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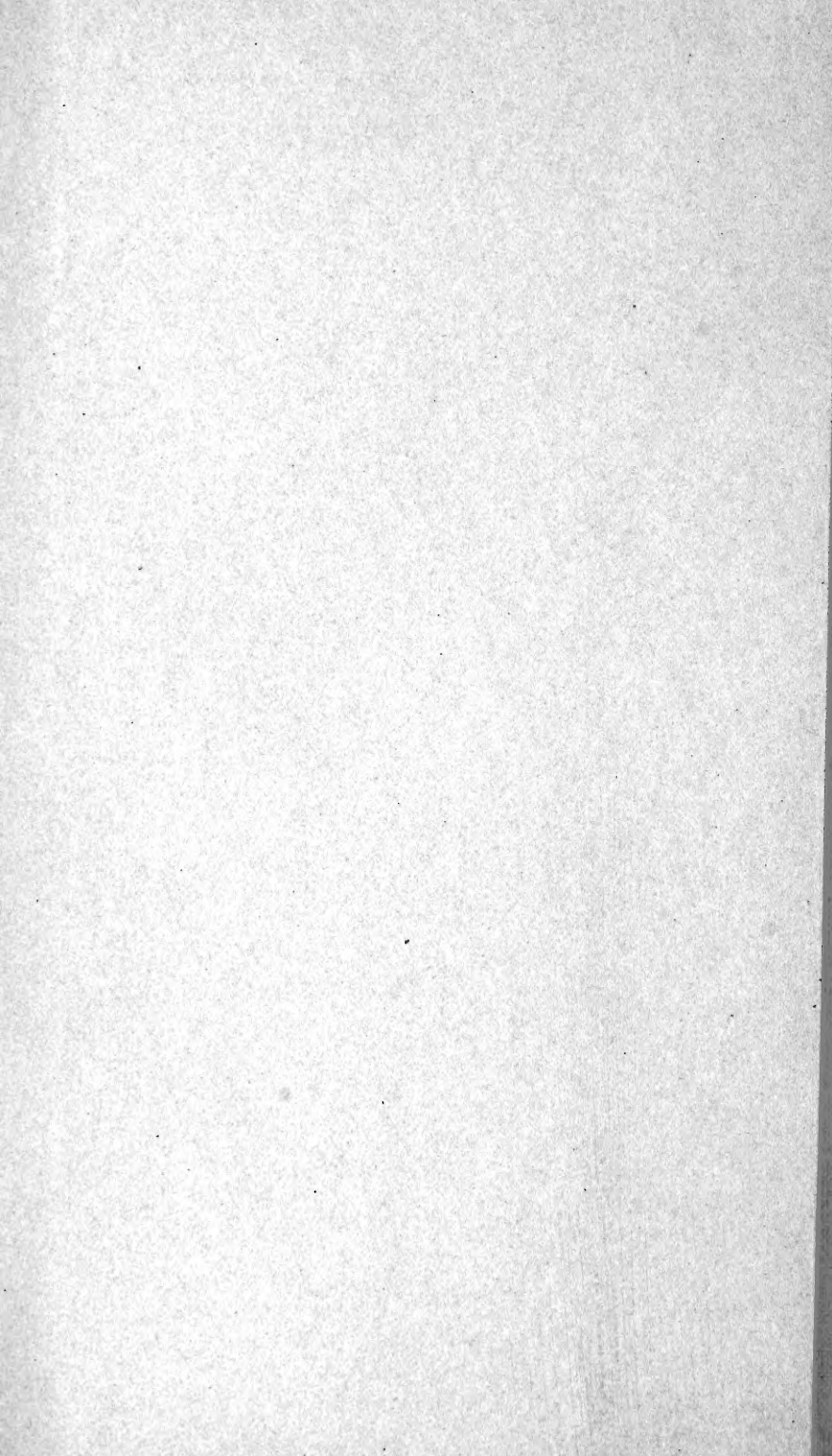
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# FACTS AND FIGURES

CONCERNING THE

Climate, Manufacturing Advantages,

AND THE

Agricultural and Mineral Resources

OF

EAST TENNESSEE.

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# Facts Concerning East Tennessee.

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THE Immigrant, in selecting a new home, naturally inquires, in reference to the point in contemplation, concerning the Climate, the Soil, the Productions, the Schools and Colleges, the state of Society, the Railroads and Markets, the Minerals and Manufactures.

We propose giving facts concerning these several subjects.

## CLIMATE.

East Tennessee lies between the thirty-fifth and thirty-seventh parallels of Latitude. Its eastern and southern line runs along the extreme height of the Stone, the Iron, the Smoky, and the Unicoi or Unaka Mountains, which are all parts or outlines of the great Blue Mountain. On the north and west, it is separated from Kentucky and Middle Tennessee by the Cumberland range. These mountains, especially on the south and east, are exceedingly high, rising to the height, in some places, of more than six thousand feet, and at one place exceeding the height of Mount Washington. The Valley of East Tennessee lies between these high ranges or mountains. It is about fifty miles wide and two hundred and fifty long.

From these lofty mountains pour down into the valley the Clinch, the Holston, the Watauga, the Nolichucky, the French Broad, the Big Pigeon, the Tennessee, the Hiwassee, the Ocoee, and the Emory rivers, besides many smaller streams, all finally uniting and forming the beautiful Tennessee. The waters of these streams, as they dash down from their mountain sources, are as clear as crystal, and carry fertility into all the great valleys. The rapidity of their descent affords countless sites for manufacturing purposes, with power sufficient to move, at all seasons, the heaviest machinery.

Knoxville is the geographical, as well as the commercial, centre of East Tennessee. It is situated on a high plateau, on the north bank of the Holston, a stream that is navigable for steamboats a great part of the year. Knoxville is nearly one thousand feet above the sea level. The extreme

eastern part of this section of the State is several hundred feet higher, while the western part, in the vicinity of Chattanooga and below, is lower than Knoxville. The mean elevation of East Tennessee may, therefore, be placed at nearly one thousand feet. Its summers are delightful. The heat is greatly tempered and modified by the high mountains which surround the valley, while in winter the force of the winds from the west and north is broken and expended against the Cumberland mountains. For these reasons our summers are cool, and our winters mild and pleasant. Snow seldom falls, and ice rarely exceeds three or four inches in thickness. Much of our stock runs out, unprotected, during the whole year. The fierce winds which, during a great part of the year, violently sweep over the northwestern States, rarely visit in fury this mountain protected region. Swamps and stagnant water, so common in the west and further south, are almost unknown, except in the lower end of the valley. For this reason miasmas and noxious exhalations, except in the region just stated, are absolutely unknown. In the region of Knoxville, and in all that East of it, we are exempt from chills and ague, the great enemy of the immigrant in all the Western and Southern States. No process of acclimation is necessary here, whether the immigrant comes from Maine or Pennsylvania, from France or Norway, from the first he inhales a pure mountain air, and is as exempt from disease as our native mountaineer. He can come with perfect safety during any month in the year.

From the Meteorological Record, kept at the East Tennessee University, at Knoxville, for January, 1868, we have the following facts:

Mean Temperature for said month at 7 A.M.,  $32^{\circ} 45'$ ; at two P.M.,  $37^{\circ} 56'$ ; at 9 P.M.,  $35^{\circ} 12'$ .

Mean Temperature for month  $35^{\circ} 05'$ .

Coldest day, January 30th, mean temperature for 24 hours,  $20^{\circ} 16'$ .

Warmest day, January 7th, mean temperature for 24 hours,  $52^{\circ} 66'$ .

Extreme Temperatures at 7 A.M.,  $14\frac{3}{4}^{\circ}$  and  $50\frac{1}{4}^{\circ}$ ; at 2 P.M.,  $23\frac{1}{4}^{\circ}$  and  $53\frac{1}{2}^{\circ}$ ; at 9 P.M.,  $22^{\circ}$  and  $51^{\circ}$ .

Mean Barometer Height reduced to freezing point, at 7 A.M., 29.089 inches; at 2 P.M., 29.063 inches; at 9 P.M., 29.089 inches

Mean for 31 days, 29.080.

The extreme temperatures during the year 1868, were  $14^{\circ}$  and  $92^{\circ}$ , giving a range of  $78^{\circ}$ . The range in Ohio is about  $105^{\circ}$ , in Missouri, over  $100^{\circ}$ , and in Florida, about  $75^{\circ}$ .

