T H E S I S

AN INDUSTRIAL SURVEY OF LOUDON COUNTY

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A TABLE OF CONTENTS

I. History

II. Natural Resources

1. Location
2. Marble
3. Limestone
4. Iron
5. Sand and Gravel
6. Barytes
7. Lead
8. Manganese
9. Soils
10. Climate
11. Ceramic Industries
12. Water Power

III. Population

IV. Industrial Statistics

V. Moral and Religious Resources

1. Churches
2. Marriage and divorce

VI. Social and Economic Conditions.

1. Bank
2. Telephones
3. Use of Electric Power

VII. Separate Study of Each Town

1. Greenback
2. Lenoir City
3. Loudon
4. Philadelphia

VIII. Industrial Opportunities

IX. Table of Advantages of Country

X. Relation Between Industrial Development and Social and Economic Progress.

INDUSTRIAL AND ECONOMIC SURVEY OF LOUDON COUNTY

I. History.

Loudon County was formed on May 27, 1870, from parts of Roane, Monroe and Blount Counties, and was named in commemoration of Fort Loudon, which in turn was named for the Earl of Loudon, commander-in-chief in 1756 of the British forces in America and Governor of Virginia. It lies on both sides of the Tennessee River. Loudon, the county seat, is about twenty-nine miles southwest of Knoxville. The county was established in accordance with especial provisions embodied in Section 4, Article X, of the constitution of 1870.

Among the early settlers were John Browder, Banjamin Prater, James Balir, William B. Lenoir, Jacob Gardengill, Henry Bogart, Samuel Blair, William Blair, Jesse Eldridge and Simeon Eldridge.

The first church in the county was established by the Presbyterians in 1823. Dr. Isaac Anderson, a teacher of Sam Houston, was the first pastor.

The county is drained by the Tennessee River and is well watered. The area of the county is 219 square miles. It has 29 miles of railroad, five miles of concrete highway, three miles of concrete and asphalt pavement in Loudon and Lenoir City, and many miles of macadamized and graded roads.

II. Natural Resources.

1. Location. Loudon County is favorably located in that it is almost the exact center of the southeastern part of the United States. Markets are close to the county for almost any product which might be manufactured here. And the main lines of the two great railroads of the South, the Southern and the Louisville & Nashville, pass through the county. The Tennessee River also passes through the county, and when it is developed according to the present plans of the United States War Department there will be an open channel during the entire year to the Ohio and Mississippi Rivers.

Not only is the location favorable as regards markets and transportation, but even more favorably is it located in regard to raw materials. The great southern Appalachian coal field is only a few miles distant. And this coal is of excellent quality for industrial uses. Bulletin No. 7 of the Engineering Experiment Station of the University of Tennessee shows in detail the superiority of the southern Appalachian coal. This Bulletin shows an average heat value of 13,615 B.T.U. per pound. This is decidedly higher than the coal of competing fields. It also shows that the ash content is lower, and that the ash

fuses at a higher temperature. This coal is also very low in sulphur. Only nine samples out of ninety-two tested had more than 2 % of sulphur, only three had more than 3 % and none had as much as 3½ %. These figures show that most of the coal is suitable for metallurgical coke. Any industry using coal or coke is thus assured of a good quality at any time. And the price for steam coal is low. The nut and slack coal, which is the kind used in a mechanical stoker, can be delivered at any station in the county for an average price of 10 c. per million B.T.U.

As is shown under the discussion of the waterpower resources, an almost unlimited supply of hydro-electric power is available.

Not only are coal and electric power at hand but most of the raw materials of industry are also here. The accompanying map shows that there are several blast furnaces within less than 75 miles. One of the largest copper plants in the world is also close. At the location of the copper plant there is also one of the largest sulfuric acid plants in the world. The Alcoa plant of the Aluminum Company of America is just a few miles from the county. Zinc, Barytes, Silica, Sand, Gravel Marble, Limestone, Hardwood Timber, Chestnut Timber, Cement making materials, Brick and Tile Clays, and fire clay are all in the county or within a few miles of it.

Good factory sites are available at each town, the climate is mild, and the labor is native white. The negro population is 6.4 % while the foreign born population is only one tenth of one per cent. This leaves a native white population of 93.5 %. The purest Anglo-Saxon blood in the world flows in the veins of the inhabitants of this county and the surrounding counties of East Tennessee.

2. Marble. There are three marble belts which cross the county. The Black Oak Belt runs about parallel with the Southern Railway and from three to four miles to the northwest. There are no quarries in this belt within the county. The marble is of a good quality of both the pink and gray variety, with some of the red or cedar color. For the most part this belt is not more than a fourth of a mile wide. Its distance from the railroad makes its development a rather uncertain proposition. Good marble exists in several places. There is at least one place that is worth the attention of anyone interested in marble. This location is known as the Wilson place. It is about three miles west of Philadelphia. The outcrop is over about fifteen acres. The samples show a high polish. Preliminary investigations indicate that there is a great amount of high grade marble here.

The so-called Concord Belt runs entirely across the county along the Southern Railway. There are no quarries in operation in this belt within the county, Thirty or forty years ago there was a quarry and marble mill at Loudon. The quarry was located in what is now the southeast part of the town of Loudon. Reports differ as to the quality of marble produced, but the company went into the hands of a receiver. It is stated by some of



Marble quarry near Meadow Station



Close up view of above quarry

the older business men that the receiver in closing up the business produced some good marble at a fair profit.

The marble in this belt is of uncertain quality. In some places it is good and in other places it is defective. Its nearness to the railroad would make production profitable wherever a reasonable quantity of good marble can be found. Further prospecting may result in the discovery of workable deposits.

The Knoxville Belt crosses the southeastern portion of the county. It runs northeast and southwest. Bulletin No. 28 of the Division of Geology of the state of Tennessee describes this belt as follows:

"In this and the French Broad Belt the marble formation is on the whole more uniform in bedding, due apparently to location near the middle of the marble trough where clearer waters prevailed. The operations on this belt, which at the present time (1924) exceed those of any other area, extend from the vicinity of Meadow Station on the south to Holston River on the north....."

"The leading variety of marble found in this belt is pink, one of the most beautiful and popular shades produced in this country. In addition to the pink, some quarroes are noted for their chocolate colors, while others make a specialty of gray colors. Owing to differences in the conditions of sedimentation, the character of the beds vary from place to place, and each quarry has usually some distinguishing feature in its quarry product. There has been much progress made in the development of this area during recent years, a growth that is destined to continue, as the deposits are of good quality and of great extent."

Several of the quarries referred to in the above bulletin are in Loudon County. They are producing a considerable amount of this good marble.

This same bulletin also describes an uncharted belt which it calls the Meadow Belt. The most important outcrop is near Meadow Station where it has been quarried to some extent.

3. Limestone. There is an abundance of limestone in Loudon County. This limestone and marble is nearly pure calcium carbonate. Chemical analyses have been made of samples from various parts of the county. The calcium carbonate content is always high. One sample run 99.6 %, and the average is around 98 %. These limestones and marbles make a high quality of lime either for building or agricultural purposes. The purity of these rocks makes them easy to grind. This becomes a somewhat important feature to the person who is producing ground limestone.

4. Iron. There are no iron mines in the county but outcrops occur in many places. The writer saw one place, two miles north of Phil-

adelphia on the Windle farm, where a hole about seven feet deep and four feet in diameter had been dug and from it there was removed about a ton of iron ore which run 55.4 % metallic iron. Another hole of the same size 180 ft. from this one had a similar pile of ore lying by it. The man who was hired to dig these holes quit and reported that the amount of iron was increasing. At the time the holes were visited they were partially filled with clay and ore and this report was not verified. The outcrop covers several acres and the owner was encouraged by the writer to prospect further.

