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A Technical Perspective of Greater Huntsville’s First 150 Years

by

Raymond C. Watson, Jr.

A book, *Huntsville’s Technological Evolution* (Trafford 2015) by the author of this article, provides a technical history of Greater Huntsville from 1800 to the present. While the primary intent in preparing the book was to document detailed coupling of technical activities throughout the years, the first two chapters are more of a general history nature. This article is based on the information in these chapters, perhaps making it of interest to a broader readership.

The article is in two Parts covering 1800-1899 and 1900-1950; Part I also has information on the native Indian land.

PART I – ORIGINS and MATURING

Indian Land

Before the arrival of Spanish, French, and British explorers, the southeastern woodland areas of the present United States were primarily occupied by tribes of Cherokee, Chickasaw, Choctaw, Muscogee (Creek), and Seminole Indians. A tradition in the tribes was that they had come to this area from northwest Mexico; moving as a body in a 15-year migration across the continent, they sought a new homeland after Spanish conquistador Hernán Cortés conquered the Aztecs in 1520.

A large region in the area was called *Ah-la-bama* by the Muscogee Indians. French maps of the region from the late 17th century show a large traversing river looping south and then north
around the area – later called the “Great Bend” – indicating early French explorations. A 1755 British map showed this as the "River of the Cherekees" [sic]. The name Tennessee is believed to have come from Tanasi, a Cherokee Indian town.

The broad area in the present North Alabama adjacent to the Tennessee River is commonly called the Tennessee Valley, herein simply “the Valley.” The Cherokee Indians were the first well-identified inhabitants spread across the Valley, but in the mid-1600s, they primarily withdrew their villages to the mountains to the northeast, reserving the flat portions of the Valley as a large hunting ground.

In about 1765, some of the Chickasaws from the western portion of the Valley moved into an area near the Tennessee River in what is now the southern part of Huntsville. This was challenged by the Cherokees, and in 1769, there was a major battle at the settlement; the Chickasaws won, but soon moved back westward to their earlier lands. Thereafter, the area of the abandoned settlement was known as the Chickasaw Old Fields; this became a benchmark for future divisions of the land.

In the late 1700s, President George Washington termed the Cherokees, Chickasaws, Choctaws, Muscogees (Creeks), and Seminoles the Five Civilized Tribes, recognizing their adoption (albeit it limited) of the colonists’ Anglo-European culture. The bulk of the people lived in villages and towns, some of which had populations in the thousands.

As the overall territory was developed by the White settlers, the Chickasaw nation became in debt to the traders and merchants, and also needed funds for local improvements. In the Chickasaw

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Early Cherokee House

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Treaty of 1805, the land between the east boundary and a straight line running at about 45 degrees northwest from the Old Fields to the ridge near the main source of the Buffalo River, was ceded to the United States. For this, the Chickasaw nation was paid $20,000, the debt of $2,000 was settled, and the Chickasaw king, Chinubbee Mingo, was to be paid an annual annuity of $100.

Similarly, in the Cherokee treaty of 1806, all their territory north of the Tennessee River and west of a line drawn from the upper part of the Chickasaw Old Fields northerly to the Elk River, was ceded to the United States. For this, the Cherokee nation was paid $10,000 and the Cherokee chief at that time, Black Hawk, was to be paid an annual annuity of $100. In addition, a grist mill would be built in Cherokee country, and a machine for cleaning cotton (a hand-powered cotton gin) would be provided, indicating advancement in their farming.

The tract of land acquired by these two treaties became the original Madison County of 1808. For the next two decades, the Cherokees and Chickasaws lived peacefully in the land adjacent to Madison County. Overall, the Cherokees advanced greatly; they had a written language (a syllabary) developed by George Guess/Gist (Chief Sequoyah) between 1809 and 1824.

Further south in the territory, there were conflicts with the Red Sticks tribe of the Muscogees. This led to the so-called Creek War and the Battle of Horseshoe Bend in 1814 (described later). In the following years, over 40 treaties were signed with various Indian nations throughout the South; continuing conflicts, however, led Congress to pass the Indian Removal Act in 1830, calling for the Five Civilized Tribes to move to the Indian Territory (Oklahoma). The Cherokee people, the largest and last tribe moved, called this journey the "Trail of Tears."
Pioneers

Before 1800, there was confusion as to governmental ownership of the land in the region containing the Great Bend of the Tennessee River. In 1783, the Georgia Legislature declared the northern region extending westward to the Mississippi River to be in their territory. In 1795, Georgia sold 40 million acres of these western lands to four land companies for $500,000, or 1.25 cents an acre; included was the land that eventually became Madison County. Under what was later called the Yazoo Land Fraud, much of this was in turn sold to buyers throughout the nation who never saw, much less occupied, their new land. Georgia eventually surrendered its claim in 1802, transferring to the United States Government a large area that later became Alabama and Mississippi. It took years to settle the claims of absentee land owners.

