforts game preserves have been established and restricted fishing streams are restocked from year to year to insure good fishing.

2. **The Mountain Balds of the New-Watauga Region.** No discussion of vegetation in this mountain region would be complete without mentioning the grass covered mountain balds found here and elsewhere throughout the mountain South. These were found by the earliest white men entering the region and have been the subject of considerable discussion since their discovery. Among the examples in this area are Rich Mountain Bald (Tater Hill), Stone Mountain Bald, Old Field Bald, and Bald Knob. In all cases a turf of wild grasses (now frequently supplemented by domestic varieties) covers the surface, surrounded by heather, shrubs, and small trees. The vegetation pattern is not unlike that of a timberline zone of higher mountains (Figure 10).

A number of explanations have been offered for the absence of trees. According to Peattie, wind evaporation largely accounts for the lack of forest vegetation.¹⁶ This view is also held by Camp, who spent considerable time studying the balds of the Great Smokies farther south.¹⁷ Both Peattie and Camp consider the balds a natural phenomenon produced by occasionally desiccating winds. By

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Figure 10. Rich Mountain Bald (Tater Hill) in Watauga County.
contrast, Cain in his studies of the heath balds on Mt. LeConte concluded that they were post-climax, developing on the windward sides of the upper slopes after disturbance of the original vegetation.\textsuperscript{18}

It is his belief that they resulted from three sets of causative factors: (1) Climatic, especially the severer winter periods which he considers more important than summer evaporation. (2) Edaphic factors, particularly the strong development of Podzol layers as the vegetative habits of the heath plants fit them for existence in strongly podzolized soils - they have shallow root systems and plants spread horizontally by rhizomes. (3) Catastrophic factors, including windfall, landslide, and fire. Of these he considers fire to be the most important. Wells feels that these balds are artifacts of Indian origin.\textsuperscript{19} It is his view that these balds represent old, high mountain, summer camp sites for Indians, which, when abandoned, went through a ruderal stage in the oat grass climax, a community, which under the climatic conditions of the high ridges and mountain tops, is able to resist invasion by the original forest.

It is quite evident that, as yet, no theory as to the origin of these balds has proven acceptable to all interested scientists. It is likely that whatever their origin, fire and close grazing over the past one or two centuries has intensified their grassland


character. Field studies in the New-Watauga region by the writer appear to strengthen the argument for natural origin. In all cases these grassland plots occupy isolated mountain summits or present exposed fronts to the prevailing winds. The trees in all cases diminish in size upward to the edge of the bald. It is possible that a catastrophic factor might have caused the original removal of vegetation if such vegetation ever existed, but recent studies indicate that climatic and edaphic factors are responsible for their present existence. Of the edaphic factors, the moisture supply is probably the most critical, for while total precipitation is quite adequate, the steep slopes and porous rocky material promote the rapid loss of soil moisture.

3. Useful Wild Plants. The mountain South has long been important in the wild plants industry of the nation. The roots, stems, branches, leaves, flowers, fruits, and seeds of wild flowers, weeds, trees, and shrubs have from the first occupation of man contributed to the general economy of the region. According to Yoakley, western North Carolina, southwestern Virginia, eastern Tennessee and Kentucky furnish about 75 percent of the crude botanical drugs produced on the North American continent. Miss Yoakley reports that of the 250 botanical drugs produced in the United States more than half of them are found in this region.20 (The August 1954 price list for the Wilcox Drug Company of Boone, the larger of the two drug com-

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panies operating in the region, includes 85 different items.)

In the New-Watauga region the wild plants industry has long been established. Ginseng root, or "sang", long in demand for the Oriental market, is one of the more sought after wild plants of this area. There was a "sang" factory on Brushy Fork Creek, a tributary of the Watauga, long before the Civil War, and according to Arthur, a number of people, called "sangers" made their living by gathering ginseng and other wild plants. In an earlier period many farmers of this region cultivated ginseng as a part of their regular crop system. There probably is still some cultivated ginseng in this area but most of the product now reaching local markets is of the wild variety, despite the fact that it is far more difficult to find than earlier. Ginseng is a slow rewarding crop, requiring at least seven years to reach maturity, and because of the high price of the product (dry

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21 Col. William Byrd writing in the History of the Dividing Line says of ginseng: "Its vertues are, that it gives an uncommon warmth and viguor to the Blood, and frisks the Spirits, beyond any cordial. It clears the Heart, even of a Man that has a bad Wife, and makes him look down with great composure on the crosses of the World. It promotes insensible perspiration, dissolves all Phlegmatic and Viscous Humours, that are apt to obstruct the narrow channels of the Nerves. It helps the memory and would quicken Helvetian dullness. 'Tis friendly to the Lungs, much more than scolding itself. It comforts the Stomach, and strengthens the Bowels, preventing Colicks, and Fluxes. In One Word, it will make a man live a great while, and very well while he does live. And what is more it will even make Old Age amiable, by rendering it lively, cheerful, and good humored." (J. S. Bassett, editor, Writing of Col. William Byrd, New York, 1901, pp. 211-212.)

ginseng root presently is worth fifty cents per ounce) it is quite subject to theft in the latter stages of growth.

Other wild products in great demand include goldenseal, balmony, butterfly root, liferoot, lobelia, passion flower (maypop), witch-hazel, sassafras bark, wintergreen and wild cherry bark, all of which are used either for drugs or flavoring.

During the winter season a number of evergreens are gathered for decorative purposes. The best known of these is galex, a beautiful low growing herb in demand by florists for winter decorating. Other decorative evergreens are the various ferns, mountain laurel, and hemlock boughs.

During World War II the wild plants industry of this area reached its greatest peak, when an estimated 3,000,000 pounds of unprocessed products were shipped annually. Present output averages approximately 2,000,000 pounds per year.

The market for the crude drugs of this area is nation wide, with the bulk of the total output going to the larger drug companies of the east.

While still important, the wild plants industry is on the decline in this area. There are a number of reasons for this but perhaps more important than all others has been the overactivity of gatherers combined with the diminishing forests due to lumbering. Also there has been in recent years a growing competition from commercial nurseries in production of decorative plants.
D. Soils

One of the more vital physical factors in the formation of the present land use patterns in the New-Watauga region has been the quality, depth, and position of the soils.

Present soil conditions are here the result of human occupation combined with the sum total of all the physical factors affecting soil formation, especially slope, quality and quantity of precipitation, vegetation, elevation, and parent rock.

The soils of this mountain region are largely residuals developed under a forest cover and in a climatic regime somewhat resembling the southern Corn Belt in winter and central New England in summer. While there is heavy rainfall and good to excessive drainage, the soils are not badly eroded due to friable consistency and good physical structure. They are leached, but not nearly so badly as in the lowlands on either side of the mountain region. Soil color is dominated by the lighter components ranging from light gray to light or reddish brown. At the time when the land was cleared the soils contained a fairly abundant supply of acid organic matter derived largely from leaf litter. This organic layer has largely been removed from all cleared land. Parent rock includes granite, gneiss, schist, quartzite, and a number of dark colored basic rocks such as diorite and hornblende schist. Due to the steep slopes that prevail throughout the region few mature soils have developed. Erosion on slopes and accumulations in the valleys have worked against such a development. In many places bedrock outcrops at the surface and in many more cases
it is covered by only a shallow layer of soil. Loamy soils are prevalent throughout the area with sandy and gravelly loams the most widespread.

Although the use of soils for agricultural purposes is limited by terrain and climate, the soils themselves are naturally quite fertile. The poorest soils are found on the steeper slopes overlying the more resistant of the crystalline rocks (i.e. quartzite and granite), while the better soils are in the alluvial bottomlands adjacent to the larger streams.

Three series of upland soils cover most of the land in this region. These are the Ashe, Porters, and Clifton soils. One bottomland series, the Congaree Loam, occupies the larger and more fertile valley bottoms.

1. **Ashe Soils.** Ashe soils are the most extensive found in the New-Watauga region. While found throughout the region, they are most widespread in the central and western parts. Although quite fertile, they are severely limited in their agricultural use by their occurrence on steep slopes and at high altitudes. In the natural state the surface soils are well supplied with organic matter and are underlain by a friable, brownish-yellow clay with good physical structure. Ashe soils occupy terrain ranging from rolling to extremely steep slopes and are found on the highest summits of the area. At the present time about half of the area covered by Ashe soils is cleared and is used for agricultural production with the rest occupied by cut-over forests. The steeper cleared land is used for
pasture and meadow, while the more gentle and lower slopes are frequently planted to field crops.

2. Porters Soils. Porters soils are the most important of the upland soils for agriculture. They are most extensive on the lower slopes adjacent to the larger streams, occupying transition sites between the bottomland Congaree and the Ashe or Clifton soils of the higher slopes. Surface soils generally are brown in color and are underlain by a yellow-brown, friable, clay sub-surface, although there is often little uniformity of soil properties over any extensive area. On certain lower slopes soils may be several feet deep while in other situations the surface soil rests directly on bedrock. In such areas rock outcrops are frequent. The steeper and more rugged Porters soil areas are occupied by woodlands or are used for pasture and upland meadow. The more gently sloping valley land is used for production of the wide variety of crops produced in this region. On many of the steeper slopes contour strip-cropping is effectively employed. The good structure of the broken soil absorbs water readily, and therefore, is not subject to severe erosion when properly cultivated.

3. Clifton Soils. Clifton soils are less extensive than either of the other two upland series. They occupy, for the most part, the steeper, more rugged upland areas and, as would be expected, are largely forest covered. Surface soils are brown to reddish brown in color, overlying subsoils with a broad range in color characteristics and depths. The texture is usually clay or clay
loam. On steep slopes there is often only a shallow covering of soil, while in valley areas soil depth may exceed three or four feet. Clifton soils are good agricultural soils whenever found on slopes that are not too steep or rocky for cultivation.

4. **Congaree Loam.** Congaree Loam occupies between two and three percent of the land in the New-Watauga region, and is typically found in the lowlands of the larger stream valleys. It consists of a medium or dark brown, mellow loam about a foot in depth and is generally underlain by a light brown sandy loam. Congaree Loam occurs on flat to very gently sloping land and, despite the valley bottom location, has good drainage except in enclosed depressions. Essentially all land in the Congaree Loam series is cleared and used for agricultural purposes. In yields per acre it is the most productive of the region’s soils and consequently, the land occupied by these soils is the highest priced.\(^2\)

5. **Land Classification in the New-Watauga Region.** In recent years the various governmental agencies have stressed the classification of land according to land-use capability. Such classifications are generally based on the physical properties of the soil, plus slope, stage of erosion, and vegetation.

TVA Land Classification. The TVA land classification in the Watauga basin includes a five-fold breakdown. Class I land occurs in the better alluvial bottomlands and includes only about two percent of the land in the basin. Approximately eight percent of the land is included in the Class II grouping. It is found in the smaller stream valleys and borders the Class I land in the larger valleys. Class III land commonly lies between the valley bottoms and the steeper mountain slopes. Such areas normally have between 15 and 30 percent slope and comprise approximately 17 percent of the land area. Class IV land is most extensive of all the groups including approximately 45 percent of the total land area. Slopes range between 30 and 60 percent, too steep for row cropping but extensively used for upland pasture and meadow. While not the general practice, Class IV land is occasionally strip-cropped. Class V land is characteristically found on the steeper slopes of the higher hills and mountains. Slopes are in all cases greater than 30 percent and frequently exceed 60 percent. Class V land is suitable only for rough pasture and forest. As a forest producer it is in its best use and any future development of the region should have little affect on land of this type (Table 5).24

Soil Conservation Service Classification. Another classification by the Soil Conservation Service, while not complete for the region as a whole, provides a good cross-section for the area not

### TABLE 5

TVA Land Classification for Watauga River Basin

<table>
<thead>
<tr>
<th>Land Class</th>
<th>Slope Classification</th>
<th>Erosion Classification</th>
<th>Percent of Land Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>0 - 7 Percent</td>
<td>Uneroded to slightly eroded</td>
<td>2</td>
</tr>
<tr>
<td>Class II</td>
<td>2 - 15 Percent</td>
<td>Slightly to moderately eroded</td>
<td>8</td>
</tr>
<tr>
<td>Class III</td>
<td>7 - 30 Percent</td>
<td>Slightly to moderately eroded</td>
<td>17</td>
</tr>
<tr>
<td>Class IV</td>
<td>15 - 60 Percent</td>
<td>Moderately to severely eroded</td>
<td>45</td>
</tr>
<tr>
<td>Class V</td>
<td>30 - 60 Percent and over</td>
<td>Moderately to severely eroded</td>
<td>26</td>
</tr>
</tbody>
</table>

This classification is a simplified arrangement by the writer of a detailed report by the Tennessee Valley Authority Soil Survey, *Soil Legend for Watauga County, North Carolina*, July, 1946.
included in the TVA system. Products of this classification are the Land Capability Maps provided farmers to promote better land use. There are eight major classes in this classification with the best land classed as Class I and the poorest classed as Class VIII. Cultivation is advisable only on land of the first four classes. Classes V through VII are suitable for grazing and forestry, and Class VIII suitable only for wildlife, recreation, and watershed. It should be emphasized that while land in Classes III and IV are safe for agricultural crop production, strip cropping, contour plowing, cover cropping, and other normal conservation practices should be followed. A study of farm maps for the New-Watauga region indicates that the major part of the land falls in Classes III, IV, VI, and VII with relatively little land in Classes I, II, V, and VIII (Table 6).

E. Hydrology

Everywhere in the New Watauga area the landscape reflects the role of water in the history of the region, both physical and cultural. The physiographic features are largely products of erosion and the streams themselves constitute an important part of almost every scene encountered, ranging from the larger rivers to the trickling rivulets that flow from springs high on the slopes of the mountains. There are numerous evidences of too much water. There

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25 Land Use Maps, U. S. Department of Agriculture, Soil Conservation Service, Watauga County Soil Conservation District and Ashe County Soil Conservation District. (Dates vary from map to map.)
### TABLE 6

**SOIL CONSERVATION SERVICE LAND CLASSES FOR WATAUGA COUNTY (IN ACRES)**

<table>
<thead>
<tr>
<th>Total Area</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
<th>Class VI</th>
<th>Class VII</th>
<th>Class VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>204,000</td>
<td>62</td>
<td>6080</td>
<td>17,556</td>
<td>21,302</td>
<td>0</td>
<td>51,900</td>
<td>108,000</td>
<td>0</td>
</tr>
</tbody>
</table>

are long open wounds that show through the forest cover of the steeper slopes; there are valley flats deeply covered with rocks and heavy gravel; there are deep gulleys eating headward through fertile bottomlands fed by water channeled through smaller gulleys developed on the hillsides. In many places saucer-like slide scars occupy conspicuous places in fields otherwise heavily covered with sod. As has been indicated in the section on climate, there are also signs of too little water, such as occasionally withered cornfields, dry and overgrazed pastures and periodic low crop yields.

Cultural adjustments to water features of the environment are also very much in evidence. Every road through the region crosses countless bridges and culverts. There are man-made duck ponds, lily ponds, fish ponds, mill ponds, cattle ponds, swimming pools, and private lakes of all sizes and descriptions. Rural homesites are still generally located with a view toward securing good spring water by means of gravity flow. Many present day settlements began with grist mills as the focal point in the community, and a number of such mills are still in operation today.

Water is important today in almost every aspect of land use in the New-Watauga region. It is essential for many farm operations, dairy products manufacture, food canning, and a wide range of other domestic and industrial purposes. In addition, surface waters are used for fishing and hunting, bathing and boating, and also serve as an element of great attractiveness in the physical landscape. In the latter regard it would be difficult to measure the appeal of a
sparkling trout stream in bringing in fishing enthusiasts or the extent to which the many waterfalls and rapids attract sightseers.

1. Surface Water. The largest stream in the region is the north flowing New River. It is divided into two parts, the South and North forks, and these, in turn, are fed by numerous tributaries. Among the larger of the tributary streams are Meat Camp Creek, Mulberry Creek, East Fork, Old Field Creek, Elk Creek, Howard Creek, and Beaver Creek on the South Fork; and Roundabout Creek, Buffalo Creek, Haskin Fork, Rich Hill Creek, Big and Little Laurel creeks, Three Top Creek, Horse Creek, and Helton Creek on the North Fork. The total drainage basin of the New River in North Carolina amounts to approximately 760 square miles.

The Watauga River occupies the smaller of the two basins in the area with a total drainage basin area of about 220 square miles. Its major tributaries are Cove Creek, Beaver Dam Creek, Upper and Lower Laurel creeks, Boone Fork, Beach Creek, Dutch Creek, Crab Orchard Creek, and the largest tributary of Cove Creek, Brushy Fork Creek.

All streams are perennial with abundant flow in all seasons. Both main streams are fed by tributaries branching in all directions in a typical dendritic pattern. All streams are swift flowing with steep gradients broken by numerous rapids and occasional falls. All are filled with rocks and boulders and most are downcutting and eroding headward due to increased runoff resulting from the clearing of fields for agriculture.
Figure 11. Stream Pattern in New-Watauga Region
2. Water Supplies - Public and Private. The most important use of water in the New-Watauga region is supplying individual homes, farms, towns, and villages with domestic water needs. Only a few of the not too numerous industries use large quantities of water. Among these are the canning factories, dairy products manufacturers, and other food processing plants and the newly constructed Sprague Electric Company plant near Warrensville. Most home and public supplies are obtained from springs and wells. Almost every farm has at least two or three permanent springs, and many more have more than a half dozen. The procedure followed by both individuals and towns is to find a spring or springs with an abundant flow even in the driest of weather, and to construct a small reservoir right over the spring. This feeds directly into the home of the private user in most cases. In the case of public supplies and a few private supplies, the small reservoir feeds into a much larger storage tank and from there into the various water systems. The town of Boone has a number of such springs located around the slopes of Rich Mountain, providing the town with abundant supplies of soft, pure water. A similar situation exists for most of the other towns and villages in the region. Problems of water supply frequently arise due to removal of forests making up the main catchment basin for springs used by both towns and individuals. It is estimated that only half as many permanent springs now exist as did in 1920, the result of removal of protective forests.
3. **Water Power.** There are two hydroelectric plants in the region, both of which are in the New River basin. The combined output of the two amounts to a maximum of 450 kilowatts in a 15 minute period, less than five percent of the electrical energy consumed within the region. The water power potential greatly exceeds production. Almost all streams have the qualifications for water power development. All are permanent streams with fairly uniform flow, a swift gradient, and structural conditions favorable for dam construction. The chief drawback appears to be the small potential for any one of the many small streams, and the limited market for hydroelectric energy produced.
CHAPTER III
THE HUMAN ELEMENT

A. Historical Background

There is little written history concerning the mountain South, except as it deals with the settlement in the west, particularly in the Great Valley of Virginia and Tennessee. From the movements to and from these settlements, however, came the early population of the New-Watauga region.

The first settlers probably were Scotch-Irish. The first large group of them landed in Philadelphia in 1729 and heavy immigration continued for many years.\[26\] The heavy influx of settlers to Pennsylvania caused the price of land there to go so high that many of the immigrants moved south along both sides of the Blue Ridge where land was cheap and more readily available. After 1745 Scotch Highlanders joined the Scotch-Irish in settling the mountain region and still later in the century these were supplemented by immigrants from England, Germany, France, Switzerland, Sweden, and Holland.\[27\]

\[26\] "From the year 1720 to 1776 this people came(to this country) on an average of 12,000 a year or 600,000 people before the Revolution." Scotch-Irish Society in America, Vol. III, p. 132, Proceedings of the 1st-8th Congress, 1889-1896, Cincinnati.

\[27\] Kuhns estimates that total pre-Revolutionary German immigration to this country amounted to about 110,000. Arthur Kuhns, The German and Swiss Settlements of Colonial Pennsylvania, New York, 1901.

The importance of the English, Scotch-Irish, and Germans in settling this area is revealed in the following list of common names. English: Adams, Baird, Banner, Bingham, Blair, Blackburn, Brown, Carroll, Church, Coffey, Council, Farthing, Green, Hampton, Hardin,
As the earliest settlers pushed southward into the Great Valley of Virginia and Tennessee many of them were deflected through the mountains into the western Piedmont region and some of these stopped by the way to remain in the mountains. These early mountain people followed the valleys in their pattern of settlement, occupying first the broad river valleys and then progressing upstream into the many tributary valleys.

The pioneer settlers of the mountain province have been described as consisting of those who by circumstance were forced to stop but it is likely that many more settled in the mountains by choice. These were men seeking a high degree of self-sufficiency. They were not at this early date bent on becoming commercial farmers. They were gatherers and hunters as well as farmers, and the small fertile valleys of the New-Watauga appealed to many of them far more than did the open lowlands to the east and west. Many came from hilly or mountainous country in Europe and they found in this region something that resembled their old homeland. Perhaps some

were hunters who followed the game as it retreated before the settlers of the Great Valley and Piedmont. Also, according to Kephart, an element of our early population were moonshining Scotchmen from Pennsylvania. Moonshining was originally begun in Scotland and Ireland in 1659 to escape the tax levied by the government of England, and many moonshiners migrated to the Colonies. The practice began in this country in Pennsylvania during the Whisky Rebellion of 1791 and the most stubborn of the moonshiners moved south through the mountains of Virginia into North Carolina where no serious attempt was made to collect the taxes.

Whether from choice or by accident, the influx of settlers into the New-Watauga region continued through the early part of the 19th century when all travel was difficult. However, when the more prosperous lowland areas instituted a vigorous road building program, the mountain region, left to provide for itself in the matter of roads, began to be shut off from the rest of the country. According to Campbell, few settlers entered the southern mountains after the middle of the 19th century. There was some movement from one section of the region to the other, but the general composition of the popula-

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29 While much of the moonshining history in this region is not authenticated, the habits of many of the present inhabitants indicate its validity.

tion remained essentially the same. Only in the last two or three decades has the mountain region been opened to the people of the surrounding lowlands.