On the Burdette farm near Lenoir City is another outcrop of iron. This is one half mile from the railroad. It is in the same formation as the iron mines which were operated for several years along the railroad north of Sweetwater. It is possible that further prospecting would reveal sufficient iron ore here to be mined.

5. Sand and Gravel. The Tennessee River, as it winds its way through the county, deposits an immense amount of sand and gravel, of an excellent quality. Sand and gravel are dredged from the river near Lenoir City. Two large derricks transfer this material from the barges directly to cars or sieves. Many cars are shipped each year to the surrounding cities and towns. Much is also used locally. This is a resource which becomes of greater importance with the increasing use of concrete.

At Loudon there is no convenient method of transferring sand and gravel from barges to cars. A very large amount of the material, however, awaits development.

The Tennessee Highway Department makes many tests of this sand for it is used to a great extent on the roads. The following test made by the State Highway Department at Knoxville shows the excellent quality of this sand.

Laboratory Sample No. 207011

Sieve Analysis

Pass	Retained	Percent
¼	¼	0
10	10	13.4
20	20	18.4
30	30	19.0
40	40	16.6
50	50	18.2
80	80	12.3
100	100	.9
200	200	.9
		.3

Calorimetric test: No. 1
Loss by washing (clay, silt, etc.) 0.6 %

Tensile Strength

Cement-sand briquettes, 1 - 3 mixture (1 inch cross section area)

Standard Ottawa Sand		Tennessee River Sand	
7 days	28 days	7 days	28 days
310	405	298	422
310	422	350	420
312	380	330	414
293	375	318	444
	Average		
306	395	326	425
	Strength ratio 1.065		1.076

The gravel is always highly satisfactory for use in concrete. The sieve analysis is the only test that it is necessary to make on the gravel. It is exceedingly rare to find a sample that needs any artificial grading to make it come within the standard specifications.

6. Barytes. Barytes is found in three veins or belts in the Valley of East Tennessee. One of these veins begins about eight miles northwest of Athens and extends in a northeast direction to the Tennessee River. Another vein is parallel with this one and about four miles to the southeast. Both of these veins have considerable of their extent in Loudon County. Several mines, all of the surface type, are in the county. Another vein begins about six miles northeast of Athens and extends to the Little Tennessee River. There are no mines in Loudon County in operation in this vein. These are called veins but the formation is hardly a true vein but is more in the nature of a series of pockets. There are also other pockets where barytes has been found in paying quantities but most of the deposits run along these so-called veins.

New mines are being opened and the future of the industry depends upon the possibility of producing the mineral here as cheaply as it can be imported. There was a mine opened north of the Tennessee River, about three miles northwest of Loudon, in 1916 or 1917. This mine is on the Norris farm. At least one shaft was sunk and a tunnel was driven about one hundred feet into the hill. Bulletin No. 31 of the Tennessee Division of Geology in a report on this mine makes the following statements:

"In addition to barite (barytes) which is the most plentiful mineral, galena, pyrite, and some sphalerite occur as replacements of the country rock, also gangue dolomite and calcite are associated with the above minerals in varying amounts. The sphalerite occurs in association with galena and pyrite, all having been deposited contemporaneously."

No mineral was shipped from this mine and the bulletin quoted goes on to say that the conditions of mineralization were determined from samples lying on the dump at the mouth of the tunnel.

The prospecting that has been done up to the present indicates that south of the Tennessee River and Little Tennessee River is the most fruitful field for barytes.

7. Lead. While no lead is mined in the county there are some known deposits of lead in the form of galena (Lead Sulfide). The deposit on the Norris farm has just been mentioned. On the farm of F. A. Berry along the Tennessee River there is a seam or vein of galena. The outcrop is visible along the bluff by the river. It is quite possible that development of this prospect would be a paying investment.

8. Manganese. Some manganese has been mined in the county. Definite reports concerning these operations could not be obtained. However, there was one mine about three miles south of Loudon that proved unprofitable. No ore was ever shipped. There was another mine near the Little Tennessee River where it enters the county. Ore from this mine was trammed to the river, loaded on barges and taken to Lenoir City where it was loaded on cars. Only one or two cars of ore were shipped and as stated above no definite reports as to quality of ore or as to the financial returns could be obtained. This mining was done in 1918 and one man reported that the operations were profitable at that time due to the wartime price of manganese but would not be profitable under ordinary conditions.

9. Soils. Loudon County is commonly described as hilly but fertile. Until the last two or three decades agriculture has been about the only industry, and is still the largest as to number of people employed. Corn, wheat, livestock, dairy products and tobacco are the principal products.

The soil is well suited to market gardening and with the industrial expansion that is sure to continue for many years to come, the gardening will continue to increase in extent and value. Indeed, the fact that perishable food products can be produced at home is one reason that industries will find Loudon County a suitable location. This makes living expenses lower and this in turn makes either lower wages with the same standard of living, or else with the same wages a higher standard of living and consequently a better class of employees.

10. Climate. The climate is almost ideal for any industry. There is nethier the extreme cold of winter nor the extreme heat of summer. Heat prostrations are so rare as to be almost unknown. There are few days in winter so cold as to interfere with operations of industrial plants and the amount of steam which must be used for heating is not excessive.

There is no weather bureau station in the county with complete weather records, but the conditions are nearly the same as at Knoxville

whish is less than thirty miles from the center of the county. The data from the Knoxville Station is given in the tables which follow.

Mean Temperature (43 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
38.5	41.2	49.1	57.9	66.9	74.0	77.0	75.9	70.5	58.8	47.5	39.8	58.1

Highest Temperature (43 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
74	79	87	90	95	99	100	100	99	94	88	75	100

Lowest Temperature (43 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
-16	-10	5	24	34	42	52	50	35	24	12	-5	-16

Mean Maximum Temperature (39 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
47.2	50.0	59.2	68.4	77.7	84.2	86.9	85.8	81.2	70.2	57.8	47.6	68.1

Mean Minimum Temperature (39 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
30.5	32.2	39.5	47.5	56.1	64.2	67.6	66.4	60.6	48.1	38.0	31.9	48.6

Average Precipitation (48 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
4.70	4.67	5.10	4.44	3.80	4.29	4.26	3.94	2.92	2.52	3.31	4.22	48.17

Average No. of Days with 0.01 inch or more of Precipitation(43 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
13	11	13	12	12	13	12	12	8	7	9	13	135

First and Last Killing Frost (43 years record)

Average date of last killing frost in spring April 2
Average date of first killing frost in autumn Oct. 28

Mean Relative Humidity (26 years record)

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
77	72	72	65	69	74	76	79	77	75	74	77	74

Comparisons with other stations will show that there is no location in the nation where the slimate is more favorable for industry.



Plant of Greenback Brick Co.



Down Draft Brick Kiln

11. Ceramic Industries. Loudon County is in a red clay section. Along each of the marble belts there is found clay that is very free from chert or rock of any kind. Since both of the railroads in the county run along these marble belts, the best brick making clay is on the railroad. Samples of clay taken from railroad cuts and similar places show a reasonable drying and burning shrinkage. (See article on Greenback, Lenoir City and Loudon for data on clays from these locations.) There is only one brickyard in the county. The manager of this plant is not able to take care of all the business that is offered him and other brick plants would find ready sale for a good product. With the growing scarcity of lumber in the country at large and the demand for fire proof buildings there is bound to be a greatly increased demand for brick. The last industrial census gives the following data on the manufacture of common brick.