In the south nearer the Gulf, Spain claimed the land. Mobile, started in 1702, had been a colony of France, then Britain, and finally Spain. By the Treaty of Madrid in 1795, Spain ceded to the United States the lands east of the Mississippi River and above the 31° N Latitude. In 1798, Congress organized this district as the Mississippi Territory, with the Territorial Governor’s office at St. Stephens, a few miles north of Mobile. The surrounding Washington County – the first in the Territory – was formed 4 June 1800.

There are records of White groups passing through the area that is now Madison County before 1800 – such as a band of about 160 persons on the Tennessee River in flat-bottom boats making their way to settle Nashborough (later named Nashville) in 1784 – but it is generally accepted that James (also called John) Ditto (1743-1828) was the first settler in this area.
According to family history, James Ditto, accompanied by one or more of his sons (his wife had recently died), arrived at a point on the Tennessee River near the Chickasaw Old Fields. Based on dates associated with his son Josiah, this arrival would have been in 1802. It is likely that Ditto had used a small flatboat to drift down the river, also carrying goods for trading with the Indians; records show that he was operating a trading post at a place called Ditto’s Landing by 1805. To improve local travel, he started a ferry across the river in 1807 – the first recorded technological advancement in the area, allowing improved transportation over a fraction of a mile.

When Tennessee became a state in 1796, the southern border was set exactly at the 35° N Latitude. The first settlers in the future Madison County area just below this border scouted in 1803, then returned with their families in 1804; these were Isaac Criner (1783-1876), his uncle Joseph Criner (1767-1843), and Thomas McBroom (1784-1843). They had followed a trail from East Tennessee, a distance of at least 175 miles. The Criners built homes in what is now New Market; McBroom travelled farther south and built near what later became Gurley.

These pioneers certainly carried a flint-lock musket and likely had a pocket compass – a very common and relatively inexpensive device – and used this to maintain direction and identify the return path. The musket and compass then might be considered the first new hardware technologies introduced to this area.

In the spring of 1805, John Hunt (1750-1822) and Andrew Bean, exploring from their homes near Tazewell in East Tennessee, crossed into the new territory and found the Criners – this would
have been a total trek of about 270 miles. There they were told about a large spring with an abundance of game further south that had been reported by an earlier explorer, Samuel Davis; Indians called this Waiki Lako – "Big Spring."

After a brief stay with Joseph Criner, Hunt and Bean continued on a southwest path of about 15 miles and soon found this spring. The spring was semi-circular, some 100 feet in diameter, and flowed from beneath a high bluff. Nearby was the start of a crude cabin (possibly made by Samuel Davis); Hunt and Bean built a cabin on this site.

Bean decided to return and live in Tennessee, but Hunt, who was then 55 years old and had earlier been a sheriff and a militia captain, went back to Tazewell, settled his affairs, and returned to his cabin with his wife and three of his sons in the late summer of 1805. While in Tennessee, Hunt had given glowing descriptions of the land that he had found, and was soon followed by other families; this was the beginning of a small community that they called Hunt’s Station.

The pioneering period for this area was relatively brief, basically between 1805 and 1810. In this time, many families seeking new land and fresh opportunities trekked into the territory. In addition to Hunt’s Station (later Twickenham and then Huntsville), early towns included New Market, Hazel Green, Meridianville, Maysville, and Scotts Mill (now Brownsboro). The first settlers in these communities were true pioneers, living under the dangers, trials, and tribulations of pioneer life; however, unlike in many other pioneering areas, there were no problems with the Indians. The settlers were known as “squatters,” building on government-owned land with the hope of buying their homestead when the land was sold.
Surveying and Mapping

The basic art and science of surveying is ancient; it was known to the early Greeks and Romans, as shown by their roads and aqueducts; foundations of trigonometry – basic in surveying – were used in ancient Egypt. Because of the value of land, surveying was one of the first occupations in most states to require official recognition.

In 1784, then-Congressman Thomas Jefferson proposed an ordnance for dividing the land gained by the United States from the Revolutionary War; this used a modified version of the Imperial land-measurement system used for centuries in Great Britain. The next year, the details of the Public Land Survey System (PLSS) were formed and started to be used. This divided all of the land (public and private) into townships, primarily squares six miles on the side and referenced to due north. Townships, in turn, are divided into 36 square sections, each being one mile on the side and containing 640 acres. Sections, in turn, are usually divided into quarter-sections of 160 acres, these into quarter-quarter sections of 40 acres, and finally into lots of various size and shape.