1. Mountain People. The people of the New-Watauga region are products of a rather restricted mountain environment. For several generations they lived in a province essentially Colonial America in nature, a province disconnected from the rest of the nation by lack of communication. For generations their only contact with the lowlands was through the infrequent visitors to the area or through tradesmen bringing in the few essentials needed for their subsistence. Living apart from the rest of the nation and isolated from each other by ridges that were difficult to cross, their development was greatly retarded over the years. Their culture, fully as dynamic in the beginning as that of the lowland South, and largely representing elements brought in by the English, Scotch-Irish, Germans, and French, gradually became static as the inflow of new settlers to this region came to a halt. The culture of one generation became largely a stereotype of that of the preceding generation to be passed almost intact to the succeeding generation. Thus while the rest of the country was undergoing the greatest progress ever made by any nation, this region remained virtually unchanged. So little had the culture of the mountain people been altered by the early twentieth century that Kephart described them as "...creatures of environment, enmeshed in a labyrinth that has defeated and repelled
the march of our nation for three hundred years. \( \text{\textsuperscript{31}} \) (One hundred years is more nearly correct.)

The New-Watauga inhabitant of the early twentieth century used essentially the same tools and followed agricultural practices that were characteristic of the colonial period; his songs were Elizabethan ballads that were often adapted to the local surroundings; and his dialect was old English of the Shakespearean era. Home building had made some progress in certain areas but in most cabins as crude as those of the earliest settlers were to be found.

Today a new mountaineer has emerged. He no longer belongs to the past. New windows have opened up in the wall of isolation that so long surrounded him. Early in the present century railroads penetrated the region followed by highways which reached out and brought the world to the doorstep of most of the mountain people. Other new means of communication such as radio, television, and daily newspapers bring the news as it happens to even the most remote of homesteads. Today's mountaineer reflects the progress of the mountain region. He is no longer a stereotype. There are many types of mountaineers, each representing a different stage in transition from old to new.

The typical mountaineer of popular conception, the tall, slender, slouching figure in homespun, who carried a rifle as habitually as he did his hat, is getting harder and harder to find.

\[ \text{\textsuperscript{31}} \text{Kephart, op. cit., p. 19} \]
The mountaineer of today is a complex individual. He has acquired many elements of his personality through his relatively recent contact with the outside, and at the same time retained many of the elements of his past isolation. By his physical appearance alone he might be difficult to spot among a group of Ohioans or New Yorkers. However, there are certain characteristics that tend to place the mark of the mountains upon him. Though there are exceptions to the rule, the mountain man is tall and slender. He is an introvert by nature, generally shy and retiring. In his physical movements he is slow and easy going and reacts adversely on being rushed. He is superstitious, often to the point of being ridiculous, and is an avid believer in signs, regarding every unusual happening as a forecast of either impending disaster or good fortune.

Religiously he is Protestant and politically he belongs to that part of the South that is not solidly Democratic, but rather more often Republican in sentiment.

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In the mountain country much is done according to the signs of the zodiac. Beans, cucumber, peas, and top bearing fruit is planted when the sign of the zodiac is in the arms (the twins) so they will bear double; cabbage and lettuce, when the sign is in the head for obvious reasons; and root crops such as potatoes, turnips, and beets when the sign is in the legs.

Also the moon is the dictator for many farmers. Corn is planted when the dogwood whitens and the moon is new so that it will grow straight and tall. If cucumbers are planted three days after the new moon there will be three joints before blossom. Fertilizer is spread on the old of the moon so that it will go down. Pork is killed three days before or after the moon changes. The grease will all fry out if the hog is killed on the old of the moon.

Among the common superstitions the more widespread have to do with health, life, and death. For instance if a baby's dress is
Last and most characteristic the typical mountaineer is an individual. Environment and heredity have combined to make him extreme in his individuality. Graybeal states:

The wilderness drove home one lesson to the settler who attempted to establish a home in the Southern Appalachians: He must be able to "make it alone" or he would not make it at all. The nearest neighbor, sometimes miles away, was having as hard a struggle with the wilderness as he was. The spirit of neighborliness and the practice of sharing work did not erase the fact that the whole economy was on a bare subsistence base. Essentially the struggle was one of the householder against the wilderness, and those who survived emerged with a deep confidence in their ability to carve out a livelihood with little help from the other.\textsuperscript{33}

This strong reliance on self became so much a part of his personality that the average mountain man came to consider independent action a duty.\textsuperscript{34}

\textsuperscript{33}D. M. Graybeal, Protestant Churches in a Changing Culture, Unpublished Ph.D. dissertation at Yale University, 1952.

\textsuperscript{34}This individualism was well illustrated in the Civil War. Despite the strong family ties which are so characteristic of this region, brother opposed brother, father opposed son, and even man and wife became split over the issue of secession. Unlike the most of the South, the question here was purely a matter of principle, for slavery barely touched this region. Less than two percent of the population is Negro even today.
The relative isolation of homesteads from each other within the region resulted in a culture which is strongly familistic and patriarchal. Clannishness is still common and family honor is strongly defended. Many of the smaller stream valleys are still largely owned by family groups. For example, the Dutch Creek valley is dominated by the Tester family; Elk Creek by Triplets; and the upper Laurel Creek by Hodges. Settlement names such as Graybeal, Mast, Hodgetown, Shell Creek, and Todd, also indicate strong family concentrations.

B. Population - Density and Distribution

The population of the New-Watauga region is approximately 40,000 (1950 Census, Ashe County population 21,878 and Watauga County 18,342), a density slightly more than 50 per square mile or about two-thirds the density of the state of North Carolina. From the practical standpoint the region is 100 percent rural, for while the Census Bureau classifies as urban any center exceeding 2500 population, urbanity stands for more than a mere agglomeration of people. It represents a way of life emanating from urban surroundings which is reflected in the attitude of the people. They think in terms of city, and their philosophy of life sets them apart from the rural group. While there is one center, Boone (pop. 2973), classed as urban by the Census Bureau, it is still all rural. The attitude of the people is not urban. The average homemaker in the town seldom thinks of the summer weather in terms of how it will affect her planned shopping, but in terms of how it will
affect the corn, cabbage, or potato crop. Most of the present inhabitants are from the surrounding rural area and their business contacts, their friends, and their relatives are generally located in the country. The population is fairly evenly distributed throughout the region but shows a notable variation between mountain and valley areas. Lines of greatest density follow the broader and more open river valleys, diminishing outward along the smaller tributaries. Population voids appear along the more rugged portions of the Rich, Stone, Beech, Elk, and other of the higher mountains.

While the New Watauga region is essentially without any real urban center, there are several small towns and villages. With few exceptions these follow one general pattern. Most are located in valleys and represent road junctions, grist mill sites (grist mills often no longer exist but settlement remains), churches, post offices, schools, and business enterprises in various combinations. In practically all cases a store, service station, and a school or church will occupy the heart of the settlement. Except at road junctions, all settlements are linear in type with houses and business buildings facing each other along either side of the road.

Rural settlement, exclusive of towns and villages, follows the valley pattern in most cases, the few exceptions occurring wherever highways deviate from the main course of the valley. Rural non-farm population is concentrated along the main roads, generally within a few miles of the larger towns of Boone and West Jefferson. Rural farm homes are evenly distributed throughout the valleys showing no
marked variation in density or pattern from one valley to the next.

1. **Towns and Villages.** Towns and villages are scattered throughout the New-Watauga region at intervals generally ranging between three and six miles. Of the sixteen settlements which in 1950 had a population exceeding 200, nine are located in the New River basin and seven in the valley of the Watauga River. Of those exceeding 500 population four are in the basin of the New and only one in that of the Watauga (Figure 12).

The largest town of the area is Boone, the county seat of Watauga County located on the South Fork of New River. It is the leading trade center of the area and also one of the more important in tourism. Appalachian State Teachers College, the largest school in western North Carolina, is located here. West Jefferson (pop. 871), also in the New River valley, is the second largest town and serves as the market center of Ashe County. Since 1950 it has undergone a remarkable growth and may soon rival Boone in size. A number of industrial plants have recently been established in and near the town (see chapter on manufacturing) bringing in a considerable influx of workers. Blowing Rock, located astride the Blue Ridge in Watauga County, is third in size and is, by far, the most important resort town. Population-wise it is rather ephemeral in nature, varying from about 650 in winter to more than 3500 during the summer tourist season. Hemlock (pop. 608), in the New River valley, and Sherwood (pop. 600), in the Watauga basin, hardly can be called towns. Settlement in both cases is widely scattered over a broad area without a distinct core area, but with several
Figure 12. Towns and Villages of New-Watauga Region

LEGEND

# More than 500 population
■ 200 to 499 population
small nodes centered about schools, churches, and commercial enterprises. Other settlements include Zionville (pop. 302), Mabel (200), Foscoe (206), Valle Crucis (200), Adams (208), and Shulls Mill (204) in the Watauga basin; and Jefferson (359), Meat Camp (355), Todd (200), Creston (206), Lansing (344), and Treetop (320) in the New River valley.

C. Institutions

1. Government. The New-Watauga region is divided chiefly into two North Carolina counties, Ashe and Watauga. Ashe County was established in 1799, at which time it consisted of "...all that part of the county of Wilkes lying west of the extreme height of the Appalachian Mountains." Watauga County was established in 1849, "...created out of parts of the counties of Ashe, Wilkes, Caldwell and Yancey, principally out of Ashe."36

This region was purchased by the Watauga Association in fee simple from the Cherokee nation in 1775. The purchase included all the land on the Watauga, Holston, and New rivers. Settlers obtained land grants from the Watauga Association with property boundaries drawn by metes and bounds. Following the Revolutionary War this region was a part of the state of North Carolina. But when the state of Franklin was formed it received the support of most of the people west

36 Whitner, op. cit., p. 33.
of the Blue Ridge. When North Carolina ceded the Tennessee terri-
tory to the United States Congress in 1796, the land of the upper
New and Watauga river basins was retained by the state. The pre-
sent boundary between Tennessee and North Carolina was drawn in
1799.37

The chief governing body within each of the two counties of
the New-Watauga is the Board of County Commissioners consisting of
three members. Other elective officers are the sheriff, clerk of
the superior court, register of deeds, and local constables. The high-
est official from the standpoint of authority and overall prestige is
the sheriff. Among the more rural dwellers he is held in much the
same esteem as was the High Sheriff of old England. Locally, the elec-
tion of the president of the United States is second in importance to
election of the sheriff.

County seats of government are at Boone in Watauga County and
Jefferson in Ashe County. Every two years each county elects a repre-
sentative to the state legislature and the two counties combine with
Allegheny to elect a state senator. Because of the high proportion
of Republicans in the mountain region, effective gerrymandering places
the two counties in different congressional districts, each being
joined with more Democratic counties of the Piedmont.

Of more recent origin and perhaps of greater importance from
the standpoint of land-use than local governmental units are the

37 J. P. Arthur, History of Watauga County, Richmond, 1915,
pp. 15; 117-118; and 120.
representatives of state and federal governmental agencies serving the area. Among these are the county agents of the North Carolina Department of Agriculture, United States Soil Conservation agents, representatives of the Federal Production and Marketing Association, District Foresters of the North Carolina Department of Conservation and Development, State Health and Welfare agents, state-sponsored county librarians and many others. The work of these agents and agencies is included in other sections as it relates specifically to a particular land use.

2. Schools and Colleges. The first public schools of the region began in 1840. Under the North Carolina School Law of 1839, the State Literary Fund furnished two-thirds of the money for each district within the county and each county was required to furnish one-third of the total. Under an amended law in 1841, the county was required to raise, by taxation, one half the amount spent by each school.

From 1840 until the Civil War, education in the lower grades made considerable progress. In 1860 there were close to a thousand elementary students in each of the two counties of the region. Oddly enough, there were more school houses than school teachers with some of the teachers teaching two terms, one at one school and one at another. Schools were always taught in the summer season (a practice still followed in 1928).

Although somewhat removed from the major scenes of action, the Civil War wrecked the early start made by education in the region.
The last school closed in 1865 and not until 1870 were public schools reopened in the state. The chief problem was that of mixed schools and the state decided at the end of the war that it would rather be without schools than have both white and negro students enrolled together. The School Law of 1869 established separate schools for the two races, setting a policy that prevails in 1954.

From 1870 until the decade of the 1920's progress was slow and problems were many. By 1900 the length of school terms was only 74 days per year for white children and 44 days for negroes. A comparison of Census reports of 1900 showing children of school age and those actually enrolled indicates that less than three-fourths of school-age children were in school, and average daily attendance amounted to slightly more than half of those enrolled. (A weedy corn field often took precedence over "book learning"). Teachers' salaries were low during this early period and varied greatly from place to place within the region, for district school committeemen were given a certain amount of money and told to make the best deal they could with the teacher. Teachers were generally as sincere and conscientious as their training had equipped them. The "law" remained that of the "hickory stick." Discipline was strict and punishment was certain and severe. School equipment was poor; there were no modern sanitary facilities and drinking water was obtained from a spring. Slates were still in general use during the 1900's.

The period from 1920 until the present time has been one of rapid development in public education. Enrollment has increased;
small schools have been consolidated into larger ones with better teaching staffs and more adequate classroom facilities; public high schools have replaced private academies (earlier, public education stopped at the seventh grade); teachers' salaries have increased; and a modern system of transportation of pupils has evolved. (In 1925 there were two school buses in Watauga County transporting 60 pupils a total of 22 miles per day. In 1944 there were 27 buses transporting 2291 students a total of 823 miles per day. In Ashe County in 1944, 33 buses transported 2335 pupils a total of 1033 miles daily.)

Although the region ranks low in school facilities (average assessed value per school building in 1944: Ashe County $7,414; Watauga County $12,205; and state $31,688), it ranks high in number of degree holding teachers. Watauga County, for example, ranked 37th in the state in 1948 (100 counties) in percent of teachers holding Class A certificates. In 1941 more than 90 percent of all county teachers held "A" certificates, but this had dropped to about 78 percent in 1947. This was due to the shortage of teachers in the state and the pirating of teachers by larger towns which could add a greater supplement to the state salary. 38

A resume of the present school situation within the New-Watauga region shows a total of 14 high schools and 81 elementary schools. There is only one negro high school (in Boone) and three elementary

38Personal interview with Howard Walker, Watauga County Superintendent of Schools, on June 29, 1953.
schools. School enrollment for high school and elementary school combined amounted in 1944 to 12,732 white and 192 Negro students. In 1948 there were but five Negro high school students and one high school teacher.\footnote{Whitner, \textit{op. cit.}, pp. 74–90.} The Supreme Court segregation ruling of 1954 will likely cause an increase in the Negro enrollment in the future.

There is one college in the region, Appalachian State Teachers College, located in Boone. The school evolved from the old Watauga Academy which was established by the Daugherty brothers, Blanford B. and Dauphin D., in 1899. (Blanford B., the younger of the two, was the original president of Appalachian and still presides.) The academy became Appalachian Training School, a state supported high school, in 1903, and a normal school or junior college in 1922. Appalachian became a four-year state teachers college in 1929 and in 1942, aided by the University of North Carolina, established a graduate program.\footnote{Information concerning public education from several sources, the more important of which are: J. P. Arthur, \textit{History of Western North Carolina}, Raleigh, 1915; D. J. Whitner, \textit{History of Watauga County}, Kingsport, 1949; and \textit{Biennial Report of Superintendent of Public Instruction of North Carolina for 1942–44}, Raleigh, 1944.}

Of all the public institutions serving the region none has had a greater influence on the material and cultural development of the area than the schools. The remarkable progress in agriculture, so apparent over the past few decades, has been accomplished largely through the medium of education. "Book learning," which had so
hard a time in establishing itself here, has finally become ac-
cepted. Also, education, long brought in from the outside, has
recently become a local product, not only in the public schools
but also in regard to adult education. The county agricultural
agents, conservation agents, and others concerned with promoting
better land use are largely local boys who know from experience
the problems they face and who can speak with greater confidence
to the local farmers because they know them and are known by them.

3. The Church. One of the oldest organizations in the New-
Watauga region is the church. The first denomination to organize
here was the Baptist. The Three Forks Baptist Church on the upper
New River was organized in 1790 and constituted the second church
west of the Blue Ridge. Among its early members were Jesse and
Jonathan Boone, nephews of Daniel, who had settled near the site
of the present town of Boone. 41

Baptists are still the dominant group with more than two-
thirds of all church members belonging to that denomination. The
second most numerous are the Methodists and following in order of
membership are Presbyterians, Lutherans, and Episcopalians. Other
Protestant sects include the Adventist, Church of Christ, Holiness,
and Assembly of God. There are very few Catholics.

The church was the strong moral force of the early communi-

41 J. P. Arthur, History of Watauga County, Richmond, 1915,
pp. 71 - 74.
ties of this area and its influence on the life and philosophy of the people was very great. Preceding the schools, the church building served as the schoolhouse for most communities, and inasmuch as the preacher was usually the most learned man of the group, the job of teaching the children generally fell to him. Preceding the courts and established law, the church, more than any other organization, preserved law and order. Differences of all sorts were presented to the church, which weighed the evidence and made decisions generally accepted as legal and binding. Also, the church formed the hub around which most community social life revolved.

The effect of the church on land use is to be seen in all areas. It has always had a restrictive influence on many activities outside the church. It is largely the church which has kept legal whisky out of the region, which is good; but in so doing it has helped to maintain the bootleg traffic, which is bad. Recreational facilities such as dance halls, bowling alleys, pool halls, and theaters are affected in their location and in their operation by church sanction or lack of same. The effect of the church on agriculture is, at most, of only minor significance. The raising of tobacco, has probably been affected by the strong opposition of certain denominations to smoking.

Of a general nature, perhaps the most important influence of the church has been in its operation as an ultra-conservative group of great power. Church support of change is always slow in coming. For example, benefits of many recent governmental actions were slower
to be realized due to church opposition. The TVA has had the opposition of many church leaders and even the REA was strongly opposed in many areas.

4. Public Health and Medical Facilities. Although impossible to measure correctly, the health of the people might well be considered a basic resource to any region. The health and vitality of a group are important in determining the use that is made of the land. Healthy people, both physically and mentally, are better producers.

In the New-Watauga region prior to the decade of the 1930's medical services consisted largely of those supplied by country doctors with offices in their homes and whose medical beat covered the country lanes and paths. All ills came their way and the cure for most they carried in their little black satchels. To the mountain people they were general practitioner, surgeon, dentist, and pharmacist all combined. They cared for all sorts of ills, even practicing minor surgery right within the country homes wherever they happened to be. Most of these early doctors never refused a call, even in the worst of weather, often knowing from the beginning that there was little chance of being paid. All accepted payment in kind from those who could afford to pay.

The country doctor is all but gone from the region. Medical services are now largely concentrated in the towns and house calls are extremely limited. Despite the deep appreciation that is held for the country doctor, with his passing medical facilities in the region have improved, although in certain areas provisions are still
not adequate to meet the needs of the people. At the present time the overall medical and public health organization of the region includes nineteen doctors, eight dentists, and twenty nurses. Two veterinarians care for the animal life of the region. There are two hospitals and three clinics with hospital facilities (surgical, laboratory, X-ray, and nursing service). Hospital beds number approximately 150 and this appears adequate as they are not used to capacity.

Public health services for the region, though inadequate, are improving. At the present time free assistance is given in special cases as orthopedic clinics, eye clinics, mother and child clinics, immunization clinics, and examinations of public workers. Public school service includes pre-school and school examinations and all phases of preventive medicine. Sanitary services include public or private consultation for provision of safe water supplies, safe milk, proper food handling, sewage and waste disposal, and pest control.

Voluntary agencies available for medical aid include the Red Cross, Polio Foundation, Heart Association, Crippled Children's Foundation, Cancer Association, and the Tuberculosis Foundation. A number of civic organizations also are affiliated with the medical association in providing free health service for charity cases.

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42 Information concerning public health and medical facilities from Tentative Report of Medical Care Inventory Committee for Watauga County for 1953, and from interviews with public health representatives of Watauga and Ashe counties.
The greatest deficiency of the region at the present time is in connection with public health services. At the present time only one doctor, one educator, and one nutrition consultant are available for part time service. (Each serves a three county area.) One sanitarian and one public health nurse are available in each county. More workers are needed and housing facilities are needed for public health services.

How can we evaluate the importance of medical and public health services in terms of present land use? The land occupied by hospitals, clinics and medical offices throughout the region is very limited. They constitute a very insignificant market for produce grown within the region, and as an occupational unit the people providing the various services have little effect upon the overall economy of the region. Their significant contribution to the land use patterns of the region stems from the fact that they help to maintain healthier, more alert, men, women, and children.

5. Civic Organizations. There are several civic organizations active in the region, most of which are promotional in nature. Among the more important are the various chambers of commerce, merchants associations, business and professional clubs, community clubs, and local chapters of the Southern Appalachian Historical Society. In addition to these there are various social and fraternal organizations such as Kiwanis, Rotary Clubs, Lions Clubs, and a number of women's organizations.
The most important of these organizations with respect to land use are the chambers of commerce. Their membership includes almost all business enterprises, and their chief activity is the promotion of the tourist trade. This includes newspaper and magazine advertisements and the publication and distribution of attractive booklets, maps, and pictures where they can most easily be seen by the prospective tourists. The Chambers of Commerce of Boone and Blowing Rock, along with the Southern Appalachian Historical Society, are responsible for the establishment of the outdoor drama, Horn in the West, in Boone. Local chambers of commerce are also partly responsible for the growth of Boone and West Jefferson as tobacco and bean markets, and for the recent upsurge in industrial activity.

Also very active are the merchants associations. They cooperate closely with the chambers of commerce in promotional activity, particularly as it relates to wholesale and retail trade. The basic aim of most of the other groups is to stimulate all forms of economic activity, to create community awareness, and to promote community improvement.
CHAPTER IV
AGRICULTURAL LAND UTILIZATION

The New-Watauga is an agricultural land. The first man to settle here was a farmer. He also was a hunter, trapper, woodcutter, carpenter, blacksmith, shoemaker, mason, doctor, preacher, and anything else that he needed to be. But his chief interest was the farm he could call his own, and his chief means of subsistence was his farm land. The first settler was a farmer and by far the greater part of those who followed him in occupying this region have been farmers.

This area is not agricultural in the same sense or proportion as the Corn Belt. It is an agricultural land that bears the mark of the mountains. Farms are small and the percent of land in crops is likewise small. There are few tractors and little other machinery. By horse and by hand is still the chief method of cultivation and this is not likely to change no matter what innovations take place in agriculture elsewhere. The predominance of sloping land requires that it be that way.