	Quantity in Thousands per Year	Value
United States	4,447,987	$57,096,178
Tennessee	101,323	1,277,784
Loudon County	Too few to report	

There are some deposits of a white clay which has been used locally for a fire clay with good results. The further development of these clays with the possibility of the manufacture of fire brick is desirable.

There are deposits of rock suitable for the manufacture of Portland cement near Lenoir City and possibly in other parts of the county.

12. Water Power. There are two dam sites on the Tennessee River. While the Marble Bluff dam is just outside Loudon County nearly the entire pond will be in the county and it may well be considered a Loudon County project. The Coulter Shoals site is about four miles above Lenoir City, near the county line.

The application for preliminary permit of the Knoxville Power & Light Company dated July 23, 1923 describes these projects as follows:

"The Coulter Shoals Site consists of a concrete dam 52.8 ft. above extreme low water with spillway crest 1200 long at elevation 799.0. The power house will be located on the lower side of the dam. Provision will be made for future locks as the river has been declared navigable as far as Knoxville, Tennessee."

"The pond covers an area of approximately 8,000 acres. Installed capacity of 47,600 h.p. (35,500 k.w.) based on 10,000 sec. ft. flow, and 52.8 ft. head. Storage can be used effectively after Marble Bluff Development is completed which would make it possible to shut down the plant at night and furnish 28,800 - 12 hour primary h.p. in an average year. A variable quantity of 12 to 24 hour secondary power is available up to plant capacity of 47,600 h.p. - 24 hour power.

"The Marble Bluff Site consist of a concrete dam 34.8 ft. above extreme low water with a spillway 1400 ft. long at elevation 746.0. The power house will be located on the lower side of the dam. Provision will be made for future locks as the river has been declared navigable as far as Knoxville, Tennessee."

"Pond covers an area of approximately 1400 acres. Installed capacity of 43,900 h.p. (32,700 k.w.) on basis of 14,000 sec. ft. and 31.3 ft. head."

In this connection it should be noted that the development of the river above here and also the development of its tributaries will greatly increase the primary power to be produced at these dams.

There is also a proposed dam site on the Little Tennessee River in the southeast part of the county. The height of the dam is to be 110 feet. About 37,500 k.w. continuous 24 hour power is to developed by this installation.

The total power developed at these three dams will be more than the present peak load of Knoxville, Chattanooga and Nashville combined.

In addition to these projects there are several proposed developments on the Clinch River, which form a part of the northern boundary of the county, with total power capacities of 151,000 k.w.

These facts show that there is abundant hydro-electric power available for any and all plants which desire to locate in the county.

R A T E S

ELECTRIC LIGHT, POWER & HEAT

Metered Residence Lighting Rate H Schedule No. 1.
Energy charge:
11 cents per KW-hr. for the first 50 KW-hrs. used per month.
8 " " " " " next 50 " " " "
6 " " " " " all in excess of 100 KW-hrs. per month.
Minimum charge:
$1.05

Metered Commercial Lighting Schedule No. 1 Rate "E".
100% of rating of connected load; minimum demand 1.25 KW.
Energy charge:
11 cents per KW-hr. for the first 40 hrs. use of demand per month.
8 " " " " " next 60 " " " " " "
6 " " " " " all in excess of 100 " " " " " "
Minimum charge:
$1.05

Metered Power - Retail Schedule No. 1 Rate "C".
100% of rating of connected load, but not less than 560 Watts.
Energy charge:
7 cents per KW-hr. for the first 75 hrs. use of demand per month.
5 " " " " " next 75 " " " " " "
4 " " " " " all in excess of 150 " " " " " "
Minimum charge:
$1.58.

Metered power - Wholesale. Schedule No. 1 Rate "A".
Determination of demand:
By measurement, highest 15 minutes demand, but not less than 15 KW. nor less than 60 % of total KW. contracted for nor less than 60 % of the highest demand of the previous six months.
DEMAND CHARGE: $1.50 per KW of demand per month.
ENERGY CHARGE:

4 cents	per KW-hr. for the first	500	KW-hrs. per month
2 "	" " " next	1500	" " "
1½ "	" " " "	2500	" " "
1¼ "	" " " "	3500	" " "
1 "	" " " "	17,000	" " "
.8 "	" " " "	25,000	" " "
.7 "	" " " "	250,000	" " "
.6 "	" " " "	400,000	" " "
.5 "	" " "all"in excess of	700,000	" " "

Minimum charge:
$1.58 per KW. per month of the highest demand of the previous six months, but not less than $1.58 per KW. per month of the demand contracted for nor less $39.47 per month.

METERED REFRIGERATION AND COOKING OR HEATING.

Schedule No. 1 Rate "J".
Energy charge:
4 cents per KW-hr. per month.
Minimum charge:
$1.58 per month.
Prompt payment discount:
5 % if paid within 10 days from date of bill.

III. Population.

The population in 1920 was 16,275 and was 36 % in towns and villages and 64 % rural.

Native parentage	16,210
Foreign or mixed parentage	65
Foreign born	15
Native white parentage	15,158
White	15,238
Negroes	1,037
Percent of population native white	93.5%
Number of practicing physicians	13
Number of dentists	3
Population per practicing physician	1252

Death rate (1923) Deaths per 1,000 of population

	Loudon County	Tennessee
Total	11.54	11.1

Death rate by principal diseases (Deaths per 100,000 of population)

	Loudon County	Tennessee
Typhoid	11.6	21.4
Influenza	81.23	106.8
Tuberculosis	208.80	149.0
Diarrhea and Enteritis	52.20	37.1
Bright's disease	52.20	64.1
Organic Heart disease	81.23	67.2
Syphilis	0.00	11.1

Schools

Number of High Schools

4 year	3
3 year	0
2 year	2

High School Enrollment

1st year	165
2nd year	100
3rd year	80
4th year	60

Number of Elementary Schools

White	33
Colored	6

Enrollment in Elementary Schools

White	3800
Colored	300

Scholastic Population

White	5,193
Colored	336

Percent between 6 and 21 who cannot read and write

Loudon County	20.5 %
Tennessee	24.2 %

Illiterate above 10 years of age 13 %

IV. Industrial Statistics.

The 1919 industrial census is the last one of which county studies have been made. There has been no large industry established in the county since that time but there has been some development of the industries which existed then and the establishment of several small plants. Following is data from 1919 census.

Number of establishments	37
Average number of wage earners	1,862
Wages (Annual)	$1,409,104
Rent and taxes	214,648
Cost of materials	7,334,141
Value of products	10,294,713
Value added by manufacture	2,960,572
Primary horsepower used	2,737

Of the value of products only 28.8 % is added by manufacture, and 13.7 % is paid for labor. These figures reveal two significant facts; first, much of the material is bought in a semi-finished condition; second, the available labor resources are greatly in excess of the labor used.

V. Moral and Religious Resources.

Churches. If anyone should question the propriety of including a religious and moral study in a survey of this kind, he is asked to turn to the pages of history and there he shall find that all lasting material civilization has had a moral and religious foundation. This is neither preaching nor arguing for any particular religious faith, but is a simple statement of facts as recorded in the history of the human race.