Mean temperature for 1868, about  $60^{\circ}$ .

It is a rare thing for the mercury to sink below  $14^{\circ}$ , or to rise above  $92^{\circ}$ . From  $30^{\circ}$  to  $35^{\circ}$  may be assumed as the mean of winter, and from  $65^{\circ}$  to  $70^{\circ}$  the mean of summer.

During the month of January of this year, 1869, there were fifteen days that were fit for plowing, and every day was fit for out door work. Indeed during the whole round of the year, there are but few days, by reason of heat or cold, unfit for the ordinary avocations of farm life. We



are not locked up by the extreme cold and long winters of the north, nor worn down and exhausted by the sultry and long summers of the extreme south, from the effects of which the short and warm winters are insufficient to restore the constitution. A writer in the *New York Tribune* in January last, boasting of the climate of Jacksonville, Florida, states that on the 21st of December, 1868, the mercury ranged at  $85^{\circ}$ - $101^{\circ}$ - $91^{\circ}$ , mean temperature for the week,  $86^{\circ}$ . He says it is "always comfortable in the shade, but excessively hot at mid-day in places exposed to the almost vertical rays of the sun." With the mercury at  $101^{\circ}$ , in December, it is reasonable to suppose that the shade would be comfortable. On the other hand, in Portland, Maine, July 5, 1868, the mercury stood at  $98^{\circ}$ - $110^{\circ}$ - $94^{\circ}$ . East Tennessee occupies a golden mean between the extremes, which in climate, as in all things else, tends to happiness and safety.

In all the elements that constitute a health-giving and pleasant climate, we boldly challenge a comparison between the figures shown by the records of the East Tennessee University, and those shown by the records of any other institution east of the Pacific Ocean.

As proof of our superior climate we give below the rates of mortality of the different sections of the United States.

## RATE OF MORTALITY.

	DEATHS IN 1860.	PER CENT. 1860.	PER CENT. 1850.
Lowlands of the Atlantic Coast from Delaware to Florida, inclusive, including two Counties along the coast,.....	15,292	1.34	1.45
The lower Mississippi Valley, comprising Louisiana, and a breadth of two counties along each bank of the river northward to Cape Girardeux, Missouri,.....	30,346	1.81	2.38
The Alleghany Region, including East Tennessee,.....	26,346	1.08	0.96
The region surrounding the Alleghanies, extending to the lowlands of the Atlantic and the Mississippi valley, and therefore including Kentucky, Ohio, Indiana, Illinois, and Missouri,.....	79,615	1.32	1.19
Maine, New Hampshire and Vermont,.....	15,438	1.24	1.25
The Pacific Coast,.....	3,991	0.95	0.92
Wisconsin, Iowa and Minnesota,.....	15,508	0.98	1.01
The whole United States,.....		1.27	1.41

It will thus be seen that our per centage of mortality in 1860 was 1.08, while that of the North Western States was 1.32; and in 1850 ours was 0.96, while theirs was 1.10. While the per centage of the whole United States was 1.27 in 1860 and 1.31 in 1850, ours was for those periods 1.08 and 0.96. The number of deaths from consumption in Massachusetts from June 1st, 1859, to May 31st, 1860, was 4,845, in a population of 1,231,066, while in Tennessee, in a population of 1,109,801, the deaths from the same cause were 1,430.

## THE SOIL.

It would be uncandid to assume that the soil of East Tennessee, as a whole, is equal to the virgin soil of most of the Western States. But that our natural advantages *as a whole*, are equal to those of any other State we do boldly assert.

The large number of rivers entering the eastern part of the State, and flowing down the valley, sometimes for over a hundred miles in almost parallel lines, has cut East Tennessee into many long valleys, some of them, such as the New Market and the Sweet Water valleys, are from five to eight miles in width, and from twenty-five to fifty miles in length. The soil in these valleys was originally of the finest quality, consisting of a rich clay loam, and resting on a red clay subsoil. By long unskillful cultivation, and by shallow plowing, these fine soils are reduced in productive capacity. All they need to restore them is clover, generous treatment, and an alternation of crops.

Along the banks of all our rivers and many of our creeks, there are bottom lands equal in quality originally, to the best lands on the Mississippi or Missouri, without the marshes, malaria, or mosquitoes. The average yield of these lands, in corn, with good cultivation, is from fifty to one hundred bushels per acre. Owing to the length and great number of our streams, the quantity of this bottom land is very considerable, sometimes it spreads out from the river from one to two miles, and bodies of many hundreds of acres can be had in a compact form.

From Kingston, eastward to the Virginia line, it is nearly or quite as healthy on the streams as on the rolling lands. Through two-thirds of the entire length of East Tennessee, the currents move rapidly and the water is therefore pure and sparkling. Up towards their sources the mountain trout abound. All over this region, and on almost every hundred acres, pure, bold and limpid springs gush forth from valley or hill side. Running water can be had on nearly every farm and often in every field.

The remaining land not already described consists of rolling, hilly and mountainous sections, with innumerable small valleys and coves. In these lands gravel, limestone and flint are found. Limestone indeed is found nearly everywhere, sand in some places. All the rolling lands seem to have a peculiar adaptation for wheat, as well as for clover. This is especially so of the upper half of East Tennessee. Besides wheat, clover, corn, oats, Irish potatoes, sweet potatoes, timothy, herd grass and buck-wheat do well on these lands.

Prof. Safford of Cumberland University, and formerly State Geologist, says in his report in reference to these rolling lands :

“The soil and agricultural features of the valley of East Tennessee, like its rocks, are remarkably various. \* \* The numerous and delightful



limestone valleys excel in fertility. In many cases, one side of a ridge, for many miles in succession, may be seen covered with beautiful and luxuriant grain up to the very top, while the other, all rock or sand, is worth but little more than the firewood upon it. There are extensive strips of country which do not partake so much of the ridge or valley character, that affords beautiful rolling farms and soils of excellent quality."

Speaking of the high mountain districts, the same authority says:

"On many of them the soil affords a fine growth, and an abundance of wild grass and vines, upon which droves of stock are kept and fattened. These, at present, wild regions, are well suited for excellent high land pasture grounds, and ought, some day, to be covered with cultivated grasses."

Good improved farming lands in East Tennessee can be purchased at prices ranging from five to twenty-five dollars per acre. Rich bottom lands range from fifty to one hundred dollars. Mountain lands can be bought in large tracts at from thirty cents to one dollar per acre. In some of the interior counties good upland farms can be bought at from one to five dollars. Fine ridge sides cultivated and well adapted to fruit culture can be bought at prices running from five to ten dollars per acre. Good grazing lands can be purchased in large tracts at from one to five dollars per acre.

There is one fact in reference to our soil worthy of especial notice, and that is, that experienced and scientific men all concur in the fact that, even where it is thoroughly exhausted in appearance, it contains the elements of rapid recuperation, by proper treatment, and that it can all be brought up to the highest state of fertility and productiveness. It quickly responds to kind treatment.

#### THE PRODUCTS OF THE SOIL.

The products of the soil of East Tennessee are exceedingly numerous. Occupying a half way position between South Carolina, and the grain growing States of the north west, with an altitude greater than either, it combines many of the peculiarities of production of each of those regions. Here the yam, the peach, the water melon mature in luscious perfection. The fig also will ripen out of doors if slightly protected in winter.

On the other hand many products, more peculiarly belonging to a northern climate, do well in this region, such as wheat, rye, oats, timothy, buck wheat, clover, apples, pears and the Irish potato.

**WHEAT.**—As before remarked, wheat does well in East Tennessee, and especially in all that part of it lying East of Knoxville. The soil seems to be peculiarly adapted to its successful cultivation. Owing to indifferent farming generally, and the failure to use fertilizers, the average yield per acre is very low. But in the rare cases where proper care has been

bestowed on the preparation and fertilization of the soil, the yield has been as high as from twenty-five to forty bushels. These results, as well as the methods which caused them, are exceptional. But they demonstrate what a system of high farming would do for wheat culture in this region. The grain is decidedly superior to western wheat, and flour made from it commands a higher price in market.