In the beginning all "back country" (beyond the Blue Ridge) was a land of self-sufficient agriculture. During the 19th century improvements in communications changed the Great Valley, the Blue Grass and Nashville Basins, and the Ohio Territory, but no change took place in the New-Watauga or in most of the mountain South. As previously indicated, this area was by-passed and remained through-
out the 19th century a land of subsistence agriculture. Commercial farming did not begin here until after 1900 and no real advance was made until after 1920. The National Resources Planning Board map of principal type-of-farming areas of the United States in 1930 includes this region as a general farming area, and not a part of the self-sufficing economy which embraces the Cumberland Plateau and the extreme southern portion of the crystalline Appalachians. More realistic is the 1933 classification of F. F. Elliot which includes the New-Watauga area as a part of the self-sufficing - part time forest products economy. A similar implication may be drawn from C. P. Barnes' natural land use areas classification of the same year in which the region is included in a large belt defined as "Irregular, steep mountains with occasional bodies of hilly but arable land."

It is interesting to note that Elliot's classification of 1950 places the New-Watauga in a large general farming region with the chief enterprises consisting of livestock, truck crops, and cotton. This classification is in agreement with the findings of the writer in the first two categories. However, in this area, and in the majority of the larger region so classed, cotton is a very minor crop, if produced at all,


while tobacco is the major cash crop, though not listed by Elliot.

Another work of interest is Hoover's problem area map of the United States. For while the plane of living in this area has always been below the national level, it has never been classed as a major problem area. Hoover's map, based on relief loads in 1934 to 1935 and unemployment in 1940, though centering on the Cumberlands to the west, does not include any of the older Appalachians.

Although the region is still largely one of subsistence agriculture, marked progress has been made in commercial production over the past 34 years. The most important cash crop, tobacco, has advanced from a home use crop to one with an average yearly total exceeding 2,000,000 pounds. Vegetables for sale, other than potatoes, amounted to less than 200 acres in 1920, while in 1950 there were more than 3500 acres. White potato acreage in 1920 was less than 800 and in 1950 more than 2800. While these and other commercial crops have advanced tremendously in acreage, the total land under cultivation has declined. This decline has taken place chiefly in cereals and represents a shift toward more intensive crops. Corn acreage in 1920, for example, amounted to more than 29,000 acres and by 1950 this had dropped to less than 16,000. An even greater decline has taken place in wheat acreage. In 1930 more than 12,000 acres were harvested and 20 years later the harvest totaled less than 600 acres. Similarly, acreage in both oats and rye has declined but to a lesser extent.

The change that has taken place in livestock also reflects the shift toward a more intensive use of the land. Livestock have long been important to the economy of the mountain people and there was relatively small change in the number of animal units in the period between 1920 and 1950. The real change was in the composition of the livestock. Sheep, perhaps more typical than any other animal of pioneer economies, sharply declined in number (32,000 to 15,000), while the number of cattle increased (33,000 to 42,000). There has also been marked improvement in breeds shown in the increased quantity of meat produced and in the increased income derived from the sale of livestock products. Dairying, relatively unimportant in 1920, has made great strides, especially in the last 15 years.

The shift from subsistence to commercial farming since 1920 is attributable largely to the construction of good highways and the coming of the automobile. Produce dealers from the Piedmont of the two Carolinas and even more distant areas make their way into this region to obtain fresh vegetables, fruits, and animal products. Also, many farmers own their own trucks and deliver their produce to the market of their choice. In this way delivery is made when the produce is in its most desirable condition.

A. Farms of the New-Watauga

There are three main types of farms in the New-Watauga region. There are the large bottomland farms, better equipped, and supplied with more elaborate homes and outbuildings than the rest of the re-
gion; the small hillside farms, almost strictly subsistence in type, poorly equipped, and with small, generally unpainted farm homes; and between these extremes, the hill and valley farms which are more representative of the region as a whole than either of the other two.

The representative farm of the New-Watauga region covers approximately 63 acres (state average farm size - 67 acres). Farm buildings occupy the most accessible portion of the farm and include a substantially constructed large "T" or "L" shaped frame house, a large barn, a woodshed, a chicken house, and a pig sty. The farm home is the only painted farm building and generally occupies a well-drained position facing the main road. The barn is fairly large with a high loft (Figure 14). During the early autumn it is used as a tobacco barn and later in the winter as a livestock shelter. The lower part contains a storage shed for machinery and farm implements, a granary, and several cattle stalls. Silos are found on relatively few farms and cannot be considered common to the region. The average

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48 From 1920 to 1940 there was a downward trend in farm sizes; at first a sharp decrease and then a gradual leveling out. Since 1940 farm sizes have increased very slightly. The first and most pronounced drop in farm size occurred between 1920 and 1930 and perhaps reflects the sudden opening up of the region for commercial agriculture due to the extension of good highways into the area in this decade. This accompanied by the high prices of the 'twenties lured many into buying farms at costs too high for the real value of the land. It also reflects, perhaps, a more intensive use of the land (i.e., more cash crops and fewer grains). Also responsible in part for the reduction in the size of farms has been the gradual decrease over the past three or four decades of the total amount of land in farms. Submarginal land in the more rugged mountain areas has year by year been abandoned. Farm size in 1920 averaged nearly 80 acres, but by 1930 this had dropped to 67 acres. Farm size in 1940 was approximately 60 acres as compared to 63 acres in 1950.
Figure 13. A portion of a representative farm of the New-Watauga region.
Figure 14. Typical general purpose barn of New-Watauga region. Root cellar is directly below granery. The high loft is used for tobacco curing.
farm has between 15 and 20 apple trees and several other fruit trees, the most numerous of which are cherry, peach, plum, and pear. Fruits are raised largely for home use and only an occasional surplus reaches the market. Cultivated crops occupy eight to ten acres of the farm consisting of a small patch of tobacco (average per farm approximately two-tenths acre, but only about half of all farms produce tobacco so that the average per producing farm amounts to about four-tenths acre), three-quarters acre of potatoes, one-half acre of beans, one-quarter acre of cabbage, and one-quarter to one-half acre of other garden produce. Between two and three acres of the farm is in corn, this constituting the most important crop in terms of acreage. Other cereals include small plots of oats, wheat, and rye. The remaining cultivated acreage may be divided among a number of crops such as sorghum for sirup, popcorn, broomcorn, sweet potatoes, and soybeans. About six acres of the farm is in meadow consisting of timothy, redtop, red clover, alfalfa, and other domestic grasses. Permanent pasture occupies about 18 acres, and woodland the remaining 25 or so acres. Farm animals include a horse, two or three milk cows, and one or two feeder cattle, one or two hogs, and three or four sheep. (Sheep are found on only about ten percent of the farms and the average of three or four fails to show the true picture. On the farms that have sheep the average is about 30 head per farm.) Poultry includes from 25 to 30 chickens and an insignificant number of ducks, turkeys, geese, and guineas. Farm machinery is of a simple type and is very
limited. It consists of a horse-drawn mowing machine, a hillside plow, cultivator, hay rake, fertilizer distributor, drag harrow, a wagon, and homemade sleds of various sizes. In addition to these the typical farm has a large number of hand tools, such as hoes, pitch forks, potato diggers, post hole diggers, shovels, and scythes. Small grains here are harvested using the traditional cradle. Tractors are found on very few farms and even on these they generally have to be replaced by the horse whenever one moves from the limited valley area to the steeper slopes.

The bottomland farms, found in the larger stream valleys, constitute the larger and more productive of the region (Figure 15). Farm size varies greatly ranging from 50 to over 1000 acres. (In 1950 thirty-nine farms exceeded 500 acres and seven exceeded 1000.) Even the best of the so-called bottomland farms are not 100 percent bottomland. Essentially all farms are divided into two parts, a flat valley floor used for intensive cultivation and a hillside portion occupied largely by woodland, orchards, upland meadow, and pasture. Farm buildings are generally more numerous and more elaborate than is typical for the region as a whole. The farm house is large and well constructed. Typically it is a two-story building of wood construction with porches extending the full length of the house. Outbuildings include a barn, tool shed, granary, storage cellar, chicken houses, and pig stys. Barns are larger and more elaborate in their construction than those of the upper valley farms, and many outbuildings are painted. Bottomland farms
Figure 15. Bottomland near Valle Cruces.
are the only ones in the region that may be machine operated. The use of the tractor is becoming more common from year to year but even here it has not replaced the horse as the primary source of power. (In 1950 there was a total of only 206 tractors in Ashe and Watauga counties.) Land use on the bottomland farm differs in many respects from that of the representative farm. Bottomland farmers, with a greater working capital and a broader margin of profit, trend more toward specialization. It is among these that are found the beef specialty, dairy specialty, and poultry specialty farms. Their livestock is of a superior quality with more thoroughbred animals than found on the representative farm. There is also more land in cultivation and less waste land. Cash crops occupy a greater proportion of the cultivated land and average yields per acre are larger.

The poorest farms and farm homes as a group are those of the more mountainous areas, the hillside farms. It is in this group that the "typical" mountain home of popular conception is found. Characteristically these mountainside or hillside farms are of small size (30 acres or less), and are located on the steeper slopes (20 percent and above). Farm buildings consist of a house, barn, woodshed, and two or three other smaller structures. The farm home is usually a box type of three to four rooms. All buildings are generally of poor construction and most all, including the farm home, are unpainted. Hillside farms are almost altogether subsistence in type. Farm animals include a cow, a hog, a few chickens and perhaps a single horse. The best half acre of land is occupied by the family garden and it is
quite often encircled by a rough stone fence constructed of rocks worked out of the ground through long years of cultivation. Fertilizer for the garden consists of manure from the barn and many of the farm crops receive no fertilizer at all. Farm machinery and equipment consists chiefly of a one-horse plow and cultivator, a drag harrow, and hand tools of the same type found on the representative farm. Cash crops may include small patches of tobacco, potatoes, cabbage, beans, and occasionally onions. Yields are extremely low and the farm profits are always meager.

Most farms of the region are family operated and most operators are full owners. There are fewer than 500 tenants on the more than 6000 farms. Most of these are share croppers. Tenants cultivate only about one-twentieth of the cropland. There are only ten farm managers and these are employed on the larger commercial farms. The acreage harvested on managed farms is proportionately far greater than that of the average farm. There are few Negroes on farms and most of these are farm owners.

The average farm family of the region has five members, including only those living at home. This region is one of many in the southern highlands producing more children than the economy will support, and every year many boys and girls leave the farm to seek employment in the industrial areas of the nation. Some go east to the Piedmont textile and furniture mills. Others go west to Knoxville, Kingsport, and other cities of the Tennessee Valley, and many go north to Baltimore, Cleveland, Detroit, and other industrial centers. Hal Johnson, a native of
Figure 16. Small hillside farms near Boone.
the area, stated in July 1952 that he could see more North Carolinians whom he knew on the main streets of Cleveland than he could find on the main street of Boone. Most of those in his age group are no longer around. Like Hal, they have headed for greener pastures. Farms of the region are too small as it is, and a solution to the problem created by the annual increase of boys and girls advancing to adulthood is not one of sub-division of the farmland. An approach in the right direction is that of economic upbuilding through government aid as sponsored by the TVA in the Watauga Valley.

The average value of farm land in 1950 was approximately $100 per acre or about $6000 per farm including both land and farm buildings. There is, of course, considerable variation in land values between hillside and bottomland farms. Bottomland is frequently valued at more than $500 per acre exclusive of farm buildings, while hillside farms are often sold for payment of taxes for less than $10 per acre.

The average farm income derived from the sale of farm products is approximately $800 a year. This is not, however, a measure of real income, for the value of products consumed on the farm nearly equals that of products sold giving a real gross income of approximately $1600. Of course, there are farm expenses averaging about $350 a year which cuts cash income to approximately $550 and real income to $1250. In addition, out must come taxes, principal and interest payments, and other fixed charges. All in all, the margin of profit is rather slim and it is not enough to support adequately a
family. Therefore about half the farmers, presumably that half in the lower income level, work off their farms more than 100 days every year. Some are part time painters, masons, carpenters, or other tradesmen who use the farm only as a source of food and a range for their children, and depend upon their trade for their cash income. Other farm operators may take off for the winter to work at nearby plants or at whatever jobs are available. Almost half of the farm operators report other income exceeding the total receipts of farm products.

The chief sources of income on the farm are the sale of livestock, cash crops, and dairy products. Livestock sold amounts to almost $1,700,000 or about $275 per farm. Another $800,000 is derived from sale of dairy products amounting to about $130 per farm. The source of other farm income is through the sale of farm forest products, quarried stone, and other non-agricultural products (Figure 17).

Farm expenses amount to a total of about $2,000,000. These are dominated by four major items. Feed costs totaling more than $725,000 constitute the greatest expense. Second is the purchase of livestock amounting to approximately $550,000. Third is the cost of hired labor which exceeds $450,000, and fourth is the purchase of seeds, plants, bulbs, and trees, totaling about $175,000. Other farm expenses include machine repair, purchase of new equipment, machines hired, and fuel costs for farm vehicles.
MAJOR SOURCES OF FARM INCOME IN ASHE AND WATAUGA COUNTIES IN 1950 (IN THOUSANDS)

Figure 17
B. Field Crops

1. Corn. The outstanding row crop in the New-Watauga region, according to acreage, is corn. Corn cultivation began just as soon as the earliest settlers cleared the land and has remained the most important cultivated crop of the region, not only in terms of acreage but also in terms of diet for both man and animal.

It would be difficult to imagine what the mountain people would have done without corn. It has always been the most important livestock feed produced, both concentrate and roughage. Ground and baked into "cornpone" it has for generations been the bread of the mountains, and along with hot biscuits it still is. Corn, picked when young and tender, has been boiled or roasted and eaten as a fresh vegetable. It has been canned and cooked into many different dishes. Seasoned corn has been soaked in lye until the tough outer skin could be removed, after which it is washed and then dried into hominy. Corn has been popped and parched and eaten raw. It has been shredded and toasted and eaten with sugar and cream --- and it has been drunk. Yes, by untold millions of gallons it has been drunk by mountaineers and by countless others who found the home distilled mountain product to their liking. For every bushel of corn sold by mountain farmers there has probably been a hundred gallons sold. 49

49 It has been said that in an earlier period that the price of corn was more often quoted here in terms of gallons instead of bushels, and in certain parts of the region this is probably still true.
Beginning with the pioneer, corn acreage increased slowly until about 1910, when a peak of nearly 30,000 acres was harvested. From 1900 to 1940 acreage fluctuated between 25,000 and 30,000 but experienced a marked decline between 1940 and 1950. This decline has been somewhat offset by increased yields per acre with the result that almost as much corn was produced in 1950 as at any previous period on an acreage little more than half that of 1900 (Table 7).

Production of corn in this region is almost altogether a hand operation. Horses are used in preparing the land for planting and in distributing fertilizer. Corn is dropped by hand and covered with a hoe. Cultivation of the crop begins when the corn is very small and consists of two or three hoeings before "laying it by." The hoeing operation is aided somewhat by plowing between the rows with a horse drawn cultivator. On the bottomland areas cross cultivation by horse or tractor is possible.

Corn harvesting is accomplished in two ways. The one most frequently used consists of cutting the stalks by hand and shocking it in the field. After the ears are completely seasoned it is usually husked in the field, with the fodder piled into stacks until needed for animal feed and the corn hauled to barns or granaries. The second means of harvesting amounts to a stripping of the stalks, leaving only the part holding the ears standing. In this way the ears are allowed to season on the stalk and are later husked as they are gathered for storage. The remaining husks and stalks are usually
### TABLE 7

CORN PRODUCTION FOR NEW-WATAUGA REGION

<table>
<thead>
<tr>
<th></th>
<th>1910</th>
<th>1920</th>
<th>1930</th>
<th>1940</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acreage</td>
<td>29,832</td>
<td>25,864</td>
<td>26,344</td>
<td>26,049</td>
<td>15,969</td>
</tr>
<tr>
<td>Yield (bu.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Acre</td>
<td>20</td>
<td>23</td>
<td>23</td>
<td>24</td>
<td>35</td>
</tr>
<tr>
<td>Total Production</td>
<td>615,727</td>
<td>612,619</td>
<td>620,268</td>
<td>625,778</td>
<td>562,744</td>
</tr>
</tbody>
</table>

---

used as a sort of fall or winter pasture, the cattle being allowed
to forage on whatever remains.

Corn acreage is uniformly distributed throughout the region
and is found on all types of soil and on practically all degrees of
slope. However, as one might expect, yields vary greatly according
to conditions under which it is grown, the alluvial bottomlands pro-
ducing the best yields and the thin, rocky ridges the lowest. Aver-
age yields per acre have risen remarkably over the past fifteen years
and compare favorably with the national average. Much of this in-
crease in yields per acre may be attributed to the reduction of total
acreage with better land being used at the present time. Also im-
proved agricultural practices and better varieties are in part re-
sponsible. Yields since 1940 have increased remarkably through
introduction of hybrid types.

Of all the physical factors responsible for the present dis-
tribution of corn in this area, the most important is climate,
particularly temperature. Corn is a hot weather crop which does
best when temperatures are in the middle to higher seventies. Ac-
cording to Finch and Baker, practically no corn is grown where the
mean summer temperature is less than 66 degrees. 50 Because of this
the acreage in corn here declines perceptibly with increase in ele-
vation, and also the acreage is much smaller on the cooler north-
ern exposures.

50 Vernor Finch, and O. E. Baker, Atlas of World's Agricul-
There are a number of possible reasons for the recent decline in corn acreage. In general it reflects the over-all shift toward commercialization in agriculture. With this has come a greater diversification in forage crops with the better quality hays becoming more important, and with a greater acreage in cash field crops.

Surprisingly enough, the rapid growth of dairying over the past 15 years has brought about no real increase in the growth of corn for silage. Silos are little more numerous now than in 1940 and many of these are not being used. An encouraging note in this direction is in a suggested program for agricultural improvement for Watauga County, worked out by a number of farm leaders in 1952. In this proposed program as much corn for silage as for grain was recommended for all cattle farms.\(^{51}\)

2. Tobacco. The most important commercial crop of the New-Watauga region is tobacco. From the time of the first occupation of the land tobacco has been grown for domestic use, but only since 1930 has it achieved commercial importance. In 1920 there were only 12 acres produced in the entire region. By 1930 this had increased very slightly to 39 acres, but from 1930 to 1945 acreage more than doubled every five years. In 1935 there were 330 acres; in 1940 the total was 754; and by 1945 more than 1,774 acres were under production. Since that time the acreage has remained fairly constant, though fluctuating from year to year. Almost as remarkable as the

\(^{51}\)Farm Leaders! Watauga County Agricultural Program, Boone, 1952.
TABLE 8

TOBACCO PRODUCTION FOR NEW-WATAUGA REGION

<table>
<thead>
<tr>
<th></th>
<th>1910</th>
<th>1920</th>
<th>1930</th>
<th>1940</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acreage</td>
<td>31</td>
<td>12</td>
<td>39</td>
<td>754</td>
<td>1495</td>
</tr>
<tr>
<td>Yield (lbs.) Per Acre</td>
<td>347</td>
<td>444</td>
<td>727</td>
<td>1258</td>
<td>1440</td>
</tr>
<tr>
<td>Total Production</td>
<td>10,755</td>
<td>5331</td>
<td>28,363</td>
<td>949,461</td>
<td>2,150,976</td>
</tr>
</tbody>
</table>

increase in acreage has been the increase in yield per acre. Back in 1910 when 22 acres were produced the average yield per acre was 347 pounds. In 1920 the average was 440 pounds, and by 1930 this had increased to 727 pounds. During the ten years from 1930 to 1940 per acre yield almost doubled, reaching an average of 1258 pounds per acre. By 1950 this had increased still further to 1440 pounds or to essentially three times that of 1920 and about twice the average yield for the state of North Carolina and for the nation as a whole.

What are the factors responsible for the rapid rise of tobacco as a commercial crop? First of all, it is apparent that the rapid increase in tobacco production was coincidental with the development of highway transportation, and the general shift toward commercial agriculture. Undoubtedly the opening up of the region transportation-wise was an outstanding factor. However, this cannot be accepted as the whole answer. For tobacco, unlike the present-day commercial vegetable and livestock products, is essentially non-perishable, and the fairly high price per unit weight would have paid the cost of transportation over the passable wagon roads to the market towns of Abingdon and Bristol, Virginia. It is the opinion of the writer that in this pre-1930 period the region's farmers were completely unaware of the possibilities of tobacco as a cash crop. Perhaps, living in the strictly subsistence economy of the mountains, a real need for such a crop was not acutely felt. However, with the opening up of the area in the 1920s and with highways bringing in an
ever increasing array of goods and services, farmers of the small hill and mountain farms began to realize a pressing need for a high value and low acreage crop. Subsistence was not enough. The people of the region were beginning to feel the pressure of increased wants and necessities brought about by an improved communication system. They needed more money and when tobacco culture presented itself as a possibility it was readily accepted. 52

Tobacco growing was a "natural" for this region. Here was an area of small farms and large families; a badly overpopulated area where the pressure of population was increasing. Tobacco is an intensive crop, requiring a lot of individual attention and utilizing only a small amount of land per farm, but providing a high cash return per unit of land. It can be grown on all types of terrain. It does best on fairly fertile soil but does almost as well on poor soil if proper mineral fertilizer is applied. 53 Local temperature varia-

52 We should not fail to recognize the work of state agricultural agents who in this period presented the possibility of tobacco growing to local farmers, most of whom, in keeping with the general mountain character, were pretty well "set in their ways". Not only did they have to convince them of the good possibilities that tobacco held, but also had to teach them the know-how of its cultivation, harvesting and marketing.