The population of the county in 1910 was 13,612 and in 1920 was 16,275. Most of this growth was near the close of the period due to war-time activities. The religious census was last taken in 1916. At that time the estimated population was about 14,215. The total church membership then was 5,283, which is 40 % of the population. It should be noted that the principal denominations represented here do not include small children in their reported membership. If the entire family should be counted, as is the custom in some denominations, the church membership would be above 50 %.

Following is the religious census.

Baptists		
Southern Convention	2,087	
All others	416	2,503
Methodists		
Methodist Episcopal	930	
Methodist Episcoal South	922	
All others	216	2,068
Presbyterians		
Presbyterians in the U.S.A.	251	
Cumberland Presbyterians	246	
All others	92	589
Roman Catholic		25
All others		98
Total		5,283

Marriage and Divorce.

(1924)	
Marriages	220
Divorces	24
Percent of marriages which end in divorce	10.9 %

Compare this with the divorce rate in some other places and it will be seen that Loudon County has a low rate.

		Divorce rate
Loudon County	(1924)	10.9 %
Chicago	(1922)	33.3 %
Denver	(1922)	49.5 %

The moral and religious conditions of the county are, of course not perfect. While the above statistics are not conclusive evidence, yet they do indicate the existing conditions. The impartial observer is impressed that the county is above the average in moral and religious conditions.

VI. Social and Economic Conditions.

Banks. The following data of the banking conditions of the county was compiled from the statements of all the banks in the county.

Loans and discounts	$1,384,577
Total resources	2,091,423
Capital stock	265,300
Surplus and undivided profits	116,504
Total deposits	1,488,132

Telephones. On July 15, 1925 the Cumberland Telephone and Telegraph Company had the following telephones, including farmers' lines.

Lenoir City

Residence telephones	327
Business "	111

Loudon

Residence telephone	51
Business "	30

The independent company did not reply to the questionnaire sent them but from their last published directory and other observations this company has about 200 residence and 70 business telephones in the county.

Use of Electric Current. The Tennessee Electric Power Company furnishes light and power to Loudon, Lenoir City and to the Marble quarries north of Greenback. It is the present intention to extend their lines to Greenback in the near future. The Philadelphia Hosiery Mill generates its own current. The quarry district is served from a station outside the county and the current used here could not be ascertained. Following is the total current for Loudon and Lenoir City for an average month.

CUSTOMERS CONSUMING ELECTRIC CURRENT IN LOUDON.

250 Residence customers.
2483 KWH used by residences.
Total amount of bills for residence $537.65
Average bill for residence $2.15.
Total number Commercial lighting customers 94.
Total number of KW hours used by Commercial customers 2712 KW hours.
Total amount of bills for Commercial customers $1259.05
Average bill for Commercial lighting $13.39
Total number of Retail power users 11.
Total number of KW hours used by Retail power customers 1350 KW hours.
Total amount of bill for Retail power $100.02
Average bill for Retail power customers $9.09
Total number of Wholesale customers 2.
Total number of KW hours used by Wholesale power customers 31680 KW hours.

CUSTOMERS CONSUMING ELECTRIC CURRENT IN LENOIR CITY.

Total number of Residence customers 761.
Total number KW hrs. used by Residence 8,887 KW hrs.
Total amount of bills for Residence $1565.39.
Average bill for Residence $2.06.
Total number of Commercial customers 144.
Total number KW hrs. consumed 8325 KW hrs.
Total amount of bills for Commercial lighting $1384.88.
Average bill for Commercial lighting $9.62.
Total number of Electric ranges in Lenoir City 11.
Total number of KW hrs. used 1307.
Total amount of bills for ranges $51.06.
Average bill for Ranges $4.64.
Total number of Retail power customers 16.
Total number of KW hrs. consumed 5435 KW hrs.
Total amount of bills for Retail power $296.32
Average bill for Retail power users $18.52
Total Wholesale power customers 5.
Total KW hrs. used 205995 KW hrs.
Total amount of bills for Wholesale customers $5490.75.
Average bill for Wholesale power $1098.15.

VII. Greenback.

Greenback is situated in almost the extreme eastern part of the county. It is on the Louisville & Nashville Railroad. The population in 1920 was 175. There is one bank, small but very successful. In fact, it is one of the best paying investments that many of its stockholders have ever made. There is also a flour mill which does considerable business, both custom and commercial. One establishment handles country produce.

A canning factory was established in 1924. So far it has canned tomatoes principally. Since the surrounding country is well suited for the growth of nearly all kinds of vegetables there is an opportunity for much development along this line. In fact, nearly all kinds of canned vegetables could be produced here to good advantage to both the canning factory and grower.

There is also one brick plant, the Greenback Brick Company. The brick yard is on the railroad two miles north of the depot. There is a large amount of good clay available and bricks of good quality are being produced. These bricks are of a beautiful dark red color. The stiff mud process is used and the bricks are burned in a down draft kiln. Only a very few soft bricks were being produced by this method at the time the plant was visited.

Many carloads of lumber are shipped each year. Oak and pine are the principal kinds of lumber. Much chestnut wood is also shipped for acid wood. In addition to these there is much hickory wood in the surrounding country, and enough walnut that several carloads of it are being shipped each year.

There are no marble quarries at Greenback but some of the best marble in the world is quarried just a few miles north of there. Several quarries are in operation and there is sufficient marble to keep them busy for many years to come.

It should be noted that the surrounding country is in some respects the best agricultural section of the county. The land is somewhat hilly but it is fertile. The soil contains enough sand to make it easily worked, and since it is in the marble section it seems that most of the soil has enough of lime in it to keep it from becoming sour.

A study of the above conditions and resources reveals the fact that there are several opportunities for industrial expansion. A cheese factory or creamery could be located to advantage here. The surrounding country is, as has already been suggested, very well suited to dairying. Considerable dairying is being done at present, the milk being shipped to Knoxville. If a good market existed at home the dairying industry would become an important and very profitable thing in the community.



Greenback, looking south



Greenback, looking north

A hosiery or textile mill would find Greenback a good location. While there is not a water system at hand, yet several large springs are near and a creek is about a mile to the south, so that water for either steam power or for process work is readily available. A good supply of native white labor is at hand. The men find work on the farms or in the marble quarries nearby, but there is no industry employing women here.

It has been proposed to open a quarry and get out a black marble which exists near here. Since it is close to the railroad, this will perhaps be feasible if a market for black marble can be found which will keep the quarry in operation a reasonable part of the time.

It was stated in the discussion of the timber that much hickory was at hand. A handle factory to produce tool handles from this timber would do well to consider the advantages offered here for this timber is practically untouched.

Greenback has an excellent high school of which the village is justly proud. The church (there is only one church) is active and exerts a wide influence. The general moral tone of the community is good.

Lenoir City.

Lenoir City is located on the main line of the Southern Railroad, 24 miles southwest of Knoxville. It is also on the Tennessee River and at the mouth of the Little Tennessee River. The population in 1920 was 4,210 within corporate limits and the estimated population now (1925) is 5,500.

There are seven churches in the town and several more in the immediate surrounding country. Exact statistics are not available but about 40 % of the people belong to these churches. The Lenoir City high school is Grade A, Class 1. Students graduated here may enter the University of Tennessee or any other southern college or university without entrance examinations. Five modern brick buildings house the city schools, and thirty well trained teachers compose the teaching staff.

The city owns a splendid water system, drawing its water supply from the Little Tennessee River. An efficient filtration and purification plant and regular inspection of the supply guards against polluted water finding its way into the mains. There is a sewer system covering the entire town. For protection against fires the city government has recently purchased a combination fire engine. This chemical equipment in addition to the water system which has a head of more than 100 feet in the downtown section, gives ample protection against fires.