In one of the letters of Henry C. Carey, of Philadelphia, to the Hon. Henry Wilson, occurs this passage :

“Even before the war a great change had commenced in regard to the sources from which Northern supplies of cereals were to come, Tennessee and North Carolina furnishing large supplies of wheat *greatly superior* in quality to that grown on Northern lands, and commanding higher prices in all our markets. The daily quotations show that Southern Flour, raised in Missouri, Tennessee, and Virginia, brings from three to five dollars more per barrel than the best New York Genesee Flour; that of Louisiana and Texas is far superior to the former even, owing to the superior dryness, and the fact that it contains more gluten, and does not ferment so easily. Southern Flour makes better dough and macaroni than Northern or Western Flour, it is better adapted for transportation over the sea, and keeps better in the Tropics. It is, therefore, the Flour that is sought after for Brazil, Central America, Mexico, and the West Indian markets, which are at our doors. A barrel of strictly Southern Flour will make twenty pounds more bread than Illinois Flour, because, being so much dryer, it takes up more water in making up.”

The wheat harvest of East Tennessee is one month earlier than it is in Northern Illinois and in Western New York. Sixty-six pounds to the measured bushel, in a good season, is no uncommon weight, and sometimes it reaches sixty-eight or seventy pounds.

IRISH POTATOES also do well in this climate. Altitude supplies the place of a higher latitude. Their quality, when raised on our high ridges, is but little inferior to a northern raised potato. The yield per acre, in good soil and in a favorable season, is from one to two hundred bushels, and sometimes as much as three hundred, but the latter is an extreme case. The peach-blow does finely here.

SWEET POTATOES do well also, especially in the lower half of East Tennessee, from one hundred and fifty to two hundred bushels per acre is merely a good crop. For stock, they are worth as much per bushel as corn. Nothing is perhaps better when boiled for producing rich milk, than sweet potatoes. In Louisiana the experiment was tried with Corn and sweet potatoes, on two sets of pigs of the same size and age, and it was found that those raised and fattened on potatoes made the most bacon.

CORN is one of the great staples of East Tennessee. Every year millions of bushels are sold to our neighbors south of us. Besides vast quantities are converted into bacon, beef, horses and mules. The valleys of the Nolichucky, the French Broad and the Tennessee are as fruit-

ful in corn as are the Miami or the Wabash. In 1860, 50,000,000 bushels of Corn were raised in Tennessee, against 70,000,000 in Ohio. More than one-third of this, and nearly one-half, must have been raised in East Tennessee, for the other divisions of the State were largely engaged in raising cotton and tobacco. For many years corn has been worth in this market not less than fifty cents a bushel in the fall, and generally more, and by the next summer it usually commands from seventy-five cents to a dollar.

TOBACCO so far as tried has done well in East Tennessee; nor is there any reason why hemp may not do well on our rich soils. Oats also do well. So also do all the small vegetables, such as beets, turnips, cabbage, carrots, parsnips, peas and beans.

APPLES.—As fine apples as can be desired, will grow on all our high ridges. The Cumberland Plateau, all the eastern counties, all our high ridges, and all the counties bordering on the Smoky and Cumberland Mountains, are peculiarly adapted to their growth and development in perfection. By planting on the tops and sides of the ridges, that we can produce apples equal in size and quality to the best raised in the North, does not admit of a doubt. Such apples can be raised on Black Oak Ridge, in Knox county, and on the many high hills within sight of this city. In such elevated localities the buds are rarely, if ever, killed by the severity of winter, or the bloom killed by the late frosts of spring. By proper cultivation, fertilizing and pruning, a good crop can confidently be expected nearly every year. First quality of apples are now (February, 1869,) worth from one to two dollars per bushel in Knoxville. Aside from our own market, the whole south, where they can't raise apples, and where they are worth more than oranges, lies right at our doors. It is amazing that this splendid fruit and this inviting market for fortune making has received so little attention at the hands of our people. They do not raise even their own fruit trees. During last fall from fifty to one hundred thousand dollars were paid to the agents of fruit men in Ohio for fruit trees, possibly a much larger sum. We need a nursery at Knoxville.

PEACHES, being native to the south, it is natural to expect them to ripen here in perfection; and so they do, with that rich and melting flavor peculiar to them in their native clime. Like the apple, by planting on the high ridges, and by proper care in cultivating, pruning and fertilizing, a crop can be expected nearly every year. Ripening here from twenty to thirty days earlier than in Ohio, and with a much richer flavor, when the Knoxville and Kentucky Railroad is completed, those who are ready to supply the Cincinnati market with early Crawford's or early Hale's may well expect to reap a golden harvest.

PEARS have not yet been so well tested as peaches or apples, but so far as tried they have proved successful. The Bartlett and Seckel have succeeded admirably, so far as tested.

GRAPES.—Before the late war the varieties planted here were the Catawba and the Isabella, and here, as nearly every where else, they proved unreliable—some years making splendid crops, and sometimes failing. Since the war new varieties have been introduced, and, so far as they have been tested, they promise to prove an entire success. This is particularly true of the Concord. That this justly popular grape, as well as the Hartford Prolific and the Norton's Virginia and other varieties will do as well here on the banks of our rivers as in any part of the United States, east of California or New Mexico, does not admit of a doubt.

On this subject Mr. George Husman, a grape grower of Missouri, and the author of a standard work, entitled "Grapes and Wine," speaking of the advantages of his State for grape culture, says: "The mountainous regions of Tennessee, Georgia, Arkansas, Texas and Alabama, may perhaps rival, and *even surpass us* in the future, but their inhabitants at present are not of the clay from which grape growers are formed."

GRASSES.—A few months ago the question incidentally arose, and was gravely discussed in the American Institute Farmers' Club, in the city of New York, whether the grasses would grow in the South (including Tennessee in that category,) and the conclusion published to the world was that they would not. And yet the Census Report for 1860 shows that our hay crop amounted to 146,027 tons. When said Farmers' Club was reminded by a letter from this place that hundreds of cattle live from April to November on the grass which grows wild on the commons around Knoxville, and grow fat on it, the answer of the Reporter was that the club referred to native, spontaneous grasses; and that the extreme heat of summer in the South would kill or parch up the grasses. Still failing to draw the distinction between our *temperate* mountain climate, and the hot, arid sand fields of the Cotton States. Thus are we constantly confounded with the cotton and rice districts South of us, by persons professing to know, when, in truth, East Tennessee more nearly resembles in climate, soil, physical geography and productions the State of Pennsylvania than South Carolina or Alabama. In over one-third of Tennessee blue grass grows wild; over another third, including East Tennessee, it grows wild partially, and all over this region wherever the land is moderately rich with limestone rock, it can be cultivated in great beauty as may be seen in all our yards and lawns. In some of our valleys it is voluntarily spreading from year to year. But we are not compelled to rely on blue grass.

RED CLOVER flourishes everywhere in the greatest perfection. On moderately good land from one to two tons is the average yield. On the best quality of upland, with a top dressing of plaster obtained just over our borders in Virginia, from two to three tons per acre are obtained. For forty years our farmers have sown clover for the three-fold purpose of hay, pasture and renovation of soil. The argillaceous character of our

soil and the presence everywhere of limestone, render this one of the finest clover regions in the United States. We know of no section where it does better, if so well.

TIMOTHY, also, does well in East Tennessee, not only on what is termed "meadow land," but also on our rich rolling lands, and especially on the rich sides and tops of our mountains. On the top of the Smoky mountain timothy grows six feet high. The average yield of this grass in suitable land is about equal to clover.

HERD GRASS, on low flat soil does well also, but it is not so much of a favorite as clover. Orchard and Hungarian Grass also grow here. White Clover grows wild everywhere. On the sides and tops of our high ridges and mountains, vines and wild grasses grow luxuriantly, affording fine pasturage in summer for sheep, cattle and horses. In these mountain ranges, in April and May, large herds of cattle are driven, where they roam until October or November, when they are driven into the farms fit for market. Enterprising farmers near the Cumberland have made fortunes by raising stock in these highland pastures. Georgia and Alabama, where clover and timothy do not grow except to a very limited extent, afford a never failing market for our hay at prices ranging from \$1 50 to \$3 50 per hundred. These markets are at our very doors. In them we can never have a successful rival. The same is true of bacon, beef, mutton, corn, apples, Irish potatoes, butter, cheese, eggs, iron, coal, and many other articles, which we can produce and they cannot, or which they cannot produce so cheaply or perfectly as we can.