The selection of 640-acre townships as a standard in the PLSS was to allow up to seven divisions by halving but still retain a whole number of acres. (A half of a quarter-quarter-quarter section is five acres.) To identify the location of townships, sections, and their subsections, rectangular grids are used. For these grids, horizontal baselines and vertical meridians were established, with the designated Center Point being the crossing of the Principal Meridian and a Base Line.

After the Mississippi Territory expanded, the Federal Government used the PLSS to map the southern half of this region in 1805, and then followed with the northern half in 1807. For the
northern half, the Base Line was the Tennessee border at N. Latitude 35°, and the Principal Meridian – later called the Huntsville Meridian – was along Longitude 86°-34'-16". (With improved techniques and instruments, the Tennessee border was later changed to Latitude 34°-59'-27", about a mile south of the intended line.) All land in the present Madison County is mapped into townships, sections, and quarter-sections measured from this 1807 Center Point. Settlers mainly came into the area along a southward path that was about the same as the Principal Meridian.

The established practice of surveyors at that time involved observing the pole star (Polaris) to find true north at the Center Point, then use of a vernier compass (a magnetic compass with two vertical sights) mounted on a tripod and a Gunter’s chain (a flexible measuring tool 66-feet long, then 80 chains equals one mile). Through this practice, a surveyor could find the desired path and set up markers at corners of townships and sections.

Madison County, in the Mississippi Territory, was officially created by the Territorial Governor on 13 December 1808. It was Growth of Madison County - G.W. Jones & Son, 1934
named for James Madison, then Secretary of State and President-elect of the United States. A geographical survey of Madison County was made for the Federal Land Office and conducted by the official territorial surveyor, Thomas Freeman; this was completed in May 1809. (Freeman was a nationally known surveyor and friend of George Washington; he died when visiting at Huntsville in 1821, and is buried there.)

The initial area – with an arrow-head shape defined by the previously noted Chickasaw (1805) and Cherokee (1806) Treaties – encompassed roughly 540 square miles (near 345,000 acres). Land areas were added several times, and then redefined through 1887; this finally gave Madison County a total of 806 square miles (515,840 acres) and its present shape.

While making the land survey, Freeman also took a census of squatters in Madison County; released in January 1809, it showed 353 heads of White families and a total population of 2,545 persons distributed 1,150 White males, 1,073 White females, and 322 Black slaves. Many people had come into the new land, although orders were to wait for the public land sale.

After Madison County was created as part of the Mississippi Territory and the land surveyed, a Public Land Office was opened at Nashville. On 25 August 1809, the sale of public land began. Persons from Madison County had to make the trip to Nashville – averaging some 100 miles and over 20 hours on horseback – and wait until their section came up for bid. Settlers to this area had no means of exchanging messages with the outside world other than hand-written letters that were carried from post to post. [Note 2]

Most of the bidding at the public sale was for farm land, which sold for about $1.75 per acre; occupied land, however, sold for much more. Buyers paid five percent down, then had four years at six percent interest to make full payment. Eventually, less than
half of the squatters were able to buy their land. Overall, the sale was so successful – over 53,000 acres in Madison County had been sold by late 1810 – that the Land Office was transferred to Huntsville in 1811.

At the initial land sale in Nashville, John Hunt found that he had not registered as an existing squatter – giving him special bidding rights – and had to bid against all other interested persons. LeRoy Pope, a wealthy tobacco planter and lawyer from Petersburg, Georgia, successfully bid for the 160 acre quarter section (in Section 36, Township 3 South, Range 1 West) that contained Big Spring and Hunt’s home; Pope paid $23.52 per acre, the highest price of the auction.

Unable to match Pope’s bid, Hunt successfully bid – paying 5% down – on land located about two miles south of Big Spring. For a few years, Hunt farmed and also served as the county’s first coroner. With failing health, Hunt eventually sold his property and lived with his married daughter and her husband. The pioneer settler of Huntsville died in 1822, and it is believed that he was buried in an unmarked grave at the Acklin (later Sively) graveyard; this site is long lost, but, tragically, thought by some to be where the Huntsville trash dump is now located.

In the land auction, LeRoy Pope also bought the quarter section containing Ditto’s Landing. Ditto was allowed to continue operating a trading post and the ferry, but he eventually bought land east of the landing. John Ditto died there in 1828, but his burial place is unknown.

Since LeRoy Pope was the primary owner of the most of the land being developed around the Big Spring, he influenced the Territorial Legislature to have the village named Twickenham – a name taken from a place in England that he admired. This name shows on documents for several years; however, to credit Hunt for
its start, the Territorial Legislature changed the name to Huntsville. On 9 December 1811, Huntsville became the territory’s first incorporated town.