In the list of industries is found a railway car manufacturing plant, including machine shop, wrecking shop, repair shop, and foundries. There are two hosiery mills. One of these, a branch mill of one of the

large southern hosiery plants has just recently started operations and will occupy a modern mill building soon and greatly increase its output and payroll. The other mill is one of the oldest industries in the town and employs about 1,000 people. In both of these mills work is steady.

There are two planing mills with a reasonable output of rough and dressed lumber and general mill work. One of the large handle manufacturers of the south has a factory here where hickory handles are made. A shuttle factory which uses dogwood timber is also here. There are two flour mills with a large output of flour and feeds. These mills provide a market for the grains grown in the surrounding country. There are also two sand and gravel plants, an ice plant, a canning factory and a steam laundry.

The financial and economic condition is indicated by the following data taken from the recent statements of the two banks. These figures are combined from the individual statements of each bank.

Loans and discounts	$619,185.74
Total resources	1,042,758.14
Capital stock	150,000.00
Surplus	30,000.00
Undivided profits	6,316.43
Total deposits	784,717.06

There is one wholesale hardware and grocery establishment and several good grocery store, clothing stores, dry goods stores, furniture stores, hardware stores, drug stores, meat markets, etc. There are about the usual number of blacksmith shops and garages for a town of this size.

A study of the population shows that the labor supply is about 97 % native white. There are several skilled mechanics and the general intelligence of the labor is high. A study of the industries shows that there are 1,025 men and 755 women employed in industries. This is almost in the ratio of three women to four men. For the entire state of Tennessee there are four men employed to one woman.

In another part of this survey the industrial opportunities of the county as a whole are discussed but some particular advantages of Lenoir City should be noted. The location on the Tennessee River is favorable for any plant which uses a large quantity of water, either for process work or for condensing purposes. An unlimited supply of water is available so that there would be no need of either spray pond or cooling tower in order to have plenty of suitable condensing water. This abundance of good water, cheap steam and electric power, favorable climate, good labor, nearness to source of raw material and nearness to market makes this a good location for any cotton goods or textile mill.



Broadway, Lenoir City, looking east.



Broadway, Lenoir City, looking west.



Lenoir City, looking south from Hill St. and Broadway.

There is good clay for the manufacture of building brick. Nearly all the clay along the railroad for several miles northeast of town is remarkably free from rock. A sample taken from the railroad cut just north of town showed a drying shrinkage of 8 %. No burning shrinkage test was run on this sample. Another sample taken from the Harden farm showed a drying shrinkage of 5 % and a burning shrinkage of 1 %. Many bricks are being used in the county. Several years ago they were made in small old fashioned brick yards and the quality is shown by many old brick chimneys and some old brick houses that have been built from fifty to seventy years and the bricks are as good as ever. It is highly probable that the stiff mud process and down draft kiln should be used. As is shown elsewhere the coal for burning the brick is cheap and there is a market for brick and this market will increase. Other cities do not have any advantage in freight rates.

The sand and gravel of good quality make the town a suitable location for the manufacture of concrete tile and other forms of precast concrete.

Suitable limestone and shale for the manufacture of Portland cement have been located and analyzed. These deposits are on the Burdette farm one and one half miles northeast of town.

	Shale #1	Shale #4	Clay #2
Silica	34.60	39.20	57.70
Aluminum oxide	13.23	13.77	21.61
Iron oxide	5.97	7.03	8.79
Calcium oxide	22.50	17.70	0.90
Magnesium oxide	1.23	1.19	1.66
Loss on ignition	21.30	18.20	9.00

The limestone and marble near this deposit analyzes from 96 % to 98.5 % calcium carbonate.

For the manufacture of Portland cement the ratio

$$\frac{\text{Calcium oxide}}{\text{Aluminum oxide plus iron oxide plus silica}}$$

must be not less than 1.8 nor more than 2.2. As will be seen from the above analyses this combination can easily be secured. The only ingredient that will be necessary to ship is the small amount of gypsum that is used in cement.

The fact that there is relatively such a large number of women employed at present assures a good supply of male labor, and any factory which employs men will have no trouble in securing suitable labor. This does not mean that there is a scarcity of female labor, for there is a large population in the surrounding country and towns which will locate here if work is furnished.

Good factory sites are easily found and the people are friendly toward any substantially financed factory which desires to locate in the city.

Loudon.

Loudon is situated on the main line of the Southern Railroad 29 miles southwest of Knoxville. It is also on the Tennessee River which makes a large loop just north of town. The population in 1920 was 1,881 and the estimated population in 1925 is 2500. The surrounding country is a rather fertile agricultural district, being the northern end of the famous Sweetwater Valley. All the perishable food products of a good sized city can be produced in the immediate surrounding country.

The principal industries are: hosiery mill, chair factory, mantle and table factory. A planing mill is to be located in the town soon and in fact might be counted as an established industry for the purposes of this survey.

There are several churches in town with a combined membership of about 1000, or 40 % of the population. The following statement from Professor Dan T. Rogers, sets forth the educational situation.

"The Loudon schools consist of white grammar and high school and colored grammar school. The grammar and high schools are housed in a modern brick building of eleven rooms with auditorium. The total enrollment for 1924-25 was 510, 78 of these were in high school. Thirteen well trained teachers are employed.

The Loudon schools are supported by a special school taxing district, established in 1919. A $25,000 bond issue was voted March 8, 1925 to further promote the schools. The people of Loudon are much interested in schools and willingly cooperate in the development of better school facilities for the community."

The Civitan Club is very active. It does the work commonly done by a Chamber of Commerce and also functions very effectively as a luncheon club. This club gave the writer much help and encouragement in this survey. All the more important fraternal organizations are represented by active lodges.

There are several grocery stores, dry goods stores, clothing stores, drug stores, hardware stores and furniture stores. The following extracts from the recent statements of the two banks show the banking conditions. These figures are combined to show the total figures for both banks.

Loans and discounts	$537,756.69
Total resources	786,786.64
Capital stock	82,100.00
Undivided profits and surplus	63,550.75
Total deposits	511,432,00



Main St. Loudon, looking south



Waterfront, Loudon, looking west

A study of the labor distribution shows 90 % native white and 10 % colored labor. There are 300 men and 400 women employed in the industries. There has never been a strike in Loudon, and the labor is contented. While not many highly skilled mechanics are found, yet the general intelligence is high and most of the men and women quickly learn to operate a machine such as is used in ordinary factory practice.

Loudon is unincorporated and has no public water and sewer system. There are some private water systems but they are not sufficient for the rapidly increasing needs of the town. A sewer system is greatly needed. The sooner these needs are met the better and cheaper it will be. Since the town is not incorporated it seems that these developments must be private owned. The water system is greatly needed for protection against fire and this in turn will reduce insurance rates.

There are some other features of Loudon that deserve emphasis in the study of the town. Any plant which needs an abundance of water will do well to consider it. Water in any quantities for condensing purposes can be had without either cooling tower or spray pond. The The river water can also be used for process work. This abundance of good water and good labor and nearness to raw materials makes Loudon a good location for cotton or textile mills.

There is also much clay suitable for making good building brick. This clay is remarkably free from chert. A sample taken from a cut along the road southeast of town showed a drying shrinkage of 5.5 % and a burning shrinkage of 4.5 %. The samples burned were dark red after burning.