#### SCHOOLS AND COLLEGES.

At all times we have had a number of colleges in East Tennessee. The first public school West of the Alleghanies was established by Rev. Samuel Doad, D.D., in Washington county, in 1781, which was afterwards known as Washington College. Since the war a free school system has been adopted and put into operation, which opens the doors of knowledge to every child in the State black or white, rich or poor. The State Agricultural College has recently been located at Knoxville as a branch of the East Tennessee University. This will make Knoxville the attractive centre of the highest educational advantages in the State.

#### STATE OF SOCIETY.

The people of East Tennessee are at peace. The outrages of which strangers may read are in Middle and West Tennessee. There are no Ku Klux outrages here. During the late civil war a very large majority of our people sympathized with the National Government. Those who took the opposite side in East Tennessee, are to-day law-abiding and peaceable citizens, quietly engaged in legitimate business. Many of them, possibly a large majority, sincerely desire to see immigrants from the

North settle with us and join in developing our wonderful resources. The immigrant will be as safe here as in New York or Pennsylvania. This is more certainly true of East Tennessee than of any other part of this State or of the South.

Let not East Tennessee be confounded with the other divisions of this State, or with other parts of the South. We are a distinct and peculiar people. We hail the coming of the immigrant with a hearty welcome, and give him the assurance of perfect security, as long as he obeys the laws. We point him to our agricultural fields, to our vast mines of iron, lead, zinc, coal, copper, ochre and slate, to our vast quarries of marble, to our splendid water powers, now "running idly to the sea;" to our grand old forests of pine, oak, ash, birch, maple, hickory and walnut; to our equable climate as lovely as that of Italy, and invite him to participate with us in these golden bounties of Providence so lavishly bestowed on this beautiful region.

#### MINERALS.

In East Tennessee geological surveys show that we have the following minerals, to-wit: coal, iron, lead, copper, zinc, lignite, marble, salt, nitre, epsom salts, oxyde of manganese, hydraulic limestone, roofing slate, potters' and fire clays, sand for glass, albuminum, ochre and asbestos, not to mention gold and silver which have been found in limited quantities.

STONE COAL.—Our great coal field begins near Cumberland Gap, in Claibourne county, and extends South and South-west to Middle Tennessee and into Alabama, and is confined to the Cumberland range and its cognate ridges. Most of this coal region lies in East Tennessee—in fact nearly all of it. The coal is mostly semi-bituminous though in some cases it is properly bituminous. Professor Safford, in his report, says that he has no hesitation, after reviewing the whole field:

"In saying that our coal, in good quality and in beds thick enough to be profitably worked, is at least equal in the aggregate to a solid stratum eight feet thick and co-extensive with the table land, and hence equal to four thousand four hundred square miles."

This may be an extravagant estimate, yet it cannot be questioned that the quantity is practically inexhaustable.

In 1865, S. W. Ely, an experienced geologist of Ohio, made an examination of this coal region, and in his report to the company which employed him, he says:

"In truth this inestimable mineral is so liberally disposed in the structure of the Cumberlands that it would tax the imagination to comprehend the quantity. \* \* I trust the time is near at hand when Cincinnati and Louisville and the interior towns of Kentucky will seek in the coals of your Scott county lands an article which exceeds in purity and other excellent qualities any I have ever seen from the bituminous fields of the North."



Since the foregoing reports were made the Knoxville and Kentucky Railroad has been finished to the coal beds of Anderson county, a distance of thirty miles from Knoxville, from whence coal is shipped to Knoxville and many of the smaller towns East and West, to Atlanta, Augusta, Macon, Nashville and Memphis. At the last two places it comes in competition with Pittsburg coal and commands a much higher price. All our foundries and iron establishments attest the fact that Mr. Ely did not over-estimate the superior quality of this coal. It has been pronounced by the gas companies of Charleston, Augusta, Lynchburg, Nashville, Memphis and Knoxville, superior to the best gas coal they have ever used. It weighs eight pounds to the bushel more than the Yough'y coal, which is the best coal known in the Pittsburgh market. The Rockwood Iron Company of Roane county, recently put in operation under the skillful supervision of Gen. John T. Wilder, is now making the best quality of pig iron from *raw* or *uncoked* coal. It is said to be equal to the Scotch pig.

Coal is sold and delivered to our citizens in the lump, at 20 cents a bushel, or \$5 00 a ton; it is sold by wholesale to manufacturers at 15 cents, or at \$3 75 a ton. Our road as yet has only penetrated the outskirts of the great coal region. Beyond these lie the richest beds. The coal penetrated by this road, according to the concurrent testimony of all competent judges, is greatly superior in quality to that found in the lower end of East Tennessee. It is stated by those who are competent to give an opinion that the coal beds are so located as to be most cheaply and advantageously mined.

IRON.—Iron, unlike coal, is found in the eastern and southern side of East Tennessee as well as in the Cumberland range. In the latter region iron and coal are often found side by side. Indeed iron is found all over East Tennessee. Prof. Safford speaks of three distinct iron regions in East Tennessee. 1st, The Eastern, which affords three species of ore, namely: the Brown Iron Ore, or Limonite; Red Iron Ore, or Hematite, which is of two varieties, hard solid ore, or stratified dyestone ore, and the third species is magnetic iron ore. The second iron region, according to the same classification is what is termed the dye stone or Fossiliferous region. It lies at the base of the Cumberland and Walden's Ridge and extends from Hancock county to Alabama. It is found in great abundance all along this region. This region is said by geologists to extend from Alabama to Pennsylvania. The third iron region is the *Cumberland*, which is associated with the coal measures on the mountain. In this region Prof. Safford discovered—in Anderson, Morgan, Scott and Campbell counties—what is called *Clay Iron-Stone*, or an impure carbonate of iron, not before found in Tennessee.

In Washington county there is a remarkable region of Brown Hematite ore, and consists of 50,000 acres. It is said that less than two tons of the ore are required to make a ton of pig iron. The iron made of this ore

been celebrated for years as the best, or among the best in the country. A writer in describing it says:

“I cannot better describe the property than by saying that half the property is vast hills of iron from base to summit. The water power at the furnace is the best in East Tennessee that I have seen, there being fourteen feet fall on a front of one-eighth of a mile.”

In addition to iron there is found on this same property immense deposits of yellow, brown and Van Dyke ochre, and most probably lead. Near by Calvin Cole is now taking out granulated galena, found in soft blue lime rock from a vein forty feet in thickness.

The iron made of the ores we have so imperfectly described has long been celebrated for its superior quality. Since the war a new impetus has been given to the manufacture of iron, especially in Greene and Roane counties, in each of which new and costly establishments have just gone into successful operation. At Rockwood they are now manufacturing pig iron. Tennessee iron is quoted in Louisville at four dollars higher per ton than the best northern iron. The iron at Rockwood is made out of the fossiliferous or lenticular ore. The main bed of this ore commences in Claibourne county, below Tazewell, and extends through Campbell, Anderson, Roane and into Rhea. Prof. Safford says “it is nearly or quite one hundred miles long; at many points two and three feet in thickness.” He particularly speaks of Elk Fork in Campbell county, as “a remarkable and valuable locality of this ore,” where, “owing to the great number of minor folds or wrinkles in the rock, the ore layer is repeated a great number of times, and crops out in numerous parallel bands for a distance of five or six miles; many of these are from twenty inches to three feet thick. In some places it is six feet thick. The Knoxville and Kentucky Railroad passes through this iron region. Coal also abounds in vast quantities in the Elk Fork Valley. There is a similar deposit of iron and coal at Wheeler’s Gap, also on the railroad.

From a communication from an iron manufacturer to this Association, we make the following extracts:

“Within eight miles of Knoxville are abundant beds of iron; and within twenty miles there is a body of iron said to be nearly equal in quantity to the Iron Mountain of Missouri and of precisely the same quality. \* \* No country of the world furnishes mineral wealth more convenient in locality, superior in quality, greater in variety, or easier of access than are our vast deposits. Almost every county possesses a wealth of iron sufficient to enrich a State or pay the debt of a nation; and the facilities for manufacturing are as great as the mineral is abundant. Convenient water power, an unlimited supply of timber and bituminous coal, cheap food and cheap labor, furnish all the facilities for producing iron cheaply and in unlimited quantity. A distinguished iron manufacturer from New York gave it as his opinion that iron could be made by charcoal at one of the mines of East Tennessee and hauled ten miles to the railroad at one-half the cost of producing a similar article in the North. If

that can be done with charcoal ten miles from the railroad, what shall be said of mines equally rich and exhaustless lying where the railroad track cuts the ore-bed and where coal banks are as abundant as the iron?"