53 Mr. C. C. Gold, Soil Conservation Agent for Washington County, Virginia, states that the best tobacco produced in the county is grown on small, hillside farms on soils that are too poor to grow anything else. Here the farmers buy almost everything needed for the plant in the way of soil nutrients and as a result can produce an almost controlled crop in terms of desired texture, aroma, and color, the three most important qualities of tobacco.
tions with elevation seem to have little or no affect on it, and in curing there is only one requirement — that the tobacco be kept dry and well ventilated. Very humid days which bring the tobacco into "case" for grading occur frequently during the late autumn and early winter seasons. Of all the physical factors affecting tobacco production here, the most important is moisture supply. As Klages states: "Dry seasons tend not only to reduce the size of the leaf but also to produce abnormally thick leaves having poor combustibility."\textsuperscript{54} Too much moisture is also undesirable. Wet seasons produce thin tender leaves with free burning qualities but which are very susceptible to decay in curing and fermenting.

Burley tobacco cultivation consumes, by far, more labor than any other crop grown in the region. Preparation for the crop begins in late February or early March with the burning of the seed beds. Brush or sawdust fires are burned over the bed site for two or three days to destroy all plant seeds that might later crowd out the tobacco. Beds are generally located in protected valleys with south facing slopes in order that they might receive the greatest benefit from the sun. The soil is worked to a depth of about a foot and all large particles of soil are reduced to a powder before sowing. A very thin cotton muslin is placed over the seed bed to protect the small plants from extremes of weather such as an occasional late

spring frost or a beating rain. Plants are ready to be set out by
the latter part of May or early June and much time is spent carrying
water and packing soil around individual plants.  

During the summer the tobacco must be hoed every one or two
weeks, depending upon the weather, and in the farmers' spare time
he must worm and sucker each plant. The burley tobacco produced here
is air-cured. Unlike the flue-cured type of the Bright Belt, which
is picked leaf by leaf, here whole stalks are cut at one time and hung
in tiers in tobacco barns to cure. The cutting usually takes place in
late August or early September. After curing for three to four months,
the tobacco is taken from the barn and graded according to color and
texture of the leaf. The graded tobacco is then tied into hands (a
bundle of about 20 to 30 leaves), packed into bales according to
grade, and taken to market. Thus the crop that began in February is
finally marketed in December or January. Then the cycle begins all
over again.

There are two main types of tobacco planting machines, one,
horse or tractor drawn and the other hand carried and operated. Both
require two men for the operation. Because of limited funds, rugged
terrain, and small acreage, only the latter is extensively used here.
Although dirt is thrown around the plant by the machine, most farmers
pack the dirt more firmly by hand to insure a better stand.

Tobacco is occasionally sold right on the farm to "pinhookers,"
speculators who travel through the area buying tobacco prior to the
opening of the markets. In earlier years pinhooking often proved
quite profitable, but since the establishment of government support
in tobacco prices the margin of speculative profit (or loss) has
been reduced.
For several years after tobacco came into commercial production it was sold in the burley markets of Abingdon and Bristol, Virginia, and Greeneville and Johnson City, Tennessee. However, in 1938 the Coleman brothers established a warehouse in Boone, and by 1945 there were three warehouses in the town. Since that time three warehouses have been constructed in West Jefferson and another in Boone, giving the region a total of seven warehouses and a burley market position in North Carolina second only to Asheville. The movement of tobacco to the local warehouses usually begins in early December, and after the floor is pretty well covered the tobacco auction begins. The chant of the auctioneer can be heard almost every day through the month of December as buyers from all major companies bid for the quality leaf. More than 6,000,000 pounds of tobacco per year are marketed in the region at the present time, with the total fairly equally divided between the Boone and West Jefferson markets.

A future possibility for farmers of the New-Watauga region is the cultivation of Turkish types of tobacco. Experimental work by the Oxford, North Carolina, Tobacco Station, in cooperation with Duke University, indicates that the Samsun variety may be successfully grown on Appling, Cecil, Mecklingburg, Madison, Clifton, and Porter soils.57 The last two of these are widespread in this region. Both human and physical conditions seem favorable for production. Turkish tobaccos must be planted closer together than American varieties.

Figure 18. Tobacco warehouse in Boone.
in order to achieve the smaller, more aromatic leaf. This means that it must be worked altogether by hand. Yields per acre are smaller but prices higher. The intensive cultivation with much hand labor is well suited to this region.

3. White Potatoes. Throughout most of the time since 1930 the white potato has remained second to tobacco in commercial importance and third behind corn and oats in acreage within the region. The potato has always been one of the most important crops. It has always been the most used vegetable of the local diet. In addition, it is often used as a substitute for corn as stock feed. It has always been a common practice to use smaller potatoes for hog feed rather than put them on the market at a low price. Slightly seasoned, cooked potatoes are preferred by many farmers over corn for finishing hogs for slaughter. Potatoes are also used to feed other farm animals as a supplement to the often inadequate grain supply.

The white potato was the first important cash crop of the region to reach the market after the highway development of the 1920's. It was only logical that it should be. Potatoes had been from the beginning of settlement an important crop, and in occasional years of surplus were hauled by wagon to the Piedmont. In that day of slow

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58 T. A. Brawley, Assistant Jackson County Farm Agent for the North Carolina State College Extension Service, reports there is an unlimited demand for the small leaf aromatic tobacco. Less than ten percent of our present needs are American grown. Brawley estimates that the average crop at present prices would be worth about $1000 per acre. (Agricultural Review, North Carolina Department of Agriculture, Raleigh, Vol. 29, No. 3, Feb. 1, 1954.)
freight there was little reward for the trip for there was not always a market in these small towns, and it was not an infrequent occurrence that the individual farmer took a substantial loss for his trouble. But farmers were aware that profits could be made when conditions were favorable. Therefore, as highways and highway carriers penetrated the region, potato acreage began an immediate climb. Acreage from 1900 to 1920 had remained constant at about 800 acres. This was the peak year and except for a brief expansion near the end of World War II, production has been on a decline, with only 2518 acres planted in 1950 (Table 9).

Why the decline? The answer is to be found in the rise and fall of potato prices. Periodic overproduction throughout the country caused many farmers to direct their attention to more reliable agricultural products (i.e. tobacco) or at least have a greater number of possibilities for obtaining the needed income. The more crops that are raised the better the chance that one of them will come through.

Unlike most of the southern potato-producing areas, which in general, focus on the northern market, production here, coming late in the season, is directed toward the south. The principal market towns are Charlotte and Gastonia, North Carolina, and Columbia, South Carolina. Most farmers sell to local wholesale dealers, who own warehouses for storage here and in the Piedmont towns just mentioned. Practically all local production is marketed within a radius of 200
<table>
<thead>
<tr>
<th></th>
<th>1910</th>
<th>1920</th>
<th>1930</th>
<th>1940</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acreage</td>
<td>907</td>
<td>789</td>
<td>2565</td>
<td>3591</td>
<td>2167</td>
</tr>
<tr>
<td>Yield (bu.)</td>
<td>89</td>
<td>74</td>
<td>105</td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td>Per Acre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>80,746</td>
<td>59,245</td>
<td>269,835</td>
<td>369,909</td>
<td>223,300</td>
</tr>
</tbody>
</table>

miles, with the majority of the crop moving southeast.59

From the physical point of view, this region is well suited to potato production. Potatoes require a cool climate with abundant moisture during the early period of growth and a fairly dry period preceding harvest. Soils should be fertile, well drained, and loose. Friability of soil appears to be more important than fertility. This region, with temperatures for late spring and early summer averaging between 55 and 65 degrees and with abundant moisture during the period of growth, is ideal climatically.60 One handicap is the lack of dry weather preceding harvest, but the very good drainage of the land somewhat compensates for this. The loose, well drained, and fairly fertile soils of the region are well suited to potato production although heavy fertilization is required for good yields in all areas. Production seems to be little affected by variations in elevation and exposure, with good crops found at both high and low elevations and on both north and south slopes. However, potatoes are not well suited to excessively steep slopes.

There are three varieties of potatoes that appear dominant in this region. The most popular of these is the Green Mountain. It is

59 Olin Goodnight, Boone wholesale produce dealer, personal interview.

60 Bushnell found that the average yield of potatoes is best where the highest average temperature for the growing season is less than 65 degrees, and that high night time temperatures are especially unfavorable for potato production. (J. Bushnell, "The relation of temperature to growth and respiration in the potato plant," Minnesota Experiment Station Bulletin, No. 34, 1925.)
the oldest variety now produced and generally commands the best market. The potatoes are uniform in size and shape and on good soil average about a half-pound each in weight. Irish Cobblers are also raised in considerable quantity but their popularity appears to be waning. The third and most recent of the varieties produced in this region is the Sequoia. One can easily see where they got the name for they are the giants of the potato family. Individual potatoes often weigh as much as two or three pounds and in good years yields per acre range between two and three hundred bushels. Despite its great producing qualities, the Sequoia rates below average with farmers of the region. Its market demand is rather low, and it is subject to heavy losses in wet seasons. As a stock feed the potato is good, but the more particular human element demands a better quality product.

Although periodic overproduction has reduced to some extent the desire among farmers of the region to grow potatoes as a cash crop, there is an excellent opportunity for farmers interested in producing certified seed potatoes. It has been found that potatoes produced under warm conditions eventually become degenerate and as well, are more susceptible to seed born diseases. Therefore, the best seed is produced in the cooler areas. Governmental regulations require that certified seed potatoes produced in North Carolina be grown at elevations of 2500 feet or more. The greater part of this region will qualify in this respect and seed potatoes produced here could be sold throughout the truck crop region of the South, and
at lower prices than those grown in Maine, Wisconsin, or New York.

4. **Cabbage.** Commercial production of cabbage in the New-Watauga region parallels in time that of potatoes. Prior to 1920 it was chiefly a garden vegetable for home use, having a total acreage of less than 100. As the region became more accessible, acreage increased steadily until 1935 when more than 2100 acres were in production. Since that time there has been a gradual but fairly constant decline with only 1331 acres harvested in 1950. Despite this decline, the New-Watauga region still ranks as one of the more important cabbage districts of the state. Watauga County led the state in production in 1945 and was second in 1950.

Essentially the same factors that caused the early increase and slow decline in potato acreage apply in the case of cabbage. In the 1920's, when farmers began to commercialize, these were the only crops which offered market possibilities. At first, they were produced year after year whether prices were good or bad -- and often they were not good. The decline in potato and cabbage acreage is the result of the trend toward greater diversification. In most cases this shift could not be accomplished by increasing total crop acreage. Most farms have a very limited amount of tillable land, and also the eight to ten acres of land in production represents about all the average farmer can care for using the hand operated machinery and implements required on these slopeland farms. So, introduction of a half-acre each of tobacco and beans meant that a comparable acreage of potatoes and cabbage had to be abandoned.
In fact, as we have noted earlier in this chapter, the intensification of cropping for commercial purposes has meant an overall decline of land in crops.

Cabbage is probably the most speculative of crops produced in the New-Watauga region. Prices from one year to the next may vary from fifty cents to more than three dollars per hundred pounds. Even within the same season prices may vary by as much as two dollars per hundredweight. Not only are there great price fluctuations with which the farmer must contend, but a sudden flooding of the market may mean that he cannot sell at all, and unlike potatoes, which may be held back for several months if necessary, cabbage must be sold immediately after the crop has matured. If there is no demand for as much as two weeks, an entire crop may be completely lost. Because of seasonal price fluctuations and frequent periods of over-production, most farmers stagger their planting in order to have crops maturing throughout the summer season. A life saver for many farmers in the region has been the operation of a sauerkraut factory in the town of Boone since 1925. Taking advantage of occasional overproduction and market flooding, it buys cabbage that must be sold at prices below the general market level. Selling to the sauerkraut factory means little or no profit, but it also means that the farmer will not take a complete loss for his efforts.

The more common varieties of cabbage produced in this area are Danish Round Head, Danish Bald Head, and White Dutch. There are other varieties that will give larger yields but these, having smaller,
firmer heads, command a better market. Plantings for early production are made in seed beds and the plants are transferred in late March or early April. Subsequent plantings are made in rows with surplus plants transplanted to other fields. The first cabbage reaches the market in the early part of June and production continues throughout the summer and early fall. Winter cabbage is planted in early August and the heads are buried about the time of the first frost while the roots are still in the ground. Some growth will continue until after the first hard freeze, and often heads buried while still not mature are firm and heavy when taken from the ground.

Ideal conditions for cabbage production are found in the New-Watauga region. A cool weather crop, it is well suited to the cool, moist climate of this upland area; and not particularly exacting as to soil qualities, it yields well on the light loamy soils of the region. Cabbage produced here is noted for its high quality. It is produced in all parts of the region but is most common to the cool moist areas of high elevation where most other crops are not at their best. Though demanding cool temperatures, the most critical physical factor is moisture supply. A prolonged dry period when the crop is approaching maturity may reduce crop yields to one-half of that expected. For this reason, very steep and excessively drained slopes are not preferred.

In general, the region has a favorable market situation. Cabbage matures here when none is available in the industrial areas
of the southeast Piedmont region, and local cabbage finds a market in cities as far away as Miami and Birmingham. Practically all cabbage is transported by truck from this region to the various market centers.

5. **Green Beans.** The most recent cash crop introduced into the region is the green or "snap" bean. The frequent showers, cool temperatures, and loamy soils of moderate fertility are well suited to the growth of excellent beans which command the highest market price. Also, because of the high elevation and cool climate, insect control is not as great a problem as at lower elevations.

Green beans have always been an important crop for home use, but commercial production is of very recent origin. Production of beans for sale was essentially non-existent in 1930 and there were less than 350 acres under cultivation in 1935. By 1940 acreage had increased to 634 and in 1945 a peak of 3405 acres was reached. Since then acreage has declined steadily with only 2679 acres produced in 1950.

The decline in production since World War II has been due to a tightening of the market and a decline in bean prices. During the war years (1941-45) the demand was unusually heavy and good profits were made by all growers. After the war the demand slackened and farmers frequently found difficulty in disposing of their crops, with the result that heavy losses were occasionally incurred. For example, in 1947 the price of beans dropped so low that farmers allowed large acreages to rot in the fields rather than take a loss in marketing.
them. Green beans, like cabbage, must be marketed immediately after reaching maturity, and being quite perishable must be sold soon after picking. Long periods of storage cause waste either by rotting or by a drying up of the pods which reduces weight and marketability.

Beans are marketed in two ways: In some cases buyers come directly to the fields with trucks and pack the beans for shipping as they are picked. More commonly, however, farmers sell to local produce dealers. The chief market towns are Boone and West Jefferson within the region and Mountain City located just to the west in Tennessee. The larger part of the beans here are bought by canneries. Fresh green beans are marketed over much the same area as cabbage produced here, and as in the case of cabbage, practically all are shipped directly by truck.

Bean production is well suited to this region from the physical standpoint. It is even better suited from a human standpoint. Beans, an intensive crop, demands a large output of human labor in harvesting, and human labor is abundant here.

Commercial bean production began here only after good transportation facilities had been developed. The extent to which it will continue will depend upon demand. As in the past, the market must continue to be a southern one. Green beans of high quality are not available throughout most of the South during the hotter part of the summer. Also, transportation costs make it impractical for local producers to try to compete with northern farmers for the northern market.
6. **Small Grains.** The more important small grains of the New-Watauga region are oats, rye, and wheat. All are used primarily as cover crops and most of the grain produced is kept on the farm for stock feed. Acreages in small grains have declined markedly since 1920, wheat experiencing the greatest drop. In 1920 the total acreage in small grains amounted to more than 20,000 and by 1950 this had dropped to less than 4500 acres.

The decline in small grains is due to the intensification of agricultural production. The small areas of relatively level land in the region are better suited to crops requiring intensive cultivation than to crops which are produced on a large scale by the use of machinery. The decline in cereal production on the whole represents progress in the sum total of all farming activities.

The most important of all the small grains in terms of acreage is oats. Of all the cereals, oats seem to have been the least affected by the swing to commercial production within the region. Acreage in 1920 was 5320 and by 1930 it had increased to 6918. By 1935 it had dropped to 4218 and then increasing again to 6355 by 1940. This increase continued to 1945 when 7371 acres were harvested. Following the peak in 1945 acreage dropped rapidly to 2779 acres in 1950.

Although oats acreage varies greatly from season to season, depending in part upon the need for winter cover, acreage has generally remained at a fairly high level. This is due to a number of factors. Oats are fall sown and make a good winter cover for fields following
### TABLE 10

**SMALL GRAINS PRODUCTION IN NEW-WATAUGA REGION**

<table>
<thead>
<tr>
<th></th>
<th>1910</th>
<th>1920</th>
<th>1930</th>
<th>1940</th>
<th>1950</th>
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<td>5,338</td>
<td>6,918</td>
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<td>3,010</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>12</td>
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<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Wheat</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Rye</td>
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<td>8</td>
<td>9</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>48,103</td>
<td>38,212</td>
<td>25,156</td>
<td>10,101</td>
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harvest of such crops as corn, potatoes, and tobacco. The crop fits in well with the pastoral activity of the region as it makes a good winter pasture supplementing dry forage. Oats mature in early summer following the planting of summer crops and preceding their harvest. Also, they are important in this region because either threshed or left in bundles they are preferred over all other grains as horse feed, and horses are still important in the economy of this region.

While acreage in oats have varied greatly over the past thirty years, yields per acre have increased steadily from an average of 14 bushels per acre in 1920 to more than 20 bushels in 1950.

Rye is well suited from a physical standpoint to this region. It is less affected by plant diseases than either oats or wheat and it does well even on the poorest of soils. Rye is more tolerant of extreme winter cold and less affected by the moist cool spring weather which seems to promote various types of plant mold in the other two cereals. The chief disadvantages to rye production in this area are lower yields per acre and the more restricted use of rye straw. The straw is very poor as a forage crop, generally being used for bedding cattle stalls and as a field mulch.

Wheat at one time ranked second to corn in crop acreage in the New-Watauga region, and constituted one of the few cash crops reaching lowland markets. Acreage in 1920 amounted to 12,017 acres but since that time it has declined steadily. Only 548 acres were produced in 1950.

Unlike either rye or oats, wheat produced in the region is oc-
casionally milled and used for human consumption. The soft wheat grown here has a relatively low gluten content and therefore is not preferred for making light breads. However, it is well suited to pastry and hot breads, and local flour is still preferred by many for making the hot biscuits that are so common throughout the South. However, the milling of flour for home consumption and the making of "chop" using wheat, corn, rye, oats, and other grains for a concentrated livestock feed, both relatively important in an earlier period, are little practiced today — another step away from the subsistence economy of the past.

Other cereals produced in this region include barley, buckwheat, and sweet sorghum. Combined acreages for all three of these are estimated to be less than 200, and all three are raised for home use. Buckwheat cakes and sorghum molasses have long been popular items in the mountain diet, and the latter, in an earlier day, formed the principal sweetening agent for home baking and food preserving. Another cereal in the subsistence economy, barley, was once used in making a type of "homebrew" that was quite popular among families of German descent.

The methods by which small grains are produced are little changed from that of 150 years ago. While there are a few drills and reapers, the major portion produced employs neither. After the land is prepared the grain is sown by hand using a rhythmical motion acquired through long years of practice. An experienced hand spreads the grain evenly over the land. Likewise, harvesting of the grain is
a hand operation. In an earlier period when the land was being cleared of forests, grain was frequently sown among the girded trees after the smaller undergrowth had been removed. The dead trees cast little shade over the grain, making it possible to reap a harvest even before the major clearing had been accomplished. Grain so planted had to be harvested by the hand sickle. Today the grain is cut by a cradle and bound and shocked by hand. One of the marks of experience in a mountain farmer is his ability to use a cradle. Good cradling, like so many farm crafts, is acquired after long days of practice. One of the most graceful pictures one can see is to sit on a hill opposite a grainfield being cradled by five or six experienced hands. The rhythm back and forth of the cradles is as smooth and uniform as that of a team of dancers following the beat of a Strauss waltz.

After the grain is cut, bound, and shocked, it remains in the field until thoroughly dry, and then it is hauled to an accessible spot and stacked. There are few combines in this region and threshing is still accomplished by a traveling threshing machine and crew. Threshing is a cooperative effort with two or more farmers joining together to get all their grain threshed. The threshers are fed on whichever farm they happen to be, and food is invariably good and plentiful.

After threshing, the straw is stacked to be used as a supplementary forage, stable litter, or as compost in the following season. The grain is milled for home use or, as is most often the case,
it is stored and used directly as cattle feed.

7. Hay and Pasture. Hay occupies more land than any other crop in the rotation system of the region, averaging between six and seven acres per farm. In the past, a specific part of the farm was set aside as permanent meadow, remaining in grass year after year. There are very few of these permanent meadows today. Hay is now a part of the more productive crop rotation system, alternating from year to year with other field crops.

Just as livestock has long been important in the economy of the New-Watauga, hay has always occupied large acreages on the region's farms. The acreage in 1950, for example, was slightly less than that of 1920 (29,342 to 29,696). However, the total tonnage produced was greater by more than 4,000 tons, the yield per acre averaging slightly more than one ten or about 10 percent more than in 1920. This increase was due chiefly to better care and to the use of improved plant varieties (Table 11).

Unlike the lowland South, the New-Watauga region is well suited to grasses common to the northern dairy region. The outstanding meadow grasses are timothy, the bent grasses (particularly redtop), bluegrass, and orchard grass. The common legumes are red clover, alsike, crimson clover, and lespedeza. Alfalfa has increased in acreage in recent years and should possibly be included in the latter category.

The most important meadow grass is timothy. Timothy is a moisture loving plant which is unable to stand extreme summer heat.
<table>
<thead>
<tr>
<th>Year</th>
<th>Acreage</th>
<th>Yield (Tons)</th>
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<td>Per Acre</td>
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</tr>
<tr>
<td>1920</td>
<td>29,697</td>
<td>.93</td>
<td>27,677</td>
</tr>
<tr>
<td>1930</td>
<td>24,926</td>
<td>.98</td>
<td>24,575</td>
</tr>
<tr>
<td>1940</td>
<td>21,436</td>
<td>.89</td>
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</tr>
<tr>
<td>1950</td>
<td>29,342</td>
<td>1.06</td>
<td>31,900</td>
</tr>
</tbody>
</table>

In the cool moist valleys of this area the conditions are ideally suited for its growth. It is raised here in combination with all other grasses and legumes, particularly red clover since they are similar in soil and climatic requirements. Another reason for the continued dominance of timothy is because it is considered the very best of the hays for horses. It is also a good cattle feed, especially when mixed with one of the clovers.