There is a vast amount of good sand and gravel which can be dredged from the river. This could be used in the manufacture of concrete tile and other forms of precast concrete. The increasing use of concrete in road building, and its wide use in buildings of all kinds will furnish a market for this sand and gravel.

Almost any of the industries which are suggested for the county may find suitable conditions in Loudon. The leading business men consider the following as some of the more outstanding opportunities and needs.

Veneer plant
Any factory whose chief material is oak timber
Canning factory
Combined packing and ice plant
Wood pulp mill
Artificial silk mill.

Philadelphia.

Philadelphia is located on the main line of the Southern Railroad about 34 miles southwest of Knoxville. The population in 1920 was 332 and the estimated population at present is 400. It is surrounded by a farming country in main. There are some barytes mines in the extreme southwestern portion of the county which are a help to the town but the payroll of the mines is comparatively small and only a portion of it is spent at Philadelphia. There is considerable quantity of acid (chestnut) wood shipped and also several cars of oak lumber. The town has one small but successful bank, two grocery stores and three general stores.

The industries consist of one hosiery mill, one gristmill and one blacksmith shop. The blacksmith shop is a one man shop and the mill only employs two men. The hosiery mill employs 15 men and 45 women and girls.

The town shares with all the other railroad stations the general advantages of the county. In addition it has a sufficient supply of water from the Sweetwater Creek which flows thru the town. There is yet much good oak timber in the surrounding country.

These advantages would make it a suitable location for a small plant using oak timber or a small metal working plant would do well to consider these advantages. The small number of men employed for the number of women makes sure a supply of men for laborers. It is true that at present these men are largely unskilled laborers but they are naturally intelligent and very quickly learn to operate a machine. There would be small use of another plant employing women locating here until the surplus of male laborers is employed.

There is a vein of marble which runs parallel to the Southern Railroad and it is of such a quality near Philadelphia that it could perhaps be worked with profit.

There are three churches, Baptist, Presbyterian and Methodist. The high school offers educational advantages to the youth of the community.

VIII. Industrial Opportunities.

With reference to their location there are five rather distinct types of industries.

1. Industries that must be located near the source of raw materials.

2. Industries that must be located near where the finished product is used.

3. Industries that must be located where cheap power is available.



Philadelphia, looking north



Philadelphia from State Highway



Philadelphia Hosiery Mills

4. Industries that must locate where labor conditions are favorable.

5. Industries that may locate wherever anyone has the initiative and ability.

Various other factors such as climate, social, moral, religious and economic conditions, and the desire to be near, or away from, similar industries will also influence a manufacturer in the location of an industry.

Of the five types named above there is no need to discuss further items 2 and 5. In the resource map of Loudon County, and the location of the county in regard to surrounding supplies of raw material it was shown that in the county or near it there are many of the raw materials needed by industry. It has been suggested elsewhere that there is good brick making clays in the county and that these await development. Fire clays of at least some value may also be developed. The potteries use Tennessee ball clay and china clay in large quantities. Both of these are found at no great distance from the county. The coal for burning is close at hand and of excellent quality for this purpose. At present the clays are shipped north for manufacture and then the pottery is shipped south again. This adds the freight both ways to the cost. Some of the ceramic industries could well use southern materials made in southern factories and sold in southern markets. Loudon County is so situated that its advantages along this line are worth considering.

The opportunity in the textile field is one of the greatest. Many of the southern hosiery mills have made highly satisfactory returns on the investment. The nearness to cotton fields, favorable labor conditions, good water, cheap steam and hydro-electric power, good climate and good market all combine to make the county a suitable location for great expansion along the whole textile line. It would indeed be difficult to overestimate the possibilities for mills of this kind.

Copper and aluminum are produced in great quantities near the county. Zinc sulphide is shipped from near the county to northern cities for reduction. Iron is also within a few miles from the county. Good coal, suitable for metallurgical coke is near. Here then is a favorable combination for the metal working trades.

Large quantities of oak timber were shipped from this and surrounding counties to distant furniture factories. Some walnut and cedar is also shipped. Furniture factories located here, with the advantage of short haul for the raw material, certainly can place their goods on the market at a lower price than their competitors, who must haul their lumber hundreds of miles.

Cheap steam and hydro-electric power have been mentioned before, but no consideration of the industrial possibilities could fail to note the fact that hundreds of thousands of horse power can easily be made available to any user. It is estimated that there is one million horse power of undeveloped water power on the upper Tennessee River. Coal can

be delivered in the county at a cost today of not more than 10 cents per million B.T.U.

Labor conditions are favorable. In July 1925 there were 2640 people employed. The average number employed is considerable less than this. In 1919, the last year the census report of manufacturers is available, 11.4 % of the total population were employed in industry. About 45 % of these were women. The same year, 28.7 % of the population of Lowell, Mass. were employed and 43 % were women. In Cambridge, Mass. 20.6 % were employed and 33 % were women. Patterson, N. J. employed 27.4 % with 33 % women. In this same year Akron, Ohio gave employment in industries to 31.2 % of its population. These comparative figures show that not all the available resident labor is employed. And there is a large amount of labor in the surrounding mountains which will come to an industry which offers them fair wages.

These suggestions above are only a few of the many opportunities which the county affords. The following table of advantages shows many others.

Advantages of Loudon County.

1. Abundant Supply of Good Water.
2. Cheap Hydro-electric Power.
3. Nearness to Coal Field and Cheap Steam Coal (about 10 c. per million B.T.U.)
4. Mild Climate.
5. Native White Labor.
6. Good Transportation.
7. Nearness to Raw Materials (iron, copper, zinc, barytes, sulfuric acid, silica and aluminum).
8. Nearness to market (Loudon County is almost the center of the southeastern part of the United States.)
9. Good Factory Sites.
10. Raw Materials in County.

    1. Sand
    2. Gravel
    3. Marble
    4. Limestone
    5. Hardwood timber
    6. Chestnut timber
    7. Cement making materials
    8. Brick clay
    9. Fire clay
    10. Agricultural products.

There is a direct relationship between wealth and welfare in any group. Where there is little wealth there will not be sufficient revenue to develop and maintain good schools, roads, etc. Professor Allred of the University of Tennessee in a careful study of economic and social condi-

tions discovers these facts. (a) There is a clos relationship between the welath of any region and the development of its man power in schools. (b) The wealthy states have considerable industrial development as well as agriculture. Agriculture alone has not been able to make a single state wealthy.

The following chart compiled from data in the bulletin, Economic and Social Study of Tennessee", by Professor Allred, compares Loudon County with a strictly agricultural county and also with an industrial county.

COMPARISON OF KNOX, LOUDON AND HANCOCK COUNTIES.