"Along the line of the Knoxville and Kentucky Railroad, not fifty miles from Knoxville, are numerous properties now offered for sale at moderate prices where iron and coal lie side by side in limitless quantities and surrounded by beautiful forests of choice timber, with lime and sandstone, fire clay and water power close at hand, all waiting, as they have waited for ages, for the magic touch of industry to convert them to use. In some localities these iron beds are pierced for the first time by the cuts on our railroads; and yet, such is the blindness of our present policy, that *we bring from beyond the Atlantic the iron rails to construct a road upon our own iron beds!* More than two million of dollars have been sent out of East Tennessee since the war for iron and iron wares that should have been produced at home. With such a fact before us there can be no question of a home market for all we can produce. The foundry-men of Knoxville have, until the present time, been compelled to purchase iron brought from Scotland to produce a suitable mixture for soft, light and thin castings. There are numerous places in East Tennessee where similar iron could be produced profitably at less than the cost of this freight alone, saying nothing of the price of the iron.

"The iron of Carter county has borne a reputation for nearly seventy years unsurpassed by any in the United States for toughness and adaptability to every use. The castings of this iron will bend before breaking, and car wheels made of it have worn more than twelve years on our railroads. And yet there is not a blast furnace in operation in that county at this time, and we import from abroad, at vast expense the iron that might be obtained from these mines at one-third the price we are now paying. The Telico Iron Works of Monroe county, more celebrated than those of Carter, with iron equal in quality and much greater in quantity, have been idle for years, producing nothing." Two furnaces now carried on by northern companies in Greene county and one recently established by Gen. Wilder and his associates in Roane county, are now producing three times the iron that is produced by all the old furnaces of East Tennessee.

**OTHER MINERALS.**—Space forbids us to speak in detail of our other minerals. Copper is found in vast quantities at Ducktown, Polk county, and it is believed to exist in other parts of the mountains that skirt our southern borders. It is sufficient to say, that, next after the Lake Superior mines, the Ducktown mines yield the most copper of any in the United States.

**Zinc** is abundant in East Tennessee, as the Zinc Works recently erected at Mossy Creek have clearly established. There is a fine zinc bed or vein in Knox county, within twelve miles of Knoxville, even better than that at Mossy Creek.

**MARBLE.**—There is a great interest attached to the marble of East Tennessee. In the columns and balustrades which largely contribute to adorn the State Capitol at Nashville and the National Capitol at Washington may be seen specimens of the fine quality of our variegated marble. We have in East Tennessee the variegated fossiliferous, grayish white

fossiliferous, magnesian, black breccia conglomerate varieties. The first species is found in quantity in Grainger, Jefferson, Roane, Knox, Monroe, Meigs, McMinn and Bradley counties. There are two varieties of this species. The one is an argillaceous limestone, little fossiliferous, of a dull, brownish red and sometimes greenish and receives a smooth, fine polish. The other is *par excellence* the marble of East Tennessee. It is a highly fossiliferous calcareous rock, has a bright ground of brownish red colors which are more or less freely mottled with white and gray fleecy clouds and spots. This variety is found in large quarries in Knox, McMinn and Hawkins counties. Quarries are being worked in each of these counties, and shippers find a ready sale for all they can ship to the eastern markets. A block of the light mottled strawberry variety was sent from Hawkins county to the Washington monument. This block attracted the attention of the Building Committee of the extension of the National Capitol, who, although they had specimens from all parts of the Union before them, decided in favor of and used the marble from East Tennessee. The marble used in the Tennessee Capitol was taken from Knox county. A large quantity from the same quarry was used in ornamenting the Ohio State Capitol. One bed of grayish white lies near Knoxville which is 375 feet thick; ninety feet of which, near the base of the bed, is massive white marble. The remainder contains more or less of the reddish points which make it variegated, the mottling consisting of fossil, *corals* and *crinoids*. On the French Broad River five miles east of Knoxville is a bluff of a beautiful light variegated marble which could be worked with little expense. Black marble is found in some localities in the extreme eastern part of the State. The whole extent of country between the Cumberland and Smoky Mountains is underlaid with the marble formation, and geologists have long looked upon this region with peculiar interest.

LIMESTONE.—Interspersed with the marble beds are immense deposits of limestone. The formation along the river two or three miles above Knoxville is in some places said to be pure carbonate of lime, free from silicious matter or grit of any kind. Good lime can be burned from it. Hydraulic or magnesian limestone is said to be found in abundance in Knox county. This is the variety from which water lime is burned.

#### MANUFACTURES.

Manufactures are yet in their infancy in East Tennessee. With the exception of a few furnaces, two or three foundries, one nail factory, four or five cotton yarn factories, a steam tannery or two, some plow factories, a soap factory, a few steam saw mills, one zinc establishment, a few rolling mills, and a few other minor establishments such as every community is *compelled* to have, we are just where we were fifty years ago. In this respect we offer all the advantages of choice and monopoly of a *new State*. There is a fine field open for industrial enterprises of every kind.

There is a factory in the State for weaving woolen goods, but there is not one for weaving cotton goods beyond plain brown domestic.

We import from other States all of our reapers, mowers, threshers and engines, all of our chains, axes, shovels, spades, hoes, rakes, forks, wire, sheet-iron, iron pipe, hinges, scythes, picks, willow-ware and rope, and even our axe and pick handles and wagon spokes, most of our plows, brooms, furniture, wooden-ware, fire grates, stoves, corn shellers, horse shoes and horse shoe nails, domestic, prints, woolens, boots, shoes, hats, clothing, most of our carriages and many of our wagons, besides hundreds of other articles. The average cost of transportation upon thirty of these articles, as given by a leading hardware house, is seventeen per cent. as compared with the original cost. On stoves it is from twenty to twenty-five per cent.; on reapers, mowers and threshers, fifteen per cent., and on fire-proof brick one hundred per cent. Hundreds of reapers and mowers are sold here that are manufactured in Chicago or Ohio; plows and axes and even horse shoes are brought from Connecticut; stoves are brought from Albany, Philadelphia and Cincinnati; carriages are brought from New Hampshire; even brooms are brought from New York. So it is of all articles except those which are the most simple in their construction.

#### KNOXVILLE AS A MANUFACTURING POINT.

*We boldly assume that no point in the South or Southwest, all things considered, commands so many advantages for cheap and profitable manufacturing as Knoxville. Let facts speak:*

1. Our climate, as has already been shown, is perfectly *healthful*. It is emphatically a *temperate* climate. Out door work can be done the whole year round.

2. LABOR.—Unskilled labor is cheaper here than in the North; prices ranging from seventy-five cents to one dollar and thirty cents per day. The reason for this is that laborers can work the year round, that they need less fuel and clothing, can live in cheaper houses and can get cheap food. Skilled labor commands about the same prices here as in the Northern States, with the advantages above enumerated in favor of the mechanic.

3. Provisions are cheap and abundant. Our remoteness from the great centers of trade forbids the carrying of many of our bulky articles to these distant markets. They must be consumed at home. We raise cattle, sheep and swine, as well as cereals and esculent roots. The immense supplies drawn from this valley, by both armies during the late civil war, forever established its character as one of the most productive spots in all the land. In 1860, Tennessee produced 50,748,226 bushels of corn, 5,409,863 bushels of wheat, 7,703,086 bushels of oats, 550,913 bushels of peas and beans, 1,174,647 bushels of Irish potatoes, 2,613,558 bushels of sweet potatoes, 246,027 tons of hay, and slaughtered \$12,345,696 worth

of animals. Nearly one-half of all this, except sweet potatoes, peas and beans, should be credited to East Tennessee, because this is the region where these things do most flourish, the other divisions of the State being engaged in raising cotton and tobacco. Before the war, it was estimated that East Tennessee annually furnished for the Southern markets 100,000 live hogs, besides vast quantities of bacon, as well as horses, mules, cattle and sheep. This region is a *grain growing, a grass producing, and a stock raising country.*

4. Iron and coal can be had here as cheaply as can be desired. They are brought by the rivers and by the railroads. Then, combine with iron and coal, cheap labor, cheap food, a mild climate, and a vast country destitute of nearly every article made of iron, wood, steel, cotton or wool, and there is presented a market for sale and profit. Such is our position.