Of the legumes, red clover continues to hold the most important place. It is well suited to the cool, moist climate and the heavy loamy soils of the region. Alfalfa has recently been introduced into the area and should become increasingly more important as a hay crop. Acreage in the period from 1945 to 1950 increased from 37 acres to 474 acres. Like red clover, alfalfa is sown in combination with timothy. The timothy fills in for the first year or so until the alfalfa becomes established. Successful alfalfa production here requires heavy and frequent liming, but the better quality and increased yields, which average essentially twice that of other hay, more than compensates for the costs involved.

One of the characteristic features of the New-Watauga area is the haystack. Only a small percentage of the hay is baled and stored in barns, this consisting largely of the legumes which shed water rather poorly in a stack. The bulk of all hay produced is stacked right in the field.

Hay making in this area differs from that of most of the rest of the country. The hay is cut with a horse drawn mowing machine
providing the slope is not too steep. Scythes are used on the steeper slopes. It is most frequently tedded with a pitch fork and raked into rows by a horse-drawn rake, after which it is piled into shocks of about 75 pounds each. Two men teams, using hay poles, carry it to the most accessible spot in the field where it is stacked. Building a good haystack is not a job for a beginner. It must be properly shaped to protect it from rain and properly balanced so that it will not lean or fall over when the hay settles. In constructing a haystack a snaggy pole, about 12 to 14 feet long, is set firmly into the ground and a loose platform constructed at the base. (This is to insure the passage of air from underneath into the center of the stack and to protect the hay from ground moisture.) Two men team to build the stack, one to shape and the other to keep him supplied with hay. A properly constructed haystack has the appearance of a top with the bottom one-third removed. The small bottom allows the water to drain off in an umbrella effect and the large upper covering is packed closely around the top of the stack to form a protective roof over the hay at the center. Normally haystacks average between 1200 and 1500 pounds each, and if properly constructed contain hay that is often better cured than that stored in the barns (Figure 19).

The hay stack is not just an idiosyncrasy inherited from the past. It is practical for two reasons: First, the heavy summer rainfall and high humidity often causes hay stored in barns to mold.
Figure 19. Mountain haymaking.
Second, the field from which the hay is cut is often used as a winter pasture, and having hay in the field simplifies supplementary feeding.

Hay in this area is almost altogether a home use product. Cash sales are very limited and represent almost entirely farm to farm transactions.

Pasture comprises about two-fifths of all the farmland in the New-Watauga area. However, only about one-third of this total is improved pasture, with a considerable acreage of cut over and burned over woodland, which is recovering by natural succession, used as supplementary pasture. One of the chief needs of the region is pasture improvement.

Physically, the New-Watauga is well suited as a pasture land. Its southern location allows for a long period when cattle may be pastured and its high elevation prevents summer heat exhaustion among the better pasture grasses. The gray-brown podzolic soils are well suited to most northern varieties and the abundant summer rainfall maintains a steady and vigorous growth. Also favoring pastoral activities is the fact that most of the land is in slope too steep for field cropping.

The more common pasture grasses are white clover, redtop, bluegrass, orchard grass, and fescue. These are usually grown in combination.

8. Other Field Crops. The majority of crops not already discussed are garden crops used chiefly for domestic purposes.
These include sweet corn, tomatoes, beets, carrots, cucumbers, lettuce, garden peas, sweet peppers, radishes, turnips, okra, squash, sweet potatoes, onions, and pumpkins. The last named is produced in combination with either field or sweet corn and never as a separate crop. There are no strictly commercial crops in this last group although occasionally onions, tomatoes, and other garden vegetables are planted and sold as cash crops.

C. Fruits

The New-Watauga region is one of the better natural fruit growing regions of North Carolina and of the entire eastern United States. A large variety of fruits are produced with little attention given them. Most, it seems, like Topsy, have "just growed." Under the most negligent treatment apples, peaches, pears, plums, cherries, and other domestic fruits have for years produced dependable yields. Also, wild strawberries, blackberries, and huckleberries grow wild throughout the region and it is rare, indeed, when these fail.

The potentialities of this region for an expansion of commercial fruit production appear good. There are fifteen fruit specialty farms at the present time and all have proved successful. Physically, the well drained, loamy soils are well suited to most hardy fruits, the moisture supply is adequate without irrigating, and summer extremes in temperature are lacking. The chief hazard here, as in all of the eastern United States, is the occasional late spring frost which, if severe, can cause a complete crop loss. Midslope planting, taking
advantage of air drainage, reduces greatly the loss by frost. From the standpoint of markets, this region has an advantage of being located farther south than most major producing areas of hardy fruits, with the fast growing cities of the lower South offering a constantly expanding market.

While the region has good commercial possibilities, fruit production at the present time is chiefly for home use. Practically all farms and most town lots have apple and cherry trees, and a large part of them also have peach, plum, and pear trees. Grapes are found on most farms and almost all have several varieties of tame and wild fruits.

The value of fruits and nuts (chiefly fruits) sold in good years will exceed $100,000 (1945-$129,000), but the value of those used for domestic purposes is several times that figure. Fruits are used fresh, canned, made into jams and jellies, and prepared in numerous other ways.

1. Apples. The most important of the commercial and domestic fruits is the apple. Apples have been grown from the earliest times, and numerous seedlings are harvested each year along with established varieties. Although there are only 15 commercial orchards in this region, it still ranks as one of the foremost producers of the state, with both Ashe and Watauga in the first five North Carolina counties. Production in 1945, a good year, amounted to more than 300,000 bushels for the two county area.

Of all the fruits of the area, apples have the best chance for
further commercial expansion. The small number of apple farms in the region have already proved that, with proper management, this area can favorably compete with growers of the northeast and Far West. The fruit produced compares favorably with western apples and it can be placed on the market at a much lower price and still show a profit. New-Watauga orchards are fairly close to the major markets of the northeast, and in recent years the southern market has been expanding rapidly. (The lowland South is generally too warm for successful apple production.) For several years the Rich Mountain Orchards have disposed of their crop in Florida markets at prices above the quoted market price.61

A limiting factor for many farmers who might wish to shift to commercial apple production is the lack of capital to get started and to last out the period before the orchard starts producing. The best possibility would be for a farmer to start with a small acreage and expend gradually over the years. Successful apple growing requires an original expenditure somewhat greater than the cost of the trees. A commercial orchard must have power sprays, pruning equipment, and trucks or tractors for transportation of equipment and for harvesting once production has begun. Baskets for packing must be purchased and storage houses must be built where the fruit may be stored until shipped. Most growers maintain their own trucks for transportation and many rent stalls in wholesale houses in cities

61Personal interview with Robert Anderson, co-owner of Rich Mountain Orchards.
Figure 20. Commercial apple orchard on slopes of Rich Mountain.
where the fruit is to be sold. At best, it is approximately ten years from the time of planting before any substantial return may be expected. Few farmers of the region can afford to enter commercial orcharding, and most of those financially able are valley farmers with much of their land poorly located for best protection against frost. Flat or gently sloping land is more profitable when planted to row crops and most of the mountainside farms are small and poorly endowed with working capital.

Because of the relatively high elevation, northern apples are best adapted to this region. The leading commercial varieties of the present time are Red and Yellow Delicious, Winesap, and Rome Beauty. Still important, but more characteristic of an earlier period, are Royal Limbertwig, York Imperial, and Fall Pippin. Summer apples, produced chiefly for home use, include Early Harvest, Yellow Transparent, and Red June.

Almost all farms are self-sufficient in apples, and many, besides the commercial farms, sell a few apples as a cash product. This practice could be greatly enlarged upon without too much expense by proper pruning, spraying, and fertilizing. It is likely that in this way the present stand of trees could be made to produce at least twice the present yield, with a value several times that of the present.

2. Other Orchard Fruit. The second most important of the orchard fruits in terms of value harvested is cherries. Ashe and Watauga counties rank second and third, respectively, among the counties of the state, exceeding all but Buncombe in number of trees and in cherries.
harvested. There were approximately 25,000 trees throughout the region in 1950 producing more than 100,000 pounds of cherries. In 1950 production was exceptionally low due to late spring frost. The 1945 harvest, totaling 571,183 pounds, represents a good year.

Despite the large number of cherry trees in the New-Watauga region, there is not a single cherry specialty farm. Almost all farms have producing trees but relatively few offer cherries for sale.

All cherries are of the thin skinned variety with the sweet red and black types predominant.

Other orchard fruits include peaches, pears, and plums, all of which are largely used on the producing farms. Though there are relatively few trees, plums seem well adapted to this region with few complete crop failures. Peach and pear trees are more numerous but crop failures are common because of their greater sensitivity to frost.

3. Grapes and Small Fruits. Grapes are raised on most farms of the region but almost altogether for home use. The leading varieties are Concord, Delaware, and a southern variety of Muscadine. Two varieties of wild grapes are also quite common. These are called locally "Fox" and "Possum" grapes. Fox grapes are fairly large and have a tough outer skin. They are generally very sour until after the first fall frost after which they are sweet flavored. The possum grape is small and mild flavored. It is seldom gathered.

The soft skinned grapes produced in this region have poor keeping qualities and if sold must be used immediately. Therefore
there are few grapes marketed in the fresh form. More are marketed as liquids after a bit of ageing, though the income recieved is seldom, if ever, entered in local income reports.

There is no breakdown available concerning the relative importance of the many small fruits. None is raised for commercial purposes but a few are sold to local canneries from year to year. Strawberries do well on the loamy soils found here and small crops for home needs are produced on many of the farms. These are supplemented by wild berries found in open pastures and old meadows. More important than strawberries or any of the other small fruits are the wild blackberries. Blackberries are canned and preserved in large quantities in most households and several thousand gallons are sold to a local cannery every year. Jokingly, a farmer of the region is judged according to the blackberry crop that is allowed to grow up on his farm. The better farmers have no berries to pick. However, generally speaking, there are enough poor farmers to provide berries for everyone. Huckleberries are found throughout the region but are more common on the burned over slopes of the higher mountains. They are particularly abundant on the upper slopes of the Grandfather. Other berries include wild and tame raspberries, currants, gooseberries, and elderberries.

The berry crop is of little cash value, but is quite important for home use. If one considers the value of berries eaten raw, made into pies, canned, preserved, and drunk as a beverage, then it is easily seen that berries are among the more useful farm products.
While an effort toward commercialization in small fruits has not yet been made, good possibilities exist. Both strawberries and blackberries do well in this area, and inasmuch as production lags behind that of the lowland south, market possibilities in southern cities should be good.

D. Livestock

The animal industry is one of the oldest of agricultural pursuits followed in the New Watauga region. Early settlers brought with them cattle, sheep, horses, swine, and poultry for their domestic needs. These early homemakers had to depend upon the farm for essentially all their food and most of their clothing. Wool from sheep was woven into the cloth from which came most of the clothing needs of the family. Hides and skins were made into shoes, gloves, and harness parts; mutton tallow was molded into candles and used for waterproofing boots and shoes; lard was used for shortening and in the making of lye soap from wood ashes; chickens, ducks, geese, and other fowl provided feathers for pillows and mattresses as well as furnishing eggs and meat; cattle furnished beef and milk for the table, leather for shoes, and were often used along with horses and mules as beasts of burden.

Farm animals were of unquestionable value to the subsistence economy of the region's early settlers, but their potential as a cash product is just beginning to be realized. In the ten year period from 1940 to 1950 the value of livestock products sold increased from $876,491 to $2,864,629, and possibilities for further increases are
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<td>9,911</td>
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</tr>
<tr>
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<td>153,361</td>
<td>133,711</td>
<td>145,746</td>
<td>152,922</td>
</tr>
</tbody>
</table>

good. The New-Watauga region is endowed with climate and soils considered to be among the more favorable in the entire South for grassland development, and indeed, some of the best grasslands of the South are found here. The cool, moist climate is well suited to the European type cattle, generally preferred for both meat and milk; and the region forms a part of the mountain peninsula projecting southward into a region generally deficient in all meat and dairy products.

1. The Cattle Industry. The New-Watauga area ranks as the most important cattle region in the state of North Carolina. In 1950 Ashe County ranked first in the number and value of cattle and calves on farms. Watauga ranked seventh in value of cattle and calves and eighth in number.

Cattle have always been important as a subsistence item but have gained commercial importance only within the last few years. They are still important for home use but have become, in addition, the outstanding source of farm income, cattle and calves sold for beef alone far outdistancing the next closest product, tobacco.

Illustrative of the trend toward commercial production has been the shift away from general purpose cattle and toward special beef and dairy types. While registered stock is still very much in the minority, considerable progress has been made in this direction. Registered animals are now found on many farms and their number is increasing every year. The importance of good breeding is constantly stressed by agricultural leaders, the more influential of whom are the agricultural agents of the counties and high school vocational agri-
culture teachers. Demonstration farms have been established where the benefits to be derived from registered cattle and proper feeding methods are illustrated to all who are interested. Vocational agriculture students are given instruction in breeding, feeding, and general care of both dairy and beef varieties, and as well, the essentials in judging strengths and weaknesses of the individual animals.

Another factor that has helped to create an awareness of the benefits to be derived from good cattle has been the practice followed by many farmers, particularly those with children enrolled in vocational agriculture, of entering cattle in state and regional fairs. Blue Ribbons are brought back to the region every year, and the interest created has done much to stimulate stock improvement and to increase the number of registered cattle.

**Beef Cattle.** This region has become in recent years the most important beef cattle district in North Carolina, with Ashe County ranking first among all counties of the state. Between 1940 and 1950 the number of cattle on farms increased from 29,927 to 42,268, and it must be assumed that a large part of the increase was in beef cattle (Table 12). Income from cattle and calves sold in 1950 amounted to $1,447,616, ranking as the most important source of farm income (Figure 17). Using the 1950 Census data and personal field observation, the writer estimates that there are approximately 500 beef cattle farms in the two county area—farms on which the major source of income is from the sale of cattle for beef.

The more important beef breeds are Hereford, Shorthorn, and
Aberdeen Angus. The Hereford is the most popular breed but the Angus appear to be gaining in popularity. Registered beef stock is estimated to amount to less than 15 percent of the total number classed as beef cattle. However, many of the unregistered cattle represent a concentrated effort toward improvement of stock, some ranging between three-fourths and fifteen-sixteenths Hereford, Shorthorn, or Angus.

While there is a relatively large number of farms classed as beef cattle farms, this is hardly a true picture of the situation. In most cases beef cattle are only the leading element in a diversified farming effort. They are raised as a part of general farming, and the greater percentage of all farms have at least one beef animal for sale every year, but relatively few farms have more than four or five. Incomes on those classed as beef cattle farms greatly exceed the average for the region as a whole, averaging about $1600 per year, or about twice that of the average farm. But there is still room for improvement. Only about one out of three of the beef specialty farms maintain registered herds and many farms included in this classification do not have any registered cattle, and give little thought to breeding and proper feeding.

In evaluating the region as a whole, one must recognize the great progress that has been made. However, the possibilities of the area are far from realized. With an unlimited market throughout the South for beef and with physical conditions in the region favorable for its production, a considerably greater expansion is possible.
Even without an increase in numbers, income from the sale of beef could be materially increased. Too few beef animals reach the market without benefit of concentrated feeding, and as a result the general quality of the beef is poor, based on western standards. The corn fed animals that are marketed from the better cattle farms, however, are equal in quality to those produced anywhere in the country. On many farms the cattle are exposed to the elements for the entire year with nothing in the way of shelter provided, and many are carried through the winter on a minimum supply of hay with few, if any, concentrates added to their diet. These same animals are then grazed through the summer and sold in the fall without proper finishing. While the farmer, in such cases, has spent little in putting the animal on the market, he has gained little from the sale of the animal and someone's table is graced with rather poor meat. Great progress has been made in the beef cattle industry in the past two decades, but much more progress is possible. A large number of farmers have taken the initiative in the right direction. Whether the region will continue to grow as a beef producer will depend upon the ability of other farmers to profit from their example.

The Dairy Industry. The dairy industry of the New-Watauga region has made tremendous strides in recent year. Prior to 1930 cows were maintained chiefly for home use and the major part of the surplus milk was used as hog feed. Relatively few farmers sold milk, those who did sold it in nearby towns at prices generally below the market prices. The sale of butter was far more important than at
Figure 21. Beef cattle in the New-Watauga area. These cattle, though largely Hereford, are used for both milk and beef.
the present time.

The real expansion in dairying began in 1930 with the establishment of the Kraft Company plant at West Jefferson. Milk processing plants built by the Coble Dairy Corporation in Ashe and Watauga counties in 1939 further expanded the market and stimulated production. The details of these operations are discussed in Chapter VI. These new outlets for milk had a remarkable effect on the overall farm economy. Opening up at a time when the region was in the process of shifting from a strictly subsistence economy into commercial production, they helped make the change easier for most farmers inasmuch as the sale of fresh milk involved little deviation from past production habits. Many farms in the pre-1930 period had a spring and summer surplus of milk which was used primarily in making butter, with the skim milk and buttermilk thus produced fed to swine. The conversion of a farm to part-time dairying was simple, requiring no additional equipment nor the immediate purchase of cattle. It required only a change in the use made of the surplus milk. However, the sale of milk to the newly established companies proved so profitable that many farmers were encouraged to increase the number of cows and to seek to improve the quality and increase the quantity of milk produced.

There were 248 farms classed as dairy farms in 1950. However, as in the case of beef cattle farms, many of these are of the general purpose type on which the chief source of income is through the sale of fresh milk. Relatively few of these are equipped for production of Grade A milk. Representatives of the so-called dairy
Figure 22. Milk processing plant in Cove Creek valley of Watauga County.
farms is the McNeil farm in the upper Watauga valley. In 1940 it reported an annual income from dairy products amounting to less than $50, with the major part of this derived from the sale of homemade butter. In 1948 the income from the sale of whole milk alone exceeded $50 per month. There were two milk cows on the farm in 1940, and only four in 1948. This is still a general farm for dairy income is supplemented by sale of beef cattle, tobacco, and other farm products.

There is a much smaller percentage of registered dairy cattle than beef cattle in the New-Watauga region. Most cows consist of crosses of Jersey, Guernsey, and Holstein. While an effort is being made to improve milk production, registered herds are increasing very slowly in number. Many farmers prefer to cross Holsteins with either Jerseys or Guernseys in order to secure the milk producing qualities of the former and the high butter fat average that is more characteristic of the latter two. Others like to cross Guernsey or Holstein with one of the beef varieties so that they might have better beef qualities in the male calves. While the quantity and quality of milk has improved steadily in the past 15 years, only a small part is attributable to improvement of dairy stock. Probably far more has been due to improved feeding stimulated by the demand for more milk and the fact that income from sale of milk is dependent on the quality of milk produced.

In the period from 1940 to 1950, the sale of whole milk in this region quadrupled, and the income derived from the sale of all
dairy products increased by more than six times. Whole milk sold increased from 621,138 gallons in 1940 to 2,657,315 gallons in 1950, and the value of dairy products sold from $119,686 to $815,209. Despite the impressive gains that have been made by this region in dairy production, relatively few farmers have taken full advantage of the opportunities that exist. The gains that have been made were accomplished with relatively little increase in the number of milk cows and only a slight increase in the number of registered dairy cattle. If further improvement is to be accomplished a serious effort must be made to improve the quality of the cattle. More and better barns and better balanced feed are needed. A large percentage of the farmers have realized the importance of good feeding — it means an increased income almost immediately. But the purchase of good quality cattle and the construction of better equipped barns require a lot of money, and it is here that the thrifty Scotch background of most of the people here asserts itself. Farmers spend their hard earned money slowly and only when they are fully convinced that it will mean a good return. Future increases in dairying are to be expected but progress will probably be slower than in the recent past.

When all things are considered dairying appears to be better suited to this region than beef production. An unlimited market for all dairy products exists in the Piedmont to the east, and in the rapidly developing Tennessee Valley to the west. Cities in both regions import dairy products in varying amounts from the northern dairy states. The climate of the area is favorable for dairying. A
long frost free season allows pasturing over a longer period than in the northern Dairy Belt, and an excessively hot period in summer seldom occurs favoring the growth of the better northern pasture grasses. The cool summer temperatures combine with heavy summer rainfall to provide a moist succulent growth that is well suited to milk production. (A more concentrated dry feed is preferred for beef production.)

2. Sheep. Sheep have always played a leading role in the New-Watauga economy. In an earlier period they were an important element in subsistence, providing meat for food and wool and skins for clothing. After the development of communications mutton and wool became important cash products. Sheep are particularly well suited to the extensive areas of rugged terrain found here.

From the time of the earliest census reports the two counties of the region have ranked first and second in the state in number of sheep and lambs. In some years Ashe has held first place and in others Watauga, but in no case has either fallen below second. The number of sheep have fluctuated greatly since 1910 varying from 45,382 in 1930 to 11,061 in 1945, but the general trend over the past 25 years has been downward.

The change toward commercial farming in this region is reflected not only in the decline in number of sheep but also in their distribution. In the days of strictly subsistence agriculture most farms kept sheep. The sale of wool and lambs represented a fairly reliable cash return for relatively little effort. As commercial crop pro-
duction began many farmers abandoned sheep altogether with the result that in 1950 the 14,930 sheep within the region were found on only 575 farms, or one farm out of every ten. On these the number of sheep averaged about 25 per farm.

Although there are exceptions, sheep farms are generally found in the more mountainous areas, using land that is not suitable for cultivation. The flocks remain on pasture throughout the winter with only a small amount of hay supplementing the winter pasture during the more severe weather. The flocks are allowed to browse over a large area until the spring lambing season begins, at which time they are herded into fields near the farm home where they can be more easily watched, and where shelter is available. Most sheep shelters are little more than roofs with windbreaks, but these can be quite important in bad weather.

Sheep in the New-Watsuga region are maintained for both wool and mutton but the breeds are chiefly of the mutton type. Hampshire, Shropshire, and Leicester are among the more common breeds. While the total number of sheep is smaller than 25 years ago, the quality of the flocks is better. There are several farms specializing in registered sheep for breeding purposes and every year more registered lambs are added to the flocks.