	Knox	Loudon	Hancock
Area in square miles	504	219	228
Population per square mile 1920	224.1	74.3	45.9
Total white population 1920	99,607	15,238	10,198.
Population of all incorporated places	77,818	4,210	0
Increase or decrease in population 1910-20.	18,739	2,663	-234
Number of negroes in county 1920	13,310	1,037	256
Value of all farm property 1920	$27,415,000	8,479,000	5,929,000
Net agricultural income 1920	3,297,000	1,208,000	1,046,000
Percent of farms operated by tenants	22	35.6	34
Percent increase population 1910-20	19.9	19.6	-5.0
Total banking resources 1923	$36,238,000	1,969,000	190,000
Assessed valuation of all property 1922	126,482,034	9,672,641	2,614,400
Assessed value per square mile 1922	250,956	44,167	11,467
Value of all public utilities 1922	$15,780,000	1,776,000	0
Percent of value of all property in public utilities	12.5	18.3	0
Railroad mileage 1922	120	29	0
Value of railroads 1922	$7,636,000	1,388,000	0
Value added by manufacture 1919	$21,622,000	2,961,000	0
Number of passenger automobiles 1924	11,329	1,049	143

	Knox	Loudon	Hancock
Number personal income tax payers	6,817	188	3
Number people to each practicing physician 1923	601	957	5,227
Public road mileage 1922	937	359	340
Total taxes collected by county government 1922	$885,000	86,328	$28,039
Total taxes collected by state in county	$445,000	35,000	9,000
County tax rate per $100 valuation 1922	.70	.89	1.07
County tax rate for elementary schools 1922	.25	.39	.37
Amount of taxes paid to state in excess of amount paid back by state for schools	$336,850	15,260	-$5,887
Percent of native whites illiterate 1920	5.8	12.7	18.8
Percent of negroes illiterate	14.7	17.6	43.6
Average value of rural elementary school property per school	$9,307	2,093	1,062
Expenditure per pupil enrolled in rural elementary schools 1923	$55.72	29.65	12.89
Percent of rural elementary teachers having only elementary traihing 1923	0	0	17.0
Expenditure per pupil enrolled in rural high schools 1923	$94.01	72.03	109.93
Percent of rural elementary teachers without previous experience 1923	9.7	10.6	15.1
Number of days rural elementary schools open 1923	136	116	126
Average salary of rural teachers 1923	$496	$358	$359
Average salary of city teachers 1923	$1,337	$775	0
Percent of all rural elementary schools having only one room 1923	41.9	63.1	89.3
Percent of enrollment in average daily attendance-white rural elementary schools 1923	65.0	62.7	53.6

Percent of enrollment in average daily attendance - all schools, rural and city 1923	64.0	67.0	54.0
Percent of total enrollment in high school 1923	14.2	6.1	1.4
Number consolidated schools 1923	21	14	0
Salary of county superintendent	$4,300	$1,600	$1,200
Percent of rural schools not having libraries 1923	50	60	62
Value of all books in rural school libraries 1923	$3,250	524	915
Number of subscribers to three leading magazins 1924	4,279	304	14
Number of people per dentist	2,684	5,423	No dentist

The following chart compares Loudon County in many ways with the other counties of the state. In each case the rank of Loudon County and the best and poorest county in the state is given.

SUMMARY FOR LOUDON COUNTY.

Rank of Loudon County			Amount for Loudon County
87th	In land area in square miles		219
	Shelby is largest with	801	
	Trousdale is smallest with	106	
10th	In population per square mile		74.3
	Davidson is largest with	328.4	
	Van Buren is smallest with	9.0	
51st	In total white population 1920		15,238
	Shelby is largest with	124,196	
	Van Buren is smallest with	2,574	
30th	In population of all incorporated places		4,210
	Shelby is largest with	165,417	
	Fentress, Grainger, Hancock, Perry, Union and Van Buren are smallest with	0	
8th	In percentage of increase in population 1910-20		19.6
	Unicoi is largest with	40.5	
	Sequatchie is smallest with decrease of	13.6	
13th	In numerical increase in population 1910-20		2,663
	Shelby is largest with	31,777	
	Maury is smallest with decrease of	5,053	

38th	In percentage of population that is negro		6.4
	Unicoi is smallest with	0.04	
	Fayette is largest with	74.7	
40th	In number of negroes		1,037
	Unicoi is smallest with	4	
	Shelby is largest with	98,962	
55th	In value of all farm property		8,479,000
	Shelby is largest with	44,103,000	
	Van Buren is smallest with	977,000	
76th	In net agricultural income (receipts minus expenses)		1,208,000
	Gibson is largest with	7,817,000	
	Van Buren is smallest with	215,000	
51st	In percentage of farms operated by tenants		35.6
	Morgan is smallest with	11.5	
	Lake is largest with	87.2	
41st	In total banking resources (state and national banks combined)		1,969,000
	Shelby is largest with	113,767,000	
	Union is smallest with	66,000	
45th	In assessed valuation of all property		9,672,641
	Shelby is largest with	276,087,153	
	Picket is smallest with	1,259,060	
14th	In assessed valuation per square mile		44,167
	Davidson is largest with	388,597	
	Wayne is smallest with	5,489	
45th	In value of all public utilities		1,776,000
	Shelby is largest with	46,567,000	
	Hancock is smallest with	0	
23rd	In percent of total assessed value of all property in public utilities		18.3
	Morgan is largest with	44.8	
	Hancock is smallest with	0	
58th	In railroad mileage		29
	Shelby is largest with	231	
	Cannon, Clay, DeKalb, Perry, Pickett, Van Buren, Hardin, Jackson, Meigs, Macon, Moore, and Hancock are smallest with	0	
46th	In assessed valuation of all railroads		1,388,000
	Shelby is largest with	20,419,000	
	Hancock, Cannon, Clay, Dekalb, Perry, Pickett, Van Buren, Hardin, Jackson, Meigs, Macon, and Moore are smallest with	0	

10th	In value added by manufacturing		$2,961,000
	Shelby is largest with	$50,102,692	
	Hancock is smallest with	0	
36th	In number of passenger automobiles		1,049
	Shelby is largest with	26,431	
	Van Buren is smallest with	10	
41st	In total number of income tax returns		188
	Shelby is largest with	17,537	
	Union is smallest with	1	
44th	In number of income tax returns of over $5,000		7
	Shelby is largest with	1,825	
	Sevier, Benton, Houston, Lewis, Perry Decatur, Jackson, Moore, Sequatchie, Clay Bledsoe, Hancock, Meigs, Van Buren, Union and Pickett are smallest with	0	
21st	In number of farms of average size per practicing physician		108
	Davidson is smallest with	12	
	Hancock is largest with	1,029	
44th	In number of miles of public road per sq.mile		1.64
	Moore is largest with	4.25	
	Sequatchie is smallest with	.40	
77th	In number of miles of public road per county		359
	Carroll is largest with	1,500	
	Trousdale is smallest with	60	
61st	In amount of total county tax collected		86,000
	Shelby is largest with	2,563,000	
	Pickett is smallest with	13,000	
45th	In amount of total state taxes collected		35,000
	Shelby is largest with	994,000	
	Pickett is smallest with	5,000	
21st	In county tax rate for all purposes per $100		.89
	Wilson is smallest with	.64	
	Scott is largest with	2.20	
39th	In county tax rate for elementary schools		.3925
	Hardin is largest with	.6525	
	Obion is smallest with	.1925	
45th	In amount of taxes paid to state in excess of amount paid back by state for schools		15,260
	Shelby is largest with	836,106	
	Overton is smallest with	7,827	
80th	In percentage of native white illiteracy		12.7
	Shelby is smallest with	0.7	
	Macon is largest with	22.0	