5. The fifth reason why Knoxville affords remarkable facilities for manufacturing is, that *it is the center of a magnificent railroad system,* and therefore affords an outlet to market in every direction. At this point the great through road from Washington and New York to New Orleans, will intersect at right angles the great road from Charleston and Savannah to Cincinnati. The former is completed, the latter under way. By the East Tennessee and Virginia Road, we enter Virginia, and traveling through the heart of that State, reach, by a direct route, Washington and New York. By the East Tennessee and Georgia Road, by way of Dalton, we reach Atlanta and the whole railroad system of Georgia. By the same road, by way of Chattanooga and Wills Valley, we strike the heart of Alabama, and reach, by a direct line, Mobile and New Orleans; while by the same road, by way of Chattanooga, we reach Stevenson, and then turn to Nashville, or go direct to Memphis. By the Knoxville and Kentucky Road, now completed to the coal fields, and being pushed forward to Kentucky, we reach Cincinnati, Louisville and the Great West, by a route two hundred miles nearer than by way of Nashville. While by the Knoxville and Charleston Road, or the Rabun Gap Road, we will go directly to Augusta, Charleston and Savannah. And by the East Tennessee and Virginia Road, and the Morristown and Paint Rock Road, we will reach the heart of North Carolina and strike her system of roads. This road is completed to within four miles of the North Carolina line. And by the Tennessee and Pacific Road, when completed, we will have a direct road to St. Louis.

It will thus be seen that our railroad system, when completed, will be as perfect as can be desired. *By it we can reach every important city in the county by the shortest route. Our interior central position gives us the interior and shortest lines to every important market.*

Whether viewed as the center of a rich agricultural region, or in reference to its climate, unequalled this side of the Pacific coast, or as the centre of a region wonderfully rich in all the great minerals except gold and



silver, or as being the point of intersection of two great railroad lines, that more nearly than any other lines in the country, cut all the region east of St. Louis and Omaha into four nearly equal parts; or viewed geographically as the precise center of East Tennessee; or, enlarging the circle, as the center of a larger region, whose circumference sweeps around from Lexington to Louisville, from Louisville to Nashville, from Nashville to Atlanta, and from Atlanta, by a wide circuit, round to Lynchburg, in which it is the largest town, the position of Knoxville is a most commanding one. Atlanta is distant two hundred and ten miles, Lynchburg three hundred and thirty miles. Little does he know of the laws of trade who supposes that a large interior town will not spring up in the center of a country destined soon to witness the highest development of agriculture, and to become an iron district, with all its attendant manufactures, unsurpassed by any in the country.

6. BUILDING MATERIAL.—*Lumber*.—Owing to the great number of our rivers and smaller streams which flow in every direction through this mountainous country, the very great quantity of timber of which we are possessed is easily accessible. With our net-work of railroads and water courses almost all our timber is easily reached and can be brought into market at low rates. The varieties of timber are very numerous. We have yellow and white pine, white, red and black oak, black walnut, hickory, chestnut, yellow poplar, white and red cedar, sweet gum, black gum, ash, locust, cherry and hemlock. The black walnut and cherry are found in coves of hills and mountains and bottom lands. Hemlock and white pine are found only in the mountains; mainly on the South side of the State. White and red cedar are found in abundance on ridges and knobs near the rivers and rocky lowlands. The quantity of our timber and the facilities for reaching it far exceed the average of agricultural regions. The red cedar is abundant and can be used for the manufacture of wooden-ware for which there is a great demand. Ash, hickory, oak and yellow pine can be obtained in the greatest abundance and at prices which afford a large profit in all departments of wooden machine manufacturing. Black walnut, gum and cherry can be had here at rates comparatively very low. Pine, poplar and oak for building purposes can be placed in market with profit at such cheap prices as would astonish men from most sections. Poplar, oak and yellow pine sell at fifteen to eighteen dollars per thousand; black walnut and white pine from twenty-five to thirty-five dollars.

*Brick*.—Our soil is peculiarly adapted to brick making. There are but few localities in East Tennessee where brick clay is scarce. The bricks commonly used by our builders are large; they will weigh  $5\frac{1}{2}$  pounds; are nine inches long, four inches wide and three inches thick. They can be made very cheap. At Knoxville the cost in the kiln is *five dollars and twenty-five cents per thousand*. They were delivered last year to builders at prices ranging from six to ten dollars.

*Lime.*—The lime rock is very abundant. Much of the lime for building is burnt from what is commonly called marble rock—it is a species of limestone. It is delivered to builders at from fifteen to twenty cents per bushel.

#### GENERAL OBSERVATIONS.

For the information of those who desire to locate in Knoxville, or any of the smaller cities or towns of East Tennessee, we give some few general observations that may prove of interest.

The first railroad built in East Tennessee was scarcely completed when the war began, and the growth of the country, as developed by these iron highways, is just in its infancy. Want of communication with the world, outside of the Valley of the Tennessee, had well nigh crippled every attempt at progress. Since the war, the building of railroads and turnpikes has opened up new and fertile sections of our country, so that, in such respects, we now present the advantages of a new country.

Knoxville, from its position on river and railroads, must always be the political, social and commercial, as it is nearly the geographical, center of East Tennessee. Since 1863, it has nearly doubled in population, containing now some 12,000 souls. It has, however, business facilities and advantages greater than many places of twice its population. It is really the center of that great mountain region embracing Southern Kentucky, Southwestern Virginia, Western North Carolina and Northern Georgia, and all this section is naturally and in fact tributary to it. Knoxville wholesale establishments, of which we have several, deal extensively through all the country mentioned; some of them selling over a million a year. We have banks and mercantile houses of every grade and class. Our manufacturing establishments are, as yet, few in number, but they are prosperous and growing. Our advantages and facilities for manufacturing are set forth in detail in another part of this paper. We have churches of every denomination—Episcopalian, Presbyterian, Methodist, Baptist, German Lutheran, Unitarian, Catholic, and colored churches of the Presbyterian, Methodist and Baptist denominations. The United States Circuit and District Courts, the Supreme Court of the State, the Chancery, Circuit and County Courts for Knox county, are all held at Knoxville. The Congress of the United States has just appropriated \$93,000 for the erection of a building suitable for a Court House, Revenue Offices, and other Government purposes. We offer good educational advantages. We have good free and select schools. The East Tennessee University, which has lately received the \$300,000 Agricultural College Fund of the State, is located at Knoxville, and will soon be one of the leading educational institutions of the South. The Tennessee Deaf and Dumb Asylum is also located here. Knoxville has river navigation six months of the year. Lumber, corn, produce, wood and coal, are brought

here by river from above and below. The rich bottoms of the Holston, French Broad, Clinch and Tennessee rivers are in this way made tributary to us. Building materials are low here, as we have shown elsewhere. There were over five hundred houses built in Knoxville in the years 1867-8. The prospects are that as many more will be built here in this year of 1869.

East Tennessee has a population of about 350,000. It has many fine agricultural districts, but it is sparsely populated compared with most of the States. The towns are few and small. The county towns are, in many counties, very small villages. We want more people. Our farms are too large, and we have too many acres lying uncultivated. The great want of East Tennessee is active, enterprising labor. Men of capital or energy can find inviting fields in almost every department of labor or trade. This need is keenly appreciated, and every man who comes here to live among us will find a people ready to welcome him and encourage him in all his undertakings.

Travelers wishing to go to interior counties, can find transportation at almost all of the railroad or river stations at reasonable rates.

#### CHEAP PASSENGER RATES.

All persons who desire traveling South for the purpose of prospecting for homes or investments, can procure "Excursion Tickets or Certificates" at the rate of *two cents per mile*, which will be good until *July 1st, 1869*. We have no doubt but that arrangements will be made to continue the sale of such tickets during the year. The above tickets or certificates can be purchased at the office of the General Eastern Agent of the Great Southern Mail Route, at 229 Broadway, New York, or at

Portland, Maine—W. D. Little & Co., 49½, Exchange Street.