Though the recent trend has been downward, the future of sheep raising in this region looks very good. Only goats, among the animals found here, can more effectively utilize the steep and often wooded pastures of the higher hills and mountains and goats are not preferred
as they are more destructive to grass and woody growth and command a more restricted market.

3. **Swine.** Swine have always been raised in this region for home needs in meat and shortening. Almost all farms have at least one hog for slaughter every year and relatively few have more than two. Swine are among the best of scavengers and on many farms here they have to scavenge.

Hogs are about the most practical animals raised in a diversified farm economy. Pigs farrowed in the spring are ready for slaughter in autumn. They, as scavengers, allow little food to be wasted. Their diet ranges from dishwater to undigested corn and small grains that have passed through the stomachs of cows and horses. They will eat anything living or dead (chickens are occasionally trapped in pig stys and are eaten alive with only the feathers left as evidence). Turned into forests in the early spring they can subsist on roots and green sprouts until wild fruits and nuts begin to fall (when chestnut and white oak forests were more widespread hogs frequently fattened altogether on mast from the forest floor); they are turned into summer apple orchards to browse on the damaged fruit left on the ground; and after potato and corn harvest swine are turned into the fields to root out potatoes left in the ground and to pick up the grains of corn that have fallen in the harvesting process. Anything edible is tossed to the swine where it is converted into ham, bacon, and fatback. Only in the last few weeks before slaughter are the hogs given a concentrated food (usually corn or a special
chopped food).

The sale of hogs for the market is little followed here. Most farmers slaughter their own animals and cure their own meat. The only part of the hog that is regularly marketed is ham. Stores throughout the area collect country hams and sell them at premium prices (especially to tourists during the summer season). In view of the price paid for cured ham most farmers do not feel they can afford to eat it. The remainder of the animal is cured for home use or made into sausage.

Very few farms have brood sows and still fewer maintain boars for breeding purposes. The more common breeds are Poland-China, Duroc-Jersey, and Chester-White.

4. Horses and Mules. This region is one of the few in the United States which has experienced an increase in draft horses over the past 15 years. And this increase is an indicator of progress in agriculture. The agricultural machinery that can be used in this mountainous area is largely horse drawn and an increase in horses implies employment of more machinery.

Horses have not always been the chief beast of burden. For many years after this area was first settled horses were used for riding and for pulling wagons and carriages. Oxen were more practical to use in the tedious plowing of newly cleared land because of their tremendous strength and slow gait. In later years as stumps and roots in the cleared fields rotted away and as the ground became easier to work, horses came to be used both in the field and as a
medium of transportation. By the early part of the present century the horse had almost completely replaced the oxen as the beast of burden on the region's farms. In the 1920's the auto replaced the horse as the chief means of conveyance and as a result horses declined in number for a few years. In 1920 there were 6072 horses in the two county area, but by 1935 this number had dropped to 3840. Since that time the number has increased steadily with 5363 reported in 1950. These are almost altogether draft animals.

Even though the horse forms the primary source of farm labor in this region, only about two-thirds of all farms report horses, and the average for the entire region is slightly less than one to a farm. Most very small farms (less than 20 acres) cannot afford to maintain a horse throughout the year and find it more practical to rent them whenever needed for spring plowing and for other odd jobs. Neighboring farmers frequently trade horses for spring plowing, and not infrequently small operators exchange their own labor for the use of a horse in the planting season. Except for plowing one horse is all that is normally needed on the small farm and often one horse will do quite well for two farms.

Many of the larger farms use a considerable amount of horse drawn equipment including discs, grain drills, corn planters, fertilizer drills, mowing machines, rakes, tedders, reapers, and potato diggers. An increase in horses may mean that a small operator has ceased depending upon his neighbor or it may mean that another farmer has increased his equipment. In either case it means progress.
There are few registered horses in this region. These are used primarily for maintenance of male breeding stock. The general run of horses cannot even be classed according to dominant breed. Little thought has been given to horse breeding (with few exceptions), and as a result the average horse is a mixture of many breeds.

Unlike most of the South, this region is not favorably inclined toward the use of mules. There were only 269 in 1950 and indications are that there will be little change by the time of the next census report. It seems to be a matter of preference rather than one of suitability.

The combined value of horses and mules in 1950 amounted to $478,569, a value second only to cattle among the livestock of the area.

5. Poultry. Although there were only 38 poultry specialty farms in 1950, the total value of poultry products sold amounted to $290,442 (Figure 17).

Poultry is an important item on practically all farms with most self sufficient in eggs and meat. Many of the farms also have eggs and chickens for sale at various times throughout the year. It is still quite common to see a country woman walk into a store with a chicken under arm and walk out with a bag of groceries.

Chickens are the dominant farm fowls numbering 152,972 and valued at one dollar each in 1950. The value of eggs sold in 1950 amounted to $191,756. Compared to chickens other poultry of the region is unimportant, consisting of small numbers of turkeys, ducks,
geese, and guineas. On most farms poultry, as swine, live on farm waste. Only on the poultry specialty farms is concentrated feed provided throughout the year.

The representative poultry specialty farm is not a large operation. Many are very small farms, not suited to cattle or crop specialization, which have developed with the aid of government agricultural specialists. The average flock on such a farm will range between 400 and 500 fowls. There are, however, a number of large poultry farms with flocks numbering well into the thousands and specializing in one particular aspect of the industry. Some are brood farms featuring the sale of baby chicks; in other cases egg production is the primary goal; and in still others the operation is directed toward the sale of dressed chickens and fryers.

E. The Agricultural Prospect

"Mountain life is, par excellence, a rude life, one in which there is little escape from the forces of nature." This statement by Raoul Blanchard is particularly applicable to agriculture. Mountain farmers in competition with those of valleys and plains have numerous disadvantages: The extensive use of machinery is generally impractical if not impossible. Even without machinery only a very small percent of the land can be cultivated because of excessively steep slopes. Climatic conditions are generally more severe in mountains, and the phenomena of hydrology causes frequent floods and oc-

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62 Raoul Blanchard, Lectures on the Human Geography of Mountains, delivered at Clark University, October, 1927.
casional land slides. Removal of a forest on a plain does little but add to the amount of land that is available for cultivation, but removal of a forest from a mountain slope may cause torrents of water that would have otherwise been absorbed to sweep destructively downward into the narrow valleys. A mountain farmer must be constantly aware of the delicate balance that exists in nature. To forget this for a single season can mean not only loss of a crop but also the destruction of the capability of the land for many years to come. The key to successful agriculture in a mountain region revolves around the basic understanding of the problems presented by the physical landscape and an awareness of the capabilities of the land. With a knowledge of the problems confronting him and with an appreciation of the possibilities offered by the land, the mountain farmer is then ready to capitalize on whatever advantages accrue from his particular mountain setting - for there are advantages as well as disadvantages. This is the situation of the New-Watauga farmer of today.

Changes in agriculture in this region over the past three decades have been tremendous, representing, for the most part, shifts toward commercial production of many different products. Changes in the immediate future are likely to take place more slowly and, providing farm prices remain near present levels, will chiefly represent an adjustment toward bringing production more in line with the capabilities of the land. Although crop acreages have declined steadily over the past 30 years, according to farm experts close to the problem, there is still too much land cropped from year to year. Future
prospects appear best for an animal economy.

The success or failure of any regional activity is dependent upon the comparative advantages or disadvantages of that region as against other regions. The animal economy of the New-Watauga region is in a good comparative position. The slopes, while too steep for extensive cropping are generally suitable for pasturing, and physical conditions favor the development of better grasslands than are found over much of the South and, on the whole, healthier and more productive cattle. The market position for meat and dairy products, as mentioned earlier in this chapter, is ideal. The South is undergoing a more rapid industrialization and urbanization than the rest of the nation and southern meat and dairy output is lagging far behind the demand. It is unlikely that the South will be able to meet this demand for many years to come, so that a ready market seems assured for some time for producers and prospective producers. Of the various livestock enterprises dairying appears to be in the best comparative position for increased future development. There is a marked dairy products deficiency throughout much of the South, and fresh milk, in particular, cannot easily be brought in from the areas of surplus production in the northern dairy region. Physical conditions also favor dairying as pasture grasses remain green and succulent over a large part of the year. A major need for both dairy and beef production is the use of more concentrated feeds. The greater part of these would have to be purchased from outside this region. Production of more corn for silage and stover could help to relieve the
winter deficiency that has developed in recent years. The increased production of alfalfa in recent years is a move in the right direction.

The possibilities of the New-Watauga region in crop production are far poorer than in livestock, but the circumstance of location and cool upland climate offers certain advantages. In practically all cases general crop production must focus on the deep South market. In this connection, production of potatoes, cabbage, and beans should continue near present levels with yearly fluctuations governed by demand. Tobacco should maintain its position as the most important cash crop but other special crops also offer good cash possibilities. Production of aromatic or Latakia tobaccos is a good possibility. Others include the production of seed potatoes for southern distribution and a possible increase in certain fruit specialties. The crops that are likely to develop in the future are those very intensive types which, though very demanding of hand labor, give high returns per unit of land in production.

1. Land Use Planning in the New-Watauga Region. Farmers in the New-Watauga region are becoming increasingly aware of the benefits that may be derived from better land use. A number of groups are helping to promote this awareness. County agricultural agents are constantly at work planning farm programs for individual farmers; vocational agriculture teachers are on the job throughout the year with students, promoting better farm practices; soil conservation agents are forever striving toward a more conservative use of the land which, in most cases, means an increase in productivity over the
years; and local farm groups are assisting in various ways.

While it is not practical or necessary to examine in detail the planning program of each of the various groups, a look at one should provide some insight to the possibilities offered through an expertly planned farm program. A good example of the work that is being done to promote better land use is that of the Soil Conservation Service. At the request of the farmer an aerial photograph of his farm is blown up to page size and the farm land is carefully mapped according to its capabilities. Land capability is determined through consideration of such things as slope, stage of erosion, soil properties, vegetation cover, and drainage. Present land use is carefully studied and a program for the future is drawn up directed toward the most conservative use and which, at the same time, will improve the income possibilities of the individual farmer. The planners realize that the average farmer is low on capital, and any program involving drastic changes is planned for completion over several years so that the costs involved are paid as the plan is carried out and providing, meanwhile, an adequate income through the period of transition.

Representative of the programs planned by the Soil Conservation Service is that for the Albert E. Smith farm near Sherwood, North Carolina. This 41 acre farm, while slightly smaller than the average for the region, is representative in terms of land capability. Most of the farm is in steep slope and there is only a small amount of cultivated land. The following program was planned by the Soil Conser-
Farm Plan for Albert E. Smith, Vilas, N. C.

<table>
<thead>
<tr>
<th>Crops Grown</th>
<th>Before Plan</th>
<th>Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Production</td>
</tr>
<tr>
<td>Corn (silage)</td>
<td>2</td>
<td>30 tons</td>
</tr>
<tr>
<td>Tobacco</td>
<td>0.9</td>
<td>1600 lbs.</td>
</tr>
<tr>
<td>Small grains</td>
<td>2</td>
<td>20 bu.</td>
</tr>
<tr>
<td>Orchard grass and red clover</td>
<td>1</td>
<td>2 tons</td>
</tr>
<tr>
<td>Meadow</td>
<td>2.5</td>
<td>5 tons</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Before Plan</th>
<th>Planned</th>
<th>Planned Feed Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn in bu.</td>
<td>Hay in tons</td>
<td></td>
</tr>
<tr>
<td>Horses and mules</td>
<td>1</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Dairy cows</td>
<td>12</td>
<td>12</td>
<td>240</td>
</tr>
<tr>
<td>Young cattle</td>
<td>2</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Poultry</td>
<td>25</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>Swine</td>
<td>1</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>319 bu.</td>
<td>23 tons</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Before Plan</th>
<th>After Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivated</td>
<td>6 acres</td>
<td>5 acres</td>
</tr>
<tr>
<td>Permanent hay</td>
<td>2.5 &quot;</td>
<td>3.5 &quot;</td>
</tr>
<tr>
<td>Pasture</td>
<td>22 &quot;</td>
<td>31 &quot;</td>
</tr>
<tr>
<td>Grazed woods</td>
<td>3 &quot;</td>
<td>1 &quot;</td>
</tr>
<tr>
<td>Woodland</td>
<td>2 &quot;</td>
<td>1 &quot;</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>.5 &quot;</td>
<td>.5 &quot;</td>
</tr>
</tbody>
</table>

<p>| Practices No. Field Work Schedule (year) Establishment of Practices |
|-----------------|-----------------|-----------------|------------------------------------------------|
| Perennials      |                 |                 |                                               |
| Alfalfa         | 2               | 1 ac.           | 1950 Prepare a good shallow seed bed and seed to 25 pounds alfalfa and 4 pounds ladino clover. Use double the amount of inoculation recommended. |</p>
<table>
<thead>
<tr>
<th>Practices</th>
<th>Field No.</th>
<th>Work Unit</th>
<th>Schedule (year)</th>
<th>Establishment of Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover cropping</td>
<td>2-A</td>
<td>2 ac.</td>
<td>1950</td>
<td>This field will be used for silage corn each year, followed by a cover crop of rye and an application of manure to be turned.</td>
</tr>
<tr>
<td>Strip rotation</td>
<td>2</td>
<td>3 ac.</td>
<td>1951</td>
<td>Establish and follow a three year contour strip rotation of tobacco; rye, followed by red clover and orchard grass; and red clover and orchard grass.</td>
</tr>
<tr>
<td>Meadow or pasture</td>
<td>3</td>
<td>2.5 ac.</td>
<td>1952</td>
<td>Prepare a good shallow seed bed and seed to 8-10 pounds red clover, 6-8 pounds orchard grass, and 1-2 pounds ladino clover for pasture or hay.</td>
</tr>
<tr>
<td>Pasture seeding</td>
<td>1-A</td>
<td>3 ac.</td>
<td>1950</td>
<td>Prepare a good shallow seed bed and seed to 10 pounds orchard grass and 2 pounds ladino clover.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3 ac.</td>
<td>1951</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3 ac.</td>
<td>1952</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3 ac.</td>
<td>1953</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3 ac.</td>
<td>1954</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3 ac.</td>
<td>1955</td>
<td></td>
</tr>
<tr>
<td>Pasture improvement</td>
<td>1</td>
<td>4 ac.</td>
<td>1950</td>
<td>Treat according to recommendations of soil test analysis.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5 ac.</td>
<td>1951</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3.5 ac.</td>
<td>1952</td>
<td></td>
</tr>
</tbody>
</table>
Figure 23. Farm plan map of Albert E. Smith farm.
CHAPTER V
COMMUNICATIONS AND TRADE

Of all the factors responsible for the transformation that has taken place in land-use in the New-Watauga region since 1920, the most important, by far, has been the improvement in communication facilities. For many years preceding the highway development of the 1920's many people of the region were aware of the possible benefits to be derived through access to the lowlands. Representatives from the mountain districts to the state legislature for more than a generation had agitated for state aid in road and railroad development, and writers in various fields pleaded the mountain cause, emphasizing the possible benefits, not only to the mountain people, but to the state as a whole. The highway development, when it came, justified the faith of those who had worked so hard for better communication facilities. Agriculture changed almost at once from a strictly self-sustaining type to one producing many commercial crops; tourism expanded from a small hotel business concentrated in one or two centers to a region-wide pursuit; and trade, both internal and with areas outside the region, increased by many times.

A. The Evolution of Transportation Facilities.

The first trails winding through the New-Watauga region were made by buffalo (bison). These animals in their migrations for food sought the lowest and most easily accessible gaps. The first Indians into the area followed the buffalo trails, and even today most of the
through roads serving the New-Watauga follow courses established by these animals.

By the time the first white men penetrated this region it was criss-crossed by Indian trails, though never permanently occupied by any Indian group. The first wagon road was that made by Daniel Boone and his followers, connecting the Carolina Piedmont with eastern Tennessee and Kentucky. This wagon trail, established in 1778, followed the Yadkin River to a point near its head, crossing into the valley of the upper New River north of Blowing Rock, and thence westward to the base of the Rich Mountains near Boone. From this point the trail skirted the lower western slopes of the Rich group northwestward to enter Tennessee through the State Line Gap at the northwest boundary of Watauga County. The Boone Trail was an extremely rugged wagon road and it is likely that many of the early New-Watauga settlers were forced to stop because of breakdowns. After the establishment of the Boone Trail tributary roads branched out from it in all directions and soon thereafter others penetrated the area from the north, east, and west, following the various wind and water gaps through the surrounding mountains.

In the early part of the 19th century the people of the fertile lowlands of the Piedmont east of the New-Watauga and of the Great Valley to the west, recognizing the material benefits to be derived from better communications, rapidly advanced their road building programs until they were well supplied with good wagon and stage roads. This was followed later in the century by railroad construction. In the
more mountainous areas a different situation existed. The commercial benefits to be derived through improved communications were of smaller magnitude; road construction was much more difficult and expensive; and the funds necessary for their construction were not available in the region. The result was that the roads were not built and the region began its period of isolation which lasted for almost a century.

Throughout the latter half of the 19th century the most important political issue of interest to this region was transportation development. Until the 1920's the two counties of this area, along with Allegheny, constituted the so-called Lost Provinces of the state. Though politically a part of North Carolina, economically they were more closely aligned with Tennessee and Virginia. The roads to the west were bad but to the east they were worse.

From the Civil War to about 1920 most people believed that the solution to the transportation problem was offered by the railroad. Beginning as early as 1852 the North Carolina legislature built railroad after railroad - on paper. Railroads were proposed entering the region from almost every main junction on the Piedmont. Most of the laws passed by the legislature included every thing except where, when, and how the proposed lines were to start, with the result that none of them was ever begun. Toll turnpikes were constructed as early as the Civil War, but these were generally poorly graded and did little to remove the shackles of isolation. As late as 1914 Arthur expressed the possibilities thought to be offered by railroads as well as proposing a means by which such roads could be constructed. He states
that: "If convicts were put to work grading railroads west of the
Blue Ridge, it would not be long before every county west of the Blue
Ridge would be adequately served with an outlet for their crops, lum-
ber, and minerals, while new health and pleasure resorts would be
opened up for summer tourists and health seekers."63

The first railroad into the area came not from the east but from
the west, tying the region even more closely to Tennessee and Virginia.
It was a narrow gauge road constructed by the Damascus Lumber Company
of Damascus, Virginia. The company previously had built a line to
Laurel Bloomery, Tennessee and this was extended to Hemlock in the ex-
treme western part of Ashe County in 1914. In 1915 a standard gauge
branch of the Norfolk and Western was constructed between Bristol,
Virginia and West Jefferson. Two years later this was extended to
Elkland, a village near the Ashe and Watauga boundary. Plans for that
time called for a further extension to the town of Boone. This pro-
posal was dropped when Watauga County voted to float a $200,000 bond
issue to join Boone with the East Tennessee and Western North Carolina
line operating between Cranberry in Avery County and Johnson City,
Tennessee.

The railroads entering the region from the west failed to
achieve the importance as a general carrier envisioned for them by
the early railroad proponents. Their value to the region must be

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63 J. P. Arthur, History of Western North Carolina, Raleigh,
1914, p. 489.
measured in terms of lumber, for while a great variety of goods were transported, ranging from autos to kitchen spices, compared to lumber they were of little consequence. (So regular were the coffee shipments over the E. T. & W. N. C. line that it was often called the Arbuckle Line.) Surprisingly, the effect of railroads on agriculture was very slight. There are several possible reasons for this. When the railroads began there were few, if any, produce dealers within the entire province organized for buying locally and selling and distributing at the valley terminals. Moreover, the lines extended westward in all cases to cities in the Great Valley of Tennessee and Virginia, an area generally self-sufficient in products of the New-Watauga. The open markets for agricultural products of this area are largely located southeast of the region and no railroads came in from this direction. In order to reach the better markets of the South over the existing facilities meant a long haul with resultant high transportation costs, and a good possibility that spoilage would occur.

With the final exhaustion of the major stands of virgin timber most of the railroads were doomed to fail. Highways are more practical in this mountainous country, and highway carriers coming in the 1920's soon captured most of the freight entering and leaving the region as well as dominating passenger traffic. Even in lumber trucks were soon competing with railroads because of their greater mobility and the fact that lumber was becoming progressively farther removed from railroad terminals. The East Tennessee and Western North Carolina railroad operated at a loss for a number of years, and at various
times asked permission of the Interstate Commerce Commission to discontinue the line. In 1940, after severe floods washed out many large fills and buckled miles of track, the line was discontinued between Cranberry and Boone. The Elkland extension of the N & W ceased operations in 1941 leaving, as the only railroad in the entire area, the N & W branch between West Jefferson and Bristol, Virginia. There is one arrival and departure daily. Lumber is still the principal item of freight carried on this remaining line. However, the recent industrial growth in Ashe County has brought about some increase in railroad freight and further increase is expected.

The real opening of the New-Watauga region from the standpoint of transportation came with the state highway expansion which began about 1920. The first North Carolina State Highway Commission was established in 1915 and this body laid the basic groundwork for the road building program which was to follow. The active work in road building began after the passage of the Doughton-Connor-Bowie Act of the General Assembly in 1919. This Act, providing the legal foundation for the road building program, states that:

"The general purpose of the Act are for the state to lay out, take over, establish and construct and assume control of approximately 5,500 miles of hard surfaced roads and other dependable highways running to all county seats, and to all principal towns, state parks, and state institutions, and linking up with state highways of adjoining states and with national highways into national forest reserves by the most practical routes, with special view of development of agriculture, commercial and natural resources of the state, and for the further purpose of permitting the state to assume control of the state highways, repair, construct and reconstruct and maintain said highways at the expense of the entire state, and to relieve
the counties and cities and towns of the state of this burden. The funds for highway development and maintenance are derived from auto and drivers' license fees, gas taxes, the issuance of bonds, and from the state's share of federal funds.

The building of highways and the coming of automobiles largely solved the problem of transportation. The first hard surfaced road connecting the county seats of Watauga and Ashe was completed by 1925 and soon thereafter paved highways were constructed to give the region accessibility to all surrounding lowlands as well as easy movement within the region. Road building has progressed steadily throughout the past 30 years and today the region is served by more than 250 miles of hard surfaced highways plus many more miles of gravel and unsurfaced roads. There are approximately 150 miles of United States and North Carolina highways and another 60 miles of paved connecting roads. Approximately 40 miles of the Blue Ridge Parkway has been completed and another 15 miles remains to be constructed (Figure 24).