12th	In percentage of negroes illiterate		17.6
	Perry is smallest with	9.8	
	Pickett is largest with	100.0	
30th	In average value of rural elementary school property (per school)		2,093
	Hamilton is largest with	12,154	
	Overton is smallest with	333	
19th	In expenditure per pupil enrolled for rural elementary schools		29.65
	Davidson is largest with	76.51	
	Union is smallest with	10.73	
1st	In percentage of rural elementary teachers having only elementary school training		0
	28 counties tied for smallest with	0	
	Benton is largest with	46.1	
15th	In percentage of rural elementary teachers without previous experience		10.6
	Shelby is smallest with	5.3	
	Lake is largest with	39.1	
66th	In length of rural elementary school terms		116
	Lincoln is largest with	175	
	Overton is smallest with	91	
25th	In length of city elementary school terms		176
	Knox is largest with	187	
	Overton is smallest with	99	
78th	In annual average salary of rural teachers		$358
	Hamilton is largest with	896	
	McNairy is smallest with	295	
27th	In average annual salary of city teachers		$775
	Montgomery is largest with	1,377	
	Cumberland is smallest with	368	
42nd	In percentage of rural elementary schools having only one teacher		63.1
	Shelby is smallest with	16.2	
	Pickett is largest with	96.6	
17th	In number of one-teacher rural schools		24
	Sequatchie is smallest with	4	
	Hardeman is largest with	86	
56th	In percentage of enrollment in average daily attendance in white rural elementary schools		62.7
	Marion is largest with (reported)	100.0	
	Blount is smallest with	34.5	

37th	In percentage of enrollment in average daily attendance in all schools		67.0
	Marion is largest with (reported)	99.0	
	Lake is smallest with	50.0	
8th	In number of consolidated schools		14
	Greene is largest with	35	
	16 counties tied for smallest with	0	
42th	In percentage high school enrollment is of total enrollment		6.1
	Van Buren is largest with	14.6	
	Hancock is smallest with	1.4	
41st	In number of subscribers to three leading magazines		304
	Davidson is largest with	10,094	
	Pickett is smallest with	5	
66th	In salary of county superintendent		1,600
	Hamilton is largest with	4,350	
	Sequatchie and Perry are smallest with	500	
30th	In percent of rural schools not having libraries		60.0
	Bradley is smallest with	7.0	
	Bledsoe and Stewart are largest with	95.0	
72nd	In total value of books in all rural school libraries		524
	Hamilton is largest with	18,940	
	Several counties only report a few dollars		
46th	In number of people per dentist		5,423
	Davidson is smallest with	1,281	
	Van Buren, Sequatchie, Moore, Pickett, Perry, Clay, Cheatham, Hancock, Union and Morgan have no dentist.		

It will be noted that there are two items in this county comparison which are different from the figures given under the data from Loudon County in other places in this survey. The Banking Resources, and the population per practicing physician given in the above table are for 1923. In the earlier pages the data for Loudon County alone is for June 1925.

A study of the above charts shows that for the best progress of any county that both industry and agriculture are needed. The best agricultural county of the state lost in population from 1910 to 1920. Those counties whose industries were developing gained much in the same decade. Not only was there a gain in population in the industrial counties but there was a corresponding gain in wealth. This means more property to be taxed and as a result more money for schools, roads, etc. In the richer counties there is even more money for these things with a decidedly lower tax rate. Then the further industrial development of Loudon County will mean more money for social betterment, more people and lower tax rate.

APPROVAL.

The foregoing thesis is hereby approved as a creditable study of an engineering subject, carried out and presented in a manner sufficiently satisfactory to warrant its acceptance as a prerequisite to the degree for which it has been submitted. It is to be understood that by this approval the undersigned does not necessarily endorse or approve any statement made, opinions expressed, or conclusions drawn therein, but approves the thesis only for the purpose for which it is submitted.

Name W. R. Woolrich

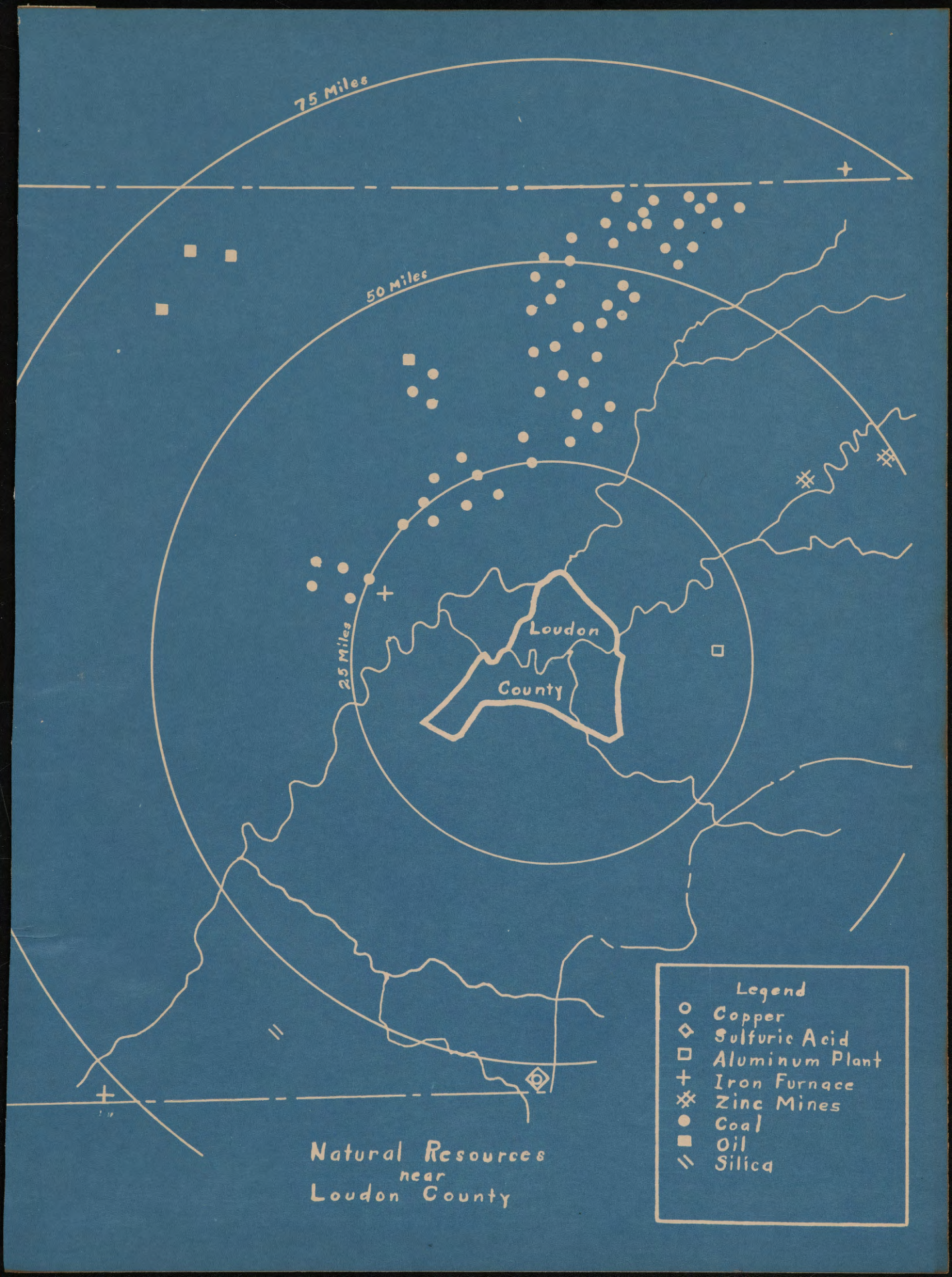
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RESOURCE MAP OF LOUDON COUNTY

Legend

- Proposed Dam
- Barytes - X Mines
- Marble
- Fire Clay
- Brick Clay along Marble
- Lead

Clinch River
Martel
Lenoir City
Coulter Shoals
Tennessee River
Marble Bluff
Loudon
Little Tennessee River
Southern R.R.
Phiadelphia
Meadow
Greenback
L.&N.R.R.



Natural Resources
near
Loudon County