Portsmouth, N. H.—Wm. M. Thayer, Union Ticket Office, corner of Daniel and Market Streets.

Montpelier, Vt.—T. R. True, Union Ticket Agent.

Boston, Mass.—W. B. Clark, 74, Washington Street.

Springfield, Mass.—James Wells, Ticket Agent, Hartford and New Haven Depot.

Hartford, Conn.—Parsons & Jacobs, 13, Central Row.

New Haven, Conn.—Lester & Webb, 201, Chapel Street.

Providence, R. I.—C. K. Lewis, Union Ticket Office No. 1.

New York—J. M. Huntington, 229, Broadway; C. E. Evans, 187, Greenwich Street.

Buffalo, N. Y.—J. A. Burch, G. T. A. Buffalo and Erie Railroad.

Philadelphia—N. Van Horn, 811, Chestnut Street; H. W. Gwinner, General Ticket Agent Pennsylvania Central Railroad.

Harrisburg—J. J. Clyde, G. T. A. Philadelphia and Reading Railroad.

Pittsburgh—S. F. Scull, G. T. A. Pan Handle Railroad; J. R. Myers, G. T. A. Pittsburgh, Fort Wayne and Chicago Railroad.

Baltimore—L. M. Cole, Gen. Ticket Ag't Baltimore and Ohio Railroad; W. E. Gaskings, 174, West Baltimore Street.

Washington, D. C.—A. Kerr, 374, Pennsylvania Avenue.

Persons starting from the East for Knoxville reach that place *via* Washington, Lynchburg and Bristol. From the West take the route *via* Louisville, Nashville and Chattanooga.

#### EAST TENNESSEE COPPER.

Just as this pamphlet was about to receive the last touch of the printers the following facts, from an address to this Association by John Caldwell, Esq., were placed in our hands, and though too late for classification we give them for the information of all interested. He asks:

Can East Tennessee present a field for copper mining equal to Cornwall or Lake Superior?

In reply, let me call your attention to that magnificent mountain range bordering the valley of East Tennessee upon the South-east from the Georgia to the Virginia line, and give you a few facts and figures within my own personal knowledge.

Early in 1851, I commenced mining operations, for copper, in Polk county, Tennessee, near the point where Tennessee, Georgia and North Carolina claim a common corner tree. These operations, although on a very small scale, sometimes working myself, with one man at the windlass and one in the shaft, resulted in opening four or five mines, which have been since sold and resold by parties owning them, at from \$50,000 to \$500,000 each, and which have been profitably worked after hauling the ore, unreduced, for forty miles by wagon, shipping thence by rail from Cleveland, Tennessee, to Savannah, Georgia, and thence by water to Baltimore, Maryland, or to England, to be smelted and refined. So rich, indeed, was the ore here found, that, before a wagon road was cut through mountains which were declared to be impracticable for a wagon road, a company was formed in the North, and their agent sent out to work a mine, whose favorite idea was to pack the crude ore over a mountain pathway for twenty miles on mules, to a point where wagon transportation could be procured to the railroad.

Polk county, Tennessee, and Carroll county, Virginia, are about three hundred miles apart. I have traveled over almost every mile of the intervening distance, and have found copper at various places, with evidences of its presence on almost every mile. The stratum or foundation is identical, and the production very similar; and I believe the inference is a fair and legitimate one, that this Smoky Mountain, as it is called, is a continued cupriferous upheaval, which deserves the attentive consideration, not only of individuals, but of the State and National Governments.

The Smoky Mountains rise some five thousand feet above the level of the sea. The Ocoee, Hiwassee and Tennessee rivers flow through this range, cutting these mountains to their base and crossing at their foot a heavy course of hematite ore underlaid by lead.

This course in Tennessee is two hundred and thirty miles in length, and is a definite waymark at the southern terminus of the limestone formation, and tells the man of science and research where the transition series begin; and after he crosses the clay and tale slate, the gneiss, granite, feldspar and quartz, which form a hill from seven to eight miles in width, he reaches the primitive or micaceous formation which, so far as the Virginia and Tennessee mines are concerned, is the matrix of copper.

This inviting field for copper operations lies from fifteen to forty miles south-east of the trunk line of railroad through East Tennessee, contiguous

to and in a section already noted for its pure water, its genial and temperate climate and its generous and fruitful soil. May we not, with just pride and well-grounded confidence, offer this as the "land of promise" to the agriculturist, the miner and the manufacturer of our own and other lands?

We have here, in copper alone, a field seven times larger than that on which England has expended her money and energies, and been growing rich for near two thousand years; and while their operations were commenced within a stone's throw of the ocean wave, and have been stopped at the depth of 3,100 feet by a degree of heat beyond human endurance, here we may begin two or three thousand feet above water level, and mine for ages unhindered by causes which have so long obstructed and now closed operations in many of her most productive mines.

## East Tennessee Iron and Coal.

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We copy from the New York Daily *Times* of the 21st of February, 1869, the following letter from its Knoxville correspondent, Omega, giving the substance of a conversation with Gen. John T. Wilder of the Rockwood Iron Company, in Roane county, East Tennessee, concerning our iron, coal and marble.

KNOXVILLE, TENN., Wednesday, Feb. 17th, 1869.

Some weeks ago there was organized in Knoxville an Industrial Association, which is likely to be the means of gathering and disseminating much valuable information concerning the resources of East Tennessee. I was so much impressed with some statements made by Gen. J. T. Wilder, formerly of Indiana, now of this State, at the last meeting of the Association, that I went to him after its adjournment and had some conversation with him, the substance of which I wish to present for the consideration of your readers. First, let me state that soon after the close of the war, Gen. Wilder came to East Tennessee to make a thorough investigation of its resources. He made this investigation for his own satisfaction and for the satisfaction of a company of capitalists, who proposed investing largely in iron works if his report should be favorable. Before beginning his explorations, and that he might the better judge of what he should see, he made a very thorough examination of all the principal iron establishments of the United States. Having spent the earlier years of his life in a manufacturing establishment he had a practical and thorough knowledge of the various kinds of iron and of its application. I mention these facts in order that his opinion may have due weight.

He is now working successfully a large iron blast furnace at Post Oak Springs, in Roane county. His works are situated four miles from the Tennessee river, in the midst of one of the finest agricultural sections of the State. He uses red fossiliferous ore, yielding 50 per cent. of iron in the blast furnace, and making iron of a very superior quality. His ore lies one-half mile from his furnace. He has three and one-half miles of iron ore, two veins side by side, four and six feet thick. He digs his ore at a cost of 50 cents a ton, and carries it to the mouth of the furnace by a small railway running down the hillside at a gentle decline. His coal is about one-half mile off, in great abundance—veins over five feet thick, splendidly drained. It is semi-bituminous, free from sulphur, and makes charcoal iron. He uses it in his furnace raw from the mine. Not one pound of it is coked, and thus far he has made an excellent quality of iron. Some of the



largest and most successful iron dealers in Pennsylvania have made examinations here, and declared it impossible to use our coal without coking. Experience is the best test, and I am glad to say that General Wilder assures me that his experiment is highly successful. This is a very important item of news, for it makes a great difference in the cost of producing iron. There are but few parts of the country where coal is found that can be used raw in the furnace. His ore he can and does use without roasting. The iron made from the above coal and ore is softer than Scotch pig, and stronger. Near by, within a stone's throw of his furnace, is a hill of fire proof clay 100 feet high. Within 600 yards he has a brown hematite iron ore, such as is used in making the Rodman gun, which yields 68 per cent. of iron. Here, in the midst of this mineral wealth, he has built his furnace. All about him are rich farming lands. Produce of every kind is delivered to his hands at the lowest rates; corn, 50 cents per bushel; bacon, 12 cents per pound; flour, \$4 00 per hundred. On that property, purchased for a few thousand dollars, the company have erected a large furnace at the cost of \$100,000. They have iron, coal and limestone enough to run half a dozen furnaces for hundreds of years. But this is not the only spot favored by Providence for such great enterprises. The Cumberland Mountains, from Cumberland Gap to Alabama, are filled with iron and coal of every kind. This range skirts the northern side of the great Tennessee Valley. In it are six veins of coal running horizontally, varying in thickness from one to six feet—usually five feet. Every vein of it is within sixty miles of iron ore, and most of it lying side by side with it. The coal is bituminous, and all of it of good quality, but varying in quantity. The Coal Creek coal, which is mined thirty-six miles north of this city, on the Knoxville and Kentucky Railroad, is five pounds to the bushel heavier than the Youghiogheny coal, which is about the best iron coal of Pittsburgh. The coal found in Roane county is equal to the great Briar Hill coal of Ohio. General Wilder says it takes one ton less of the Roane county coal to make a ton of iron than of the Briar Hill coal. Of the former it takes but 1,000 bushels to make fourteen tons of iron. They use of the Briar Hill three to three and a half tons to one of iron.