Since 1920 this region has advanced from one essentially without any all weather roads to one in which almost all towns and villages are on paved roads, and the average farm is within one mile of a paved highway.

The overall road pattern in the New-Watauga region follows closely the alignment of landforms. Roads follow the valleys in most

64. S. R. Hobbs, Jr., North Carolina, Economic and Social, Chapel Hill, 1930, p. 164.
cases, crossing occasionally from one valley to the next through gaps in the separating mountains. The general pattern that results varies little from the dendritic formation of the river systems, with the main roads following the broader, more open valleys, and the smaller secondary roads branching out from the main roads upward into the tributary valleys. The major focal point for state and national highways is the town of Boone, the roads converging on the town from the four cardinal directions. The West Jefferson-Jefferson center in Ashe County, while served only to the north and south by major highways, is well supplied with paved farm to market roads.

One of the more important links in the New-Watauga road system is that of the Blue Ridge Parkway. Although this road is closed to commercial carriers of all sorts it is of great economic importance to this region, bringing in thousands of tourists each year. The Parkway is probably the most scenic route in eastern America and perhaps in the entire continent. Throughout its extent the right of way is beautifully landscaped so that not a single road bank is left to mar the beauty of the road. Landscaping, in most cases, is directed toward removal of the ugliness produced by man. There are no billboards, no neon signs, no commercial enterprises of any sort except those approved by the Parkway Commission for service of those who travel. This road is not conceived as a shortcut to any location to the north or south. It winds and curves to follow the crest of the ridge and to provide scenic vistas of many varieties. Every bend of the road is an adventure. Around one a sheer rock face dotted with clusters of
Figure 24. Road pattern in New-Watauga Region.
Figure 25. Blue Ridge Parkway near Thompkins Knob.
rhododendron or azalea may await; another may swing to the upper edge of the steep escarpment overlooking the Piedmont; and still another may provide a panoramic view of the waves of mountains to the west. There is no duplication of scenery here and no parallel anywhere in the world.

The most traveled routes are those leading to the east. The heaviest traffic is on National Highway 421 between Boone and North Wilkesboro, North Carolina; National Highway 321 between Boone and Lenoir, North Carolina; and State Highway 16 between West Jefferson and North Wilkesboro. Traffic is also quite heavy on route 421 between Boone and Mountain City, Tennessee, and on National Highway 221 between West Jefferson and Sparta, North Carolina. Travel within the region is heaviest between Boone and West Jefferson and Boone and Blowing Rock.

B. Commercial Carriers

Commercial carriers serving this region include two bus companies and a number of trucking concerns. There are 11 bus arrivals to and departures from Boone each day and five to and from West Jefferson. Boone is served by five buses coming from and leaving for Charlotte each day, two to and from Winston-Salem, two to and from Johnson City, Tennessee, and two to and from Bristol, Virginia. West Jefferson has one arrival from and departure to Winston-Salem, two to and from Johnson City, Tennessee, and two to and from Independence, Virginia and points north. The Norfolk and Western railroad, which has been discussed at some length earlier in this chapter, provides
West Jefferson with both passenger and freight service. There is one arrival from and departure to Bristol, Virginia daily.

Although no commercial trucking company maintains offices or warehouses in this region, pick up and delivery service is provided by a number of concerns with warehouses in the Piedmont. Three of these, the Piedmont-Mountain Company, Smith Transfer Company, and East Tennessee and Western North Carolina Transfer Company, provide daily service to Boone and West Jefferson. According to business representatives the area is adequately served by the operating companies.

The commercial carriers operating in this area carry a wide variety of goods, particularly items entering retail trade. Supplementing the commercial carriers are numerous company owned trucks. These include those owned by chain stores, bakeries, dairy companies, and many other merchandise dealers. The agricultural products of the region are transported by carriers owned by wholesale produce dealers, free lance truckers who buy here and sell wherever the market appears best, and by farmers who own trucks and prefer to avoid the wholesale dealers profits. Commercial freight rates are slightly higher per freight mile than in the lowlands due to lower volume of goods handled and the more rugged terrain over which the carriers operate.

Other means of communication include daily newspapers from Winston-Salem, Charlotte, Asheville, and Greensboro, North Carolina, and Johnson City, Tennessee. Two weekly newspapers are published within the region, one at Boone and the other at West Jefferson.
Radios are found in practically all homes and television sets are also quite numerous. Telephones are available to most town dwellers but are found on less than 300 farms.

C. Trade and Commerce

Development in transportation facilities within the New-Watauga region has been accompanied by growth of local wholesale and retail trade. The larger towns have expanded from very limited retail centers, serving relatively few people beyond the town limits, to become shopping centers for the entire region. The effect of this has been the disappearance of many of the small country stores with the former country store trade going into the larger towns. Also, as the availability of goods has increased, the wants of the average family have multiplied. Adding to the retail sales are numerous items formerly produced in the self-sufficing agricultural system. Only a few farmers now bother to mill their wheat for home needs in flour. Oleo and creamery butter have supplanted the home churned product on many farms and practically all households use manufactured vegetable shortening rather than the home rendered pork lard which dominated earlier. Homemade clothing, though still important, is greatly supplemented by ready to wear items, and homemade farm machinery has been replaced by manufactured products.

Although the population of the region has only increased by one-fourth since 1920, retail trade has increased by many times. Stores are more numerous and the volume of trade by the individual store has increased materially. The most outstanding increase has
taken place since 1940. Trade for the two county area in that year amounted to $3,039,000.\textsuperscript{65} Retail sales in the fiscal year ending in 1954 for Watauga County alone amounted to $7,286,000.\textsuperscript{66} Sales tax receipts indicate that Ashe County sales probably equal those of Watauga, giving the region as a whole a total of nearly $15,000,000, or approximately five times that of 1940. Per capita sales for the region are still far below the state average and less than one-half the national average.

The more important shopping centers are Boone, West Jefferson, and Blowing Rock. The greater part of all items purchased by New-Watauga dwellers are purchased locally, with the rest obtained from mail order houses or from the larger cities near here. From time to time during the year local shoppers may journey to the Great Valley cities of Johnson City and Bristol or to the Piedmont cities of Charlotte, Winston-Salem, and Greensboro in order to buy items not found locally or because they desire a greater variety of goods from which to select. The most important trade center within the New-Watauga region is the town of Boone. Its hinterland extends beyond the physiographic limits of the New-Watauga realm both to the south and west, with shoppers from Avery County, North Carolina and Johnson County, Tennessee using facilities offered by the town. The trade boundaries between Boone and West Jefferson are largely determined by the poli-

\begin{footnotes}
\textsuperscript{65} Census of Business, Vol. 1, Retail Trade, Part 3, United States Department of Commerce, Bureau of the Census, Washington, 1940.

\textsuperscript{66} Watauga Democrat, Boone, North Carolina, August 5, 1954, p. 1.
\end{footnotes}
tical boundaries, though in all cases there is overlapping. West Jefferson dominates the trade of Ashe County but in very few instances does it attract buyers from outside the confines of the county. Blowing Rock has a much smaller trade area than either of the other two towns and its activity is very seasonal in nature, the summer season being the more important.

The towns of the New-Watauga region serve as markets for quite a number of products produced locally, and in a few cases they attract products from outside the New-Watauga realm. The most important product marketed locally is tobacco. The Boone and West Jefferson markets rank second and third to Asheville in receipts from the sale of burley tobacco. The seven warehouses located in the two towns handled more than four million pounds of tobacco in 1952, a little more than half of which was produced within the region. The rest came from surrounding counties of Virginia and Tennessee as well as North Carolina. Although the major part of all farm vegetables are sold locally to produce dealers, practically all are loaded directly on trucks and shipped to warehouses in the Piedmont of North and South Carolina, and from there all over the deep South. This is particularly true of potatoes and cabbage. The most frequent destination for vegetables leaving this area is the Charlotte-Gastonia district of North Carolina. Apples are marketed in most cases directly by orchard owners with many loads moving as far south as Jacksonville, Florida. Dairy products and beef are sold largely in the North Carolina Piedmont as well as providing local needs. Lumber is shipped both to the Piedmont and to the Great
Valley of Tennessee and Virginia. Large quantities of hardwood lumber is shipped to the furniture manufacturing towns of the North Carolina Piedmont, particularly the nearby towns of Lenoir and North Wilkesboro. The chief market towns in the Great Valley are Damascus, Abingdon, and Bristol, Virginia and Elizabethton and Johnson City, Tennessee.
A. **Industrial Development**

Of all the areas in the southeastern part of the United States, the New-Watauga and associated mountain areas are among those least likely to ever become highly industrialized. Advantages for industrial development are generally overbalanced by disadvantages. Despite the great progress made in highway development this region is still relatively inaccessible when compared with surrounding lowland areas. It is not served by any main railroad line (the N & W line to West Jefferson is a branch line serving only a limited portion of the region, though it is of some value as an industrial locational factor). Highway carriers are limited in their capacity due to steep grades and crooked roads, with the result that transfer costs are higher than in lowland areas. There is no coal here and few other economic minerals. There has been essentially no hydroelectric development because the potential market of this region is too small to attract capital in this direction and the multiple service dams of the type constructed by the government throughout the Tennessee Valley drainage area are hardly practical so near the headwaters of the major streams originating here. (There was some speculation in 1952 that the TVA was planning to construct a dam on the Watauga River in Watauga County. Apparently the political influence of the area by itself is not great enough to push through such a proposal,
and unlike the Rocky Mountain region or other areas with concerted interests, there is no political bloc in the Southern Appalachians which votes as a unit.) Combined with the physical handicaps working against industrial development in this region is the lack of local capital capable of establishing large industrial plants.

Although obstacles to industrial development in this region are great, there are some attractions for industry, and such industrial growth that has taken place has capitalized on these. There is an ever growing labor pool of intelligent and energetic people. This is one of the few areas in the country where the birth rate exceeds the death rate by enough to insure a constantly increasing population. Moreover, the average man or woman in this area is quite adept at hand labor of any sort and can easily be trained to operate complex industrial equipment. Also, because of the lack of extensive industrial development in this area, labor costs are lower than in areas where labor is unionized and where competition for labor frequently exists. In addition to the human element, there are a number of natural resources favoring industrial development. Though over exploited in the past, a fairly large reserve of timber still exists, particularly hardwoods in demand for flooring and furniture making. There are also a number of agricultural products that may be profitably processed in this area.

The industrial development that has taken place to date has utilized the natural resources available or capitalized upon the available labor pool, and any further development that is to be suc-
cessful must emphasize these same points. Industries in which skilled or easily trained labor forms the greatest cost in putting a product on the market are best suited to this region. Those requiring bulky raw materials to be shipped in or those whose finished products are bulky and expensive to ship are not likely to be successful. On the other hand, industries whose finished products are easy to ship, requiring a minimum of bulky raw materials to be shipped in, and which have a high value per unit weight should prove quite successful. Power resources are in short supply in the New-Watauga area. There is no coal, petroleum, or natural gas, and while adequate supplies of electricity are available, the cost of securing such power is higher than in many of the other regions of the South.

1. Woodworking Industries. The importance of sawmilling in the economy of this region has already been discussed at some length. If the sawmill is to be considered as an industrial plant, then sawmilling is one of the most important industrial activities. In 1947 there were 157 sawmills in the two county area, which produced 16,611,000 board feet of rough lumber with an estimated value of $1,000,000.67

Except for production of rough lumber little progress was made in wood products manufacture until after 1930. A wood novelty shop was established in Boone in 1928, using chiefly dogwood and rhododen-

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67 Letter from James W. Cruikshank, Chief, Division of Forest Economics, United States Department of Agriculture, Forest Service, Southeastern Forest Experiment Station, Asheville, North Carolina, August 15, 1952.
dron. The shop was successful for a few years but could not stand the depression of the 1930's. The plant failed in 1935. At the height of its operation the novelty shop employed 15 men and women. A tobacco pipe factory occupied the old novelty shop in 1940 utilizing the rhododendron and laurel burls available in this area. The operation was strictly a wartime venture to take advantage of the shortage of English briar caused by the war. All activities ceased in 1949 when the preferred briar became available again.

The oldest of the existing woodworking industries in the New-Watauga region is the Parker Tie Company, established in 1934. The company manufactures a variety of building supplies and planed products, the more important of which are dressed lumber, doors, windows, and interior trim. All raw materials except glass are obtained locally. Finished products are shipped to all parts of North Carolina and surrounding states. However, the larger part of all products is marketed within a radius of 100 miles. Raw materials are brought in by truck and finished products are shipped by both truck and railroad. The company employs an average of 50 people, all but three of whom are men. The value of finished products is estimated to be $300,000 per year.

The oldest of two hardwood flooring plants was established in 1935. The second was established in 1942. These two plants, both of which are located in West Jefferson, produce an average of 6,000,000 board feet of flooring annually with an estimated value of $800,000. More than 100 men are employed full time in the two factories. Both
companies specialize in oak flooring. Raw materials consisting largely of rough lumber is obtained within a radius of 75 miles and finished flooring is shipped throughout the southeastern United States. All rough lumber is trucked to the factories and the finished products are shipped to the various markets by both truck and rail.

Although there are a number of cabinet makers active in the region, there is only one true furniture factory, the Phenix Chair Company in West Jefferson. The Phenix company, which now employs 75 full time factory workers and 12 salesmen, started in 1936 as a one man operation. In 1954 it ranks as one of the country's most important manufacturers of low priced cane bottomed chairs. It also produces quality chairs for bedroom and dining room assemblies as well as dinette tables. Value of products averages about $275,000 annually. Raw materials, chiefly rough maple lumber of good quality, are obtained locally. Finished products are shipped by company trucks to markets all over the eastern states.

The L. H. Weibel Company, located at Smethwood in Ashe County, specializes in the manufacture of locust pins for telephone insulator mounts. The plant, established in 1940, employs approximately 40 men. Locust timber is obtained locally and trucked to the factory site. Finished products are bagged and shipped by truck and rail throughout the southeastern states.

In addition to these larger factories, there are a number of smaller shops manufacturing wood products. These include cabinet makers workshops, small planing and finishing mills, and other similar
operations. The total value of manufactured wood products, exclusive of rough lumber, is estimated to exceed $1,500,000.

The chief locational factor accounting for the woodworking industries is the abundance of timber still available. Also important are labor supply and transportation facilities.

2. Food Processing Industries.

Grain Milling. Among the oldest industries in the New-Watauga area were grist mills. Practically all the early mills were operated through the use of direct water power and each mill served a relatively small area. Returns for the operation were secured by taking a small portion of all grain brought in for milling. Very few milled products were sold with most of the grain collected used on the farm of the individual miller.

Though hardly thought of in the same sense, many of the early millers combined grain milling and sawmilling, the same water wheel serving as the source of power for both operations. A few sawmills and many grain mills are still powered by the water wheel, but the combined operation is no longer to be found. The source of power for most sawmills and a large part of the grain mills are internal combustion motors.

Milling operations today, as in the past, generally employs a single person. There are three commercial mills in the area which combine manufacturing and retailing, but even these are very small. The rear portion of a single building houses the milling facilities, while the front is used to display the products manufactured along
with other commercial feed bought and sold by the operators.

Although local grain milling operations employ relatively few people and are of only minor commercial importance, they are of real value as an element in subsistence. For while very few farmers still grind their wheat for home needs in flour, many use the mills to supply their needs in corn meal and some produce their own chopped animal feed.

Dairy Products. The second oldest food processing plants were the cheese factories. About the time of the first World War the United States government sent specialists into parts of the mountain South to promote cheese making. Individual communities were encouraged to build cooperative factories through sale of local bonds. Farmers, hoping to benefit by sale of surplus milk, owned most of the stock. Between 1914 and 1918 about 15 factories were brought into operation with the first factory failing before the last was brought into production. Each factory employed two people, a cheese maker and a manager whose job was to get rid of the cheese at a profit. Farmers of each community brought their surplus milk directly to the factory.

Most of these locally owned cheese factories failed within three years. Only one lasted for more than ten years. It was managed by a very successful farmer and the cheese was largely derived from the milk produced on the family farm. It failed in 1933.

There are a number of reasons for the failure of the early cheese factories. They had no established milk routes and consequently no reliable source of milk. Marketing was difficult due to poor and
costly transportation. Products produced locally were virtually unknown and they had to compete with well established brands. Also, many of the local managers were neither trained nor experienced sales managers, with the result that selling operations were generally inefficient.

The first successful cheese factory was established in 1930. This is the branch plant of the Kraft Cheese Company at West Jefferson. Few of the handicaps faced by the earlier local companies are applicable to the Kraft plant. It was established after good highways had penetrated the region allowing easier and cheaper marketing, and, at the same time, broadening the area from which milk could be collected. Plant management and marketing were in the hands of well trained and thoroughly experienced men, and the Kraft name on the product gave access to all markets.

The Kraft plant today employs 25 men and women. Raw milk is collected from Ashe, Watauga, and Allegheny farms. The cheese produced is marketed throughout the southeastern states using company owned trucks and the available railroad facilities.

In addition to the Kraft plant there are two other dairy processing plants owned by the Yadkin Valley Dairy Corporation. One is located at Sugar Grove in Watauga County and the other at Jefferson in Ashe County. Both plants were established in 1939 by the Coble Dairy Corporation of Statesville, North Carolina and were sold to the present owners in 1952. Three people are employed at each plant. Milk is processed and then shipped to the Piedmont town of North
Wilkesboro, North Carolina, for final distribution. All milk is shipped in company-owned refrigerated trucks. An average of about 16,000,000 pounds of milk is bought by the two plants annually. There is a marked seasonal availability of milk. For example, at the Sugar Grove plant more than 1,000,000 pounds per month are obtained in July and August, but during the winter less than 400,000 pounds are available per month. Milk collection is handled by the farmers who pay collectors according to the amount of milk transported.

Canneries. The oldest of two canneries in the region, the Northwest Canning Company, is located at Boone. It was established in 1925 as a farmers' cooperative but was sold in 1928 to the present operators, the Miller family. Originally the plant canned only sauerkraut and sauerkraut juice. These are still the more important products but blackberries are now canned in large quantities. Yearly output averages about 30,000 cases of sauerkraut and juice and 4,000 cases of blackberries.

The Northwest Canning Company provides a valuable service to farmers of the region. Cabbage overripenes rather quickly and most of the 1500 tons purchased annually consists of local cabbage too ripe to be marketed fresh. Such cabbage is obtained at prices somewhat lower than the prevailing market price.

The Northwest Canning Company employs 15 people about six months of the year. Operations begin around the first of July and end in February. All products are sold through brokers largely in North Carolina and surrounding states, and are transported to the various
wholesale warehouses by company owned trucks.

The Ashe County Cannery, located near West Jefferson, was established in 1949. The company employs about 15 people during the summer harvest season. Products include green beans and sweet potatoes, both of which are grown locally. The market area extends over North Carolina and surrounding states. Both truck and rail transportation are used in marketing.

The annual value of products for the two companies amounts to about $150,000.

3. Other Industries. The most important industrial development in this region has taken place in the past two years. The three largest factories now in operation have all been built since January of 1953.

Peerless Hosiery. A branch of the Peerless Hosiery Company was established in West Jefferson early in 1953. This plant was established to take advantage of an abundant supply of women labor. A labor survey was made in 1952 by the company and applications were received in order to check on qualifications. The final decision to establish the factory here came after local investors agreed to construct the factory building which is rented to the Peerless Company.

There are 138 women and 12 men employed full time. Raw material, consisting of bulk cotton yarn, is obtained from East Tennessee mills, and finished products, children's and women's anklets, are shipped to Chattanooga, Tennessee, and Forest City, North Carolina, for further processing. All transportation is by commercial trucking companies.
International Resistance Company. The operation of the International Resistance Company's branch plant at Boone began in January 1954. The plant was constructed at a cost of nearly $1,000,000. When the personnel organization is completed the plant is expected to employ 200 people.

Raw materials are brought in from many areas. Neither the raw materials nor the finished products are difficult to ship, so transportation is no problem. While the greater part of the finished products is carried by commercial trucking concerns, many items are shipped by parcel post, or in some cases by airmail. The market for resistors and other products of the local plant is world wide, the more important customers consisting of the major electrical appliance companies.

The major factor responsible for the location of the factory is the intelligent labor supply. Most of the work involved is classed as semi-skilled in type. According to Fred Gragg, personnel manager of the plant, the fact that Watauga County has the highest percentage of college and high school graduates of any county in the state was a determining factor in bringing the plant to Boone. Undoubtedly, the cost of land and the state tax structure were also items considered.

Sprague Electric Company. The largest industrial plant in the two-county area has recently been completed at Warrensville in Ashe County. This is the branch of the Sprague Electric Company, constructed at a cost of $2,500,000. When full operations are under way the plant will employ approximately 250 people. Manufactured products
Figure 26. International Resistance Company plant at Boone.
Figure 27. Sprague Electric Company plant at Warrensville.
will include a variety of electronics equipment with a worldwide market.

Selection of the plant location was made with a great amount of care. An adequate supply of intelligent labor was necessary. The plant had to be near railroad facilities. A large supply of electric power was essential, and a uniform supply of water with a low mineral content was also necessary. A good combination of all these were found at the present site.

Raw materials are largely brought in by rail and finished products are shipped by commercial truck, railroad, parcel post, and air freight.

4. Industrial Summary. By all standards by which it is possible to measure, the New-Watauga region has made a remarkable advance in industrial development. Since 1940 the industrial employment has grown from less than 200 to a total expected to exceed 1200 by the end of 1954. The Ashe County industrial payroll already exceeds $1,000,000 per year, and the Watauga goal of a million is expected to be achieved in 1955.