On the Cumberland Mountains, mixed with the coal beds referred to, running the whole length, is found the clay iron stone, of which the cheap Welsh iron is made. Bluffs of it are found one hundred feet high, and could be dug out at ten cents per ton. Along the base of the mountains, running from the Virginia to the Alabama line, are two veins of a fossiliferous ore, from two to fifteen feet thick. This is a fine ore for all kinds of castings. Running parallel with the mountains, we have ridges extending nearly the length of the valley. The same ore is found at various points in these ridges, interspersed with the black and brown hematite, gathered in little hills and knobs.

On the south side of the great Tennessee Valley, in the Smoky Mountains, which run about parallel with the Cumberland, we have the finest varieties of the magnetic iron ore. Near this range is also found a superior quality of hematite and manganese ores. The New York and East Tennessee Iron Company in Greene county, make from the hematite and manganese ores a fine quality of *spiegeleism*, such as is used as a *re-carbonizer* in the *Bessemer steel process*. The Greene County Iron Company make a fine iron from the hematite ore. Both furnaces are doing well. Up the different branches of the Tennessee river, above Knoxville, is to be found hillocks of limonite ore, and extensive beds and hills of all grades of the different oxide ores. These ores are not associated with any beds

of coal. All the coal lies on the north side of the Valley. But even these ores on the South side are nearer coal than the Champlain and Superior ores. The latter ores at Pittsburg cost the furnaces from \$9 to \$20 per ton.

These are the coal and iron beds of East Tennessee. General Wilder says our ores are superior in quality and quantity to the beds of Pennsylvania and Missouri. The bulk of the Missouri iron is near the Iron Hills. It is harder, and not so accessible as the East Tennessee mines.

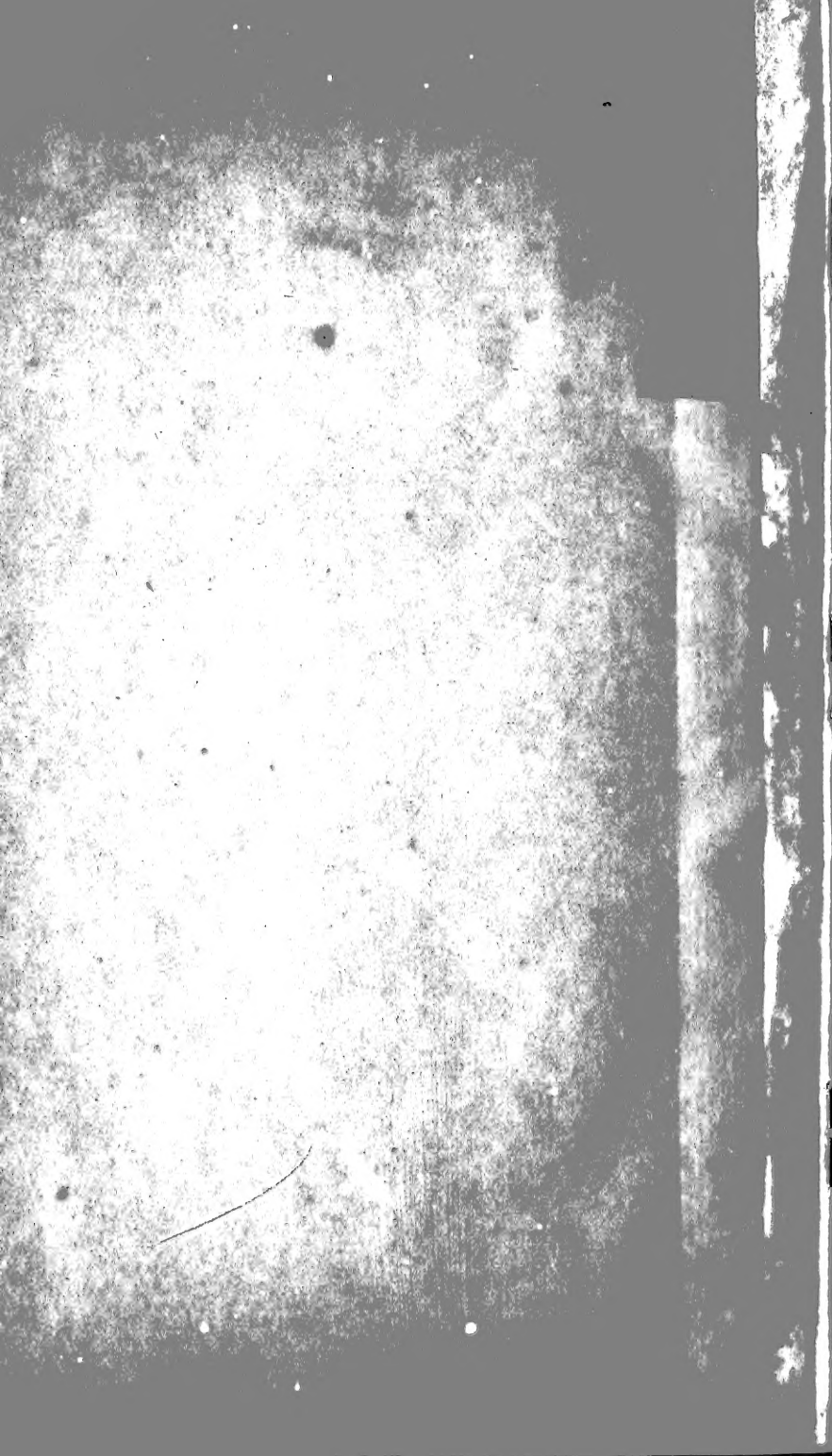
There is nothing needed to develop these immense fields of wealth but cheap transportation. We can have this if the National Government will give us help. It has been said that the opening of the Tennessee river is of local advantage only—that it is a river of little importance. But this is a great error. For 150 miles from its mouth, it is a better navigable stream than the Ohio above Louisville. In the summer months, it has a greater amount of water in its bed than the Ohio at Cincinnati. Six navigable streams empty into it. With its tributaries, it waters one of the richest mineral regions of the world. Eight millions of dollars judiciously expended at the Muscle Shoals would open up a richer mineral country than the Ohio waters. We can float into the market of the world more iron than is found on the banks of the Ohio. Is the opening of such a river of no importance to the people of the United States? Not only iron and coal fields are waiting the opening of this river for development, but the Holston river itself washes through the richest marble beds of the world! General Wilder informs me that a heavy marble dealer at Loudon—about thirty miles west of this city—told him that it cost him more to get his marble from that point to Savannah by rail than it costs to ship marble from Italy to New York. He ships by water from Savannah to New York, and then he has to compete with the Italian marble under great disadvantages. No one doubts that, for most purposes, our East Tennessee marble is finer than any in the world. Specimens of it can be seen in the National Capitol at Washington. Open up the Tennessee river so we can ship by river to New Orleans, and we will supply the world with the very best of marble. The tributaries of the Tennessee are navigable with flat boats from the salt works in Virginia. Give us free access to the ocean, and we will ship without limit, gypsum, salt, lime, marble, coal, iron, copper and lead.

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#### REQUEST.

Persons desiring further information upon any facts herein stated, are requested to address Hon. J. W. NORTH, President, or CHARLES SEYMOUR, Corresponding Secretary Knoxville Industrial Association, Knoxville, Tennessee. Their letters will be promptly answered. The great object of this Association is to gather and disseminate information concerning the resources of East Tennessee: and the officers of the Association will take pleasure in rendering every service tending to promote this object. We desire to give this pamphlet as large a circulation as possible, and will, therefore, send copies to all whose addresses are furnished, and we ask all readers to hand this to their friends when they have read it.







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