The chief reason for the remarkable growth of recent years has been the existence of a large labor supply. The industrial expansion of the past few years has hardly made a dent in the local labor pool. More than 2000 applications have been received for the 200 jobs offered by the International Resistance Company, and more than 1500 have applied for the 250 openings at Sprague Electric and applications are still coming in.
B. Mineral Development

There are a number of economic minerals found in the New-Watauga region, few of which are of large extent. Metallic minerals include magnetite and hematite iron ore; a number of copper bearing rocks, notably malachite and chalcopyrite; manganese ore (pyrolusite); and scattered nuggets of silver and gold. Non-metallic minerals include fairly large mica deposits, soapstone, and scattered deposits of asbestos. Small quantities of all the above have been produced commercially at one time or another, but none has ever gained real importance.

The iron deposits are largely located in the North Fork of New River valley. The magnetite deposits were worked as early as 1802 and some activity continued throughout most of the 19th century. There has been no active iron mining reported in the present century.

Copper bearing rocks are found at three localities, Copper Knob, Elk Knob, and Ore Knob, all within the New River basin. Copper mining has been carried on sporadically for more than 100 years, depending upon the price of copper. The largest and richest deposit is at Ore Knob, one vein reported to exceed 100 feet in thickness and some of the ore testing as high as 11 percent copper. The Ore Knob operations have recently been reopened by Ventures Limited, an exploration company. However, large scale operations are not likely because of the limited extent of workable ores.

There are a number of rock quarries worked throughout the region, some operated by the State Highway Department for use in road
building and maintenance, and others producing dimension stone for local construction. Because of the ease with which local dimension stone may be obtained, it competes on equal terms with wood and brick in building construction. For example, all of the Watauge County high school buildings, the Boone Post Office Building, and several of the newer buildings on the Appalachian State Teachers College campus are of stone construction.

The other minerals, particularly soapstone and asbestos, have been mined at various times but total production has always been small. 68

CHAPTER VII

THE TOURIST INDUSTRY

There have been three distinct phases in the development of tourism in the New-Watauga region. The first phase was one of summer home building dating from about 1875; the second phase, starting about 1900, was characterized by hotel building; and the third phase, beginning with the highway development, witnessed the decentralization of tourist facilities with tourist homes and motels springing up throughout the region to serve the increasingly mobile tourist. The three phases of development, rather than representing three beginnings and endings, are accumulative. The hotel did not replace the summer homes and cabins but, instead, represented an increase in facilities to serve those wishing a vacation in the highlands, but who could not or preferred not to own a summer home. The establishment of tourist homes and motels likewise increased the total facilities and expanded the trade over a broader area. To illustrate the overlapping nature of the three phases, there are more summer homes than ever before; hotel facilities are still expanding; and the number of tourist homes and motels is increasing every year.

The first tourist center in this region was Blowing Rock, and today almost all activities of the town are directed toward the tourist trade. Blowing Rock, in the day of the horse drawn vehicle, was the halfway point on a two day trip between the Piedmont and the county seat of Watauga County, the town of Boone. Early travelers
to and from this region either camped here or sought lodging at homes in the Blowing Rock vicinity. The beauty of the surrounding countryside and the comfortably cool summer temperatures began attracting visitors as early as the Civil War and 1875 William Morris, a Blowing Rock resident, established his home as a summer boarding house. The physical attractiveness of the area then got an added boost through the culinary ability of Mrs. Morris, with the result that the Morris Boarding House attained widespread fame. North Carolina Senator M. W. Ransom was induced to visit the Morris establishment in the late 1870's and he was so attracted to the area that he bought a plot of land and built a summer home. This move by the senator was followed by many others, and by the early part of the present century summer homes were scattered throughout the Blowing Rock area.

The hotel phase of the industry began in Blowing Rock about 1900 and provided facilities for a greater number of visitors than offered by boarding houses and summer homes. There were three tourist hotels in Blowing Rock in 1910 capable of caring for more than 100 visitors.

From 1900 to 1925 there was a steady increase in summer homes and hotel facilities. During this time Blowing Rock continued as the region's only true tourist or resort town. Boone, West Jefferson, Jefferson, and certain of the smaller villages offered limited hotel facilities and other lodging but attracted few of the tourist clas-

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sification, and summer home building was confined almost altogether to Blowing Rock. In the first part of the present century summer home development was characterized not only by an increase in number of homes but also by greater splendor in the individual home. In this period a number of mansions were built and large estates acquired. Moses H. Cone, a Baltimore millionaire, acquired more than 3500 acres of land which he beautifully landscaped, and on which he constructed the well known Cone Mansion. (The entire estate was recently willed to the town of Blowing Rock by the widow as a memorial to her husband.) Similarly imposing homes were built by Col. W. W. Stringfellow, Mrs. E. H. Hughes, New York artist Elliot Dangerfield, and many others.

The period since 1925 has been characterized by a tremendous increase in all tourist facilities, and by the spread of the industry from the Blowing Rock nucleus over the entire New-Watauga region. The construction of good highways is responsible, more than anything else, for this expansion and decentralization. The building of paved roads began about 1925 and steady progress has been made since that time. Although hotel facilities have continued to increase throughout this latter period and summer home construction expanded, the outstanding development has taken place in tourist homes and motels. Tourist homes are now found in all the larger towns and villages, along all main roads, and even on many of the small connecting roads. They are most numerous in the eastern part of the region because of the lure of the Blue Ridge and an earlier start in the trade. Motels are concentrated in or near the towns of Boone, Blowing Rock, West Jefferson,
and Jefferson and at crossroads of main highways, particularly where­ever the Blue Ridge Parkway crosses main routes leading into the re­gion from the east.

The construction of summer homes, concentrated earlier in Blowing Rock, has also spread throughout the region. However, the original center is still the most important. The summer homes that are being constructed today differ in many respects from those of the early development. The summer home builders of the earlier period were largely wealthy men and women, and the homes they built were re­markable for their size and splendor. The builders of today are made up of all classes of people and the construction ranges from small one room cabins to very elaborate structures. All, however, have one thing in common - they are practically all of rustic design in keeping with the natural beauty of the forest covered mountains. The early summer homes were located on the more gentle slopes for reasons of accessibility while today's builder apparently seeks the most rugged terrain available. Modern engineering makes possible easy access even under the most extreme conditions. The most desirable lots in Blowing Rock today, for example, are those found on the near vertical slopes of the Johns River valley. The cabins found here provide the same view from a back window that early home builders walked miles to see.

The basis for the present tourist trade is manifold. The most important physical attraction for the tourist is the cool summer cli­mate. There are few locations where the mean temperature for the warmest month exceeds 70 degrees and at the higher elevations the
Figure 28. Summer homes near Blowing Rock.
mean is closer to 65. Even on the calmest days mountain and valley 
breezes provide a cooling circulation of air and on the hottest days 
the temperature drops enough by early evening to assure cool sleeping.

While summer climate is one of the chief attractions for visi-
tors, it is not without shortcomings. The most pronounced of these is 
summer moisture. The New-Watauga region forms a part of one of the 
rainiest areas of the United States and summer is the wettest season.
As stated in the chapter on climate, summer is also the period of 
greatest cloudiness with approximately 50 percent of all days having 
more than eight-tenths cover. Not infrequently mist will hang over 
the mountains for days at a time. There is nothing more lifting to a 
depressed spirit than to ascend a mountain in a bright, clear day when 
the world unfolds her beauty for hundreds of miles, but few things are 
more depressing than to see the prospects for a beautiful day suddenly 
blotted out by waves of clouds descending from mountain summits to 
fill the valleys with gray mist. Dampness hangs from the heavens, 
drips from the trees, fills the houses and even penetrates the spirit 
of a man. Nothing is more welcome after days of this than to see the 
sun breaking through this low hanging cloud, chasing the retreating 
mist slowly up the slopes until the whole landscape is bathed in 
brilliant sunlight. Such are the climatic moods of the Appalachians. 
Perhaps, for many, this is a part of the fascination of the mountains.

The climatic control over tourism here is indicated by the 

nearly complete absence of winter tourists. The season coincides
with warm weather extending from the last of May until the last of September.

Many tourists are more attracted to this region because of the mountain scenery than because of climate, but for most it is a combination of these plus the effect of the efforts of man. The scenic quality of the Southern Appalachians, as a whole, is far less spectacular than the Rockies, the Sierra Nevadas, or even the White Mountains of New England. The mountains here are etched in softer lines and while the scene changes constantly as one moves, the change is usually not abrupt. However, there is some spectacular scenery in this region and it stands out even more because of the moderate nature of the terrain that prevails. The most spectacular scenery is found along the eastern face of the Blue Ridge overlooking the Piedmont. One of the more rugged and more popular portions of the Blue Ridge is Grandfather Mountain. The Grandfather summit, the highest in the Blue Ridge chain, provides a view unsurpassed in eastern North America. A toll road is now available to the top of the mountain and an extension of the Blue Ridge Parkway will soon encircle the summit area. The Grandfather is a massive mountain and a thing of beauty from any angle. Tourist facilities and summer homes are found all around the mountain, and developments in areas many miles away result from the fact that a good view is offered of the mountain. The summer home development near Camp Yonahlossee is based in part upon the good view offered of the Grandfather and smaller surrounding moun-
tains. Hanging Rock and the Crest of the Beech to the west are also popular tourist attractions.

The Blue Ridge near Blowing Rock provides a variety of scenery, which accounts, in part, for the dominance of the town in the tourist trade. The crest of the ridge, throughout the vicinity of the town, forms a steep faced escarpment capped by the famous rock which juts out over the Johns River gorge. The scenery is spectacularly rugged in all directions but west, as the town occupies the crest of a spur which is surrounded by deep coves cut by streams with base levels on the Piedmont. Professional tourism has permeated almost every part of the Blowing Rock area. The rock itself is covered by commercial enterprises and the largest hotel in the entire New-Watauga region sprawls over the highest summit overlooking the town.

North of Blowing Rock tourist developments parallel every main road entering the region, particularly at Deep Gap and Horses Gap where the Blue Ridge Parkway crosses the main highways from the east. The construction of the Parkway has increased tremendously the attractiveness of the Blue Ridge for tourists. Grover Robbins, a leader in the tourist trade of Blowing Rock for many years, estimates that the number of tourists has increased by as much as 20 percent as a result of its construction. The Parkway has made scenes previously available more accessible and has added many more that were previously inaccessible. Every mile along its course is filled with attractions. It has aided greatly the tourist trade.

While the Blue Ridge has dominated the tourist trade from the
beginning, the entire region has made remarkable progress since the coming of good highways and automobiles. The Boone district has grown rapidly over the past few years and now ranks second to Blowing Rock in the industry. Tourist homes are scattered throughout the vicinity of the town, hotel facilities have been greatly expanded, and several motels have been constructed in and around the town. Like Blowing Rock, Boone has benefited from the construction of the Blue Ridge Parkway. Also, the position of Boone as the chief highway terminal within the region has been of considerable value. Tourism is of somewhat less importance in the West Jefferson area. Possibilities for future development, however, are good inasmuch as the scenery near the town is as pleasing as in other areas and the climate is only slightly warmer.

Although the climate and terrain have thus far been emphasized there are many other attractions of the physical landscape. A vegetation cover of great variety mantles the landscape, offering an ever changing pattern of color to the visitor. Forests cover almost 50 percent of the land, the composition varying according to exposure and elevation. Throughout the summer wild flowers such as rhododendron, azalea, dogwood, sourwood, cucumber, and redbud add brilliant color to the woods, and in autumn the frost tints the leaves with a color array almost beyond description.

Another physical attraction for many tourists is water, and while there is little to offer those interested in bathing (mountain streams are generally too cold), there are many good fishing streams. A state operated fish hatchery is located at Linville, just south of the re-
gion, and various civic groups work together to keep the streams well stocked with fish. This area is best known for its trout fishing, the cold, crystal clear streams which cascade from the high surrounding mountains providing the ideal habitat for rainbow, brown, and brook trout. In the slow flowing larger streams are found crappie, catfish, bream, and occasionally muskellunge. Among the streams rated by local fishing enthusiasts as good are the upper Watauga River, Dutch Creek, Laurel Creek, Howard Creek, Meat Camp Creek, Long Hope Creek, Elk Creek, Buffalo Creek, and Three Top Creek. Though not in the New-Watauga drainage, some of the best fishing available to visitors to this region is to be found in streams flowing east from the Blue Ridge. Of these the upper Elk and Linville rivers are probably best known for good fishing. In most areas the fishing season begins about the first of May and ends the last of August. Licenses are required of all past 12 years of age.

Other attractive water features are the numerous falls and rapids. The highest and best known of these is Dutch Creek Falls near Valle Crucis. It is easily accessible from State Highway 124. Watauga Falls, on the lower Watauga River, are lower but are impressive because of the large volume of water at this point. Long Hope Falls in southwestern Ashe County are attractive because of their height and volume and also because they are located in one of the more ruggedly beautiful valleys of the region. There are several small falls along Howard Creek near Boone, and others are found somewhere along the course of almost every stream originating in the higher mountains.
There are no natural lakes in this area and only a few small artificial lakes.

Thus far the water features of the New-Watauga area have been little capitalized upon as tourist attractions. Dutch Creek Falls is hardly known outside of the immediate vicinity and it is possibly the most visited water attraction. The Falls of Long Hope cannot even be reached by auto and many other beautiful water features are rarely seen except by natives of the area.

Although the tourist industry as a region-wide pursuit is of recent origin, man-made or man-improved features have greatly aided the industry. The importance of road building has been adequately stressed so that no further mention of that is necessary. However, man has done more than make accessible the natural attractions of the area. A horse show in Blowing Rock in the month of June attracts enthusiasts from all over the nation. More than 70 miles of well graded bridle paths are available to those interested in riding. The highest golf course east of the Mississippi River rests astride the Blue Ridge at Blowing Rock. Through activity on the part of various civic groups many state conventions are held at Blowing Rock, this town rivaling Asheville as the most important convention city of the state. Another important man-made attraction is the Daniel Boone Theater at Boone and the annual presentation of the mountain drama, Horn in the West. The theater, paid for through the local sale of bonds, utilizes the natural features of the area to the fullest ex-
tent. The stage is located near the amphitheater head of one of the small mountain valleys with the seats erected on the natural slope of the valley head. Except for a few props representing early buildings, stage decorations, consisting of elements of the natural vegetation, are permanent. The entire theater is so constructed to give the onlooker the impression that he is a part of the natural setting. The presentation of the play has done much to increase the number of visitors not only to Boone, but also to Blowing Rock and the entire mountain province.

Tourist facilities in the New-Watauga region include several modern hotels, a large number of tourist homes and motels, and many summer homes and cabins. There are estimated to be 3000 rooms available in hotels, motels, and tourist homes. Summer homes and cabins, which are almost constantly occupied by owners or friends, or are rented through local real estate agents, number more than 1000, about two-thirds of which are in the Blowing Rock area. Grade A restaurants are available in all the larger towns and others are scattered along the main highways. Picnic grounds are found throughout the region but are most numerous along the Blue Ridge Parkway and in the Blowing Rock-Grandfather vicinity. Indoor and outdoor movie theaters are found in the larger towns, and shopping facilities are available in the larger towns and villages.

A main attraction for many visitors to this region are the mountain people and evidences of their culture. Tourists often seek the remote country roads to look for "typical" mountain homes.
Although many elaborate mansions are to be found in and near Blowing Rock, the old cabin up "Possum Hollow" is still preferred. Old grist mills are also much sought after by tourists.

Following the same trails as the photographer seeking the old mountain homes are ballad collectors. Elizabethan ballads are still sung in this area, though frequently the stories told have been strongly flavored by the local mountain environment. One of the common laments of ballad collectors is that popular songs introduced by radio and television are replacing the traditional folk songs carried down from generation to generation. With the passing of the present generation most of the old ballads will be forgotten by the mountain people. In a like manner, the folkways that so long set this region apart from the rest of the nation are rapidly disappearing. If the present trend continues the southern mountains as a cultural province will soon lose its distinctiveness.

Tourism in the New-Watauga region has increased greatly in the past 30 years. Continued growth is to be expected as the natural attractions of the area become more accessible. Highway development is continuing and man-made recreational facilities supplementing the natural features are expected to be further expanded. Strengthening the possibilities of further growth in tourism is the rapid urbanization that is taking place in the South. This is accompanied by a growing number of industrial and service workers who are making progressively better salaries, working shorter hours, and getting longer
paid vacations from year to year. As city growth continues more and more workers choose to get away from city heat and crowded recreational facilities during their vacation periods. Thirty to forty years ago a major portion of Blowing Rock tourists came from out of state, largely from the cities of the northeast United States and from Florida. This area still receives large numbers of visitors from out of state, but the greatest increase in recent years has been from the Piedmont of North Carolina. It is estimated that more than half of the present tourist group is made up of state people coming from lowland industrial areas. With good roads and automobiles now common the New-Watauga receives thousands of week-end tourists, and while many of this group are non-paying tourists who come to the mountains for a Sunday outing, many stay overnight and add tourist dollars to the region's income. The greatest growth in the future is likely to come from these nearby areas.

Gross income from the tourist trade has been estimated at various figures, none of which is completely reliable. Using the reported rooms available (4000-4500) and the reported percent of seasonal occupancy (70-75 percent) and assuming that the average daily tourist expenditure per person is at least five dollars, the writer estimates the gross income from tourism for this region is in excess of $2,000,000. If the money spent shopping and entertaining is considered, the figure is probably closer to $3,000,000. Whatever the total is, tourism ranks with agriculture as the more important sources of regional income, and unlike agriculture, the industry has no ceiling
on its potential. Future years will probably find tourism the most important economic pursuit in the New-Watauga region.

Though not strictly a part of the tourist industry, summer camp services closely parallel it. There are three such camps in this area, all of which are located near Blowing Rock. There is one special girls camp, one boys camp, and a third for physically handicapped boys and girls.
One of the existing frontiers of the United States is found in the Southern Appalachians of North Carolina and surrounding states, and the people of the present generation in this region are pioneers, just as their forefathers were in the 18th century. But, unlike the earlier generation whose frontier was unknown land, the people of today are venturing into a new way of life. For most of them, it too is an uncharted course, and as they advance new frontiers are constantly appearing.

The break from the self-sufficing regime was not and is not as easy to make as it would seem. It appears that men would jump at the chance to commercialize but such is not the case. A self-sufficient farm possesses a high degree of economic security, though at a low level of living. While a shift into commercialized production generally means a better living standard, it also means loss of some of the economic security formerly held. It means dependence on world economic conditions in place of almost complete independence. It means changes in consumption habits and an alteration of many habits and customs ingrained in the minds of people over many decades of isolation. And in this region there exists an inherent fear of change that is difficult to overcome. Also, the change from subsistence living often involves immediate risk. Cash crop or commercial cattle farming requires an original investment which may or may not be re-
paid, depending upon the quality and quantity of production and market conditions at the time.

The people of this region have crossed the first major barrier. The outstanding trend in all forms of land use over the past several years has been the trend toward greater commercialization. The first marked development in this direction began in the forest industries after railroads penetrated the area (1915-20). Agriculture commercialized rapidly following the construction of good highways (1925-30), and this development was paralleled by that in tourism. The most recent commercial expansion has taken place in manufacturing. Handicraft production has all be disappeared, and several modern factories have been established.

The one factor most responsible for the recent changes in land use has been the development of transportation facilities. Although there are many human and physical factors affecting land use, most discussions must begin with "After the development of transportation facilities...." So important to the economic development of this region are the highways that Whitner calls then "literally ribbons of gold."70

In view of the tremendous impact of transportation development on land use, other important factors are often overlooked, and there are many. In agriculture, for example, after highways were developed there was an immediate shift into commercial production of cabbage and

70Whitner, op. cit., p. 49.
potatoes. Since that time the shifts have been largely economic responses and adjustments to the physical landscape. The move toward more intensive cash crops and greater diversification on individual farms reflects certain physical limitations of the land as well as a desire for greater financial security with less danger of complete loss in any one season. Since 1940 the most apparent trend in agriculture has been toward increased livestock production with an accompanying decline in field crop acreage. This trend is a response to a favored market position and a need for a more conservative use of the steeply sloping land which predominates in this area.

In tourism, combining with the accessibility provided by the constantly expanding highway system, are numerous physical attractions of the landscape and the various facilities provided for the ease and comfort of the visitor. Decentralization in tourism has been the most recent trend, and as highways reach out toward previously inaccessible attractions a continuance of this trend is to be expected.

Although the transportation development of recent years has made it possible for modern manufacturing plants to be established in the region, the greatest handicap toward further industrialization is the relative inaccessibility of the area. For while good roads have climbed the mountains, the many curves and steep grades limit the size of highway carriers and causes rates to be higher per freight mile than in the lowlands. For that reason industries locating here must capitalize on local raw materials, cheap and intelligent labor, cheap land, and low taxes.
While great strides have been made in the economic development of this region, there are many problems still confronting those who are concerned with planning for the future. There still exists the problem of overpopulation with the attendant migration of youth, and there is still the problem of many small submarginal farms. There are economic problems for the region's farmers who live in a mechanized world, but must compete with mechanized farms using horse and hand labor with the latter predominant. And there is still the problem of establishing conservative farming methods on farms operated by old time farmers unwilling to concede that whole hillside plowing is not the best practice.

I propose no program for the future development of this region. Such a program must come from within if it is to be successful, guided by someone intimately aware of the many facets of present land use, and fully acquainted with the problems of the people with whom he is working. The successful program, while centering on the economics of the region, must go far beyond economics. It must also focus on the human element.
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AUTOBIOGRAPHY

I, Edgar Bingham, was born in Boone, North Carolina, June 23, 1921. I received my secondary school training in the public schools of Watauga County, North Carolina. My undergraduate training was received at Appalachian State Teachers College and Lees McRae College in North Carolina and the University of Tennessee. I received my Bachelor of Arts and Master of Science degrees from the University of Tennessee in 1948. While working toward the Master of Science degree I served as Instructor of Geography with the University of Tennessee Extension Division. Entering Ohio State University in 1949, I served as graduate assistant and assistant in the Department of Geography. In 1950-51 I was an Instructor of Geography at the University of Tennessee. In 1951 I received a Civil Service appointment as Research Geographer with the U. S. Army Quartermaster Corps, serving in this capacity for two years. While with the Quartermaster Corps I served as Lecturer in Geography with the University of Maryland Extension Program. In 1953 I became Assistant Professor of Geography at Emory and Henry College in Emory, Virginia.