In 1821, James White brought a flatboat loaded with salt, iron, sulfur, and other items down the Tennessee River to Ditto’s Landing. Four years later, having established a salt monopoly, White started the town of Whitesburg with a port taking the place of Ditto’s Landing. He later had many stores along the river and is often called Huntsville’s first entrepreneur.

Defending the Territory

In 1813, there was an uprising by the Red Sticks faction of the Creek Indians at Fort Mims about 40 miles north of Mobile; some 250 refugees and defending militia were slaughtered – the worst massacre by Indians in American history. The Red Sticks uprising soon spread over the lower part of the Mississippi Territory. The Government in Washington made a plea to Tennessee for Colonel Andrew Jackson to help in putting down the rebellion. Jackson asked the various militias of the region to form a defending army. Scouts were sent across the Tennessee River into the Creek territory, and returned with the false rumor that an attack on Huntsville was imminent. The assembling of defenders began on 11 October 1813, starting with a 32-mile forced march from Fayetteville, Tennessee, to Huntsville in five hours.

Companies of frontiersmen from across the region joined Jackson’s Tennessee Riflemen in Huntsville at Camp Beaty, a large staging area with a good water supply located near the present-day Brahan Spring Park. The troops also included mounted cavalrmen from Tennessee, four companies from Huntsville, and one from Hazel Green. David Crockett and Sam Houston were among the Tennessee sharpshooters. Armed with
flintlock-action long-rifles, these sharpshooters could hit a moving target at a range of 200 yards.

In early November, Jackson’s rugged army crossed the Tennessee River by Ditto’s ferry, moved south to destroy the Red Sticks strongholds at Tallushatchee, and followed this at Talladega. Jackson was promoted to Brigadier General, and his army was joined by a regiment of U.S. Army infantrymen plus several hundred Cherokee and Choctaw allies. Although lame, Chief Sequoyah was a horse-mounted combatant in the Cherokee troops. Jackson’s force of about 3,300 men continued south to decisively defeat 4,000 Red Sticks at Horseshoe Bend – a section of the Tallapoosa River in the center of the Territory – on 27 March 1814. The Red Sticks lost an estimated 850 men, and Jackson lost 47, two being from Madison County; 23 Indian allies also died. In May, Jackson returned through Huntsville for a major celebration at LeRoy Pope’s recently completed mansion.

**King Cotton**

Farmers along the coast of Georgia and South Carolina began growing relatively small crops of cotton in the late 1700s. The freeing of the fibers from the picked cotton required several hours to produce a pound of cotton fiber, so other crops – such as corn and tobacco – were more profitable. However, this was changed by the invention of the cotton gin (“gin,” a short for engine) by Eli Whitney in 1793. Simple hand-cranked gins that operated in the field were used in Madison County essentially as soon as cotton farming started; these could produce about a pound of lint per hour. Early mule-drawn gins could produce up to 50 pounds of cotton lint daily; the first mule-drawn gin in the State was opened at the Barren Fork of the Flint River by Charles Cabaniss in 1810.
The ginning process usually gave about one-third of the input weight in lint and two-thirds in cotton seed. The lint was pressed into bales, typically about 350 pounds – the modern-day standard bale is 480 pounds. The bales were not highly compressed, but were actually large, oblong bags. Initially, ginned bales were mainly taken by wagon to Nashville, where they were loaded onto Cumberland River boats, ultimately reaching New Orleans. The wagons returned from Nashville carrying dry goods, groceries, and other staples.

Cotton farming in Madison County flourished and gained both regional and national recognition. The rich soil allowed the growing of up to 1,000 pounds of picked, but unginned, cotton per acre. The 14 January 1811 edition of the *National Intelligencer* – the then-dominant newspaper in Washington, DC – reported that Madison County was the largest cotton producer of any county of its size in America.

After the federal land office moved from Nashville to Huntsville, a second land auction was held in 1818. For several years before the sale, word of the benefits of cotton farming in this area swept across the South; consequently, there were over 400 buyers at the auction. In one of the greatest speculative booms in frontier history, almost one million acres of land north and south of the Tennessee River sold for about $5.5 million – buyers paying one quarter of the price at the time of sale and the rest in three annual installments. Thousands moved into the region; it was said that the profits from one year of cotton sale more than covered the cost of the land.

Cotton farms in Madison County varied widely in size and the number of slaves. Although about 60 percent of the farms were worked by the owners without any slaves, these were mainly only a few acres in size and constituted a small fraction of the total...
farming acreage. On the other extreme, there were only a small number of large plantations with 50 or more slaves. In between, there were farms with less than 5 slaves, and many mid-sized plantations with 10 to 20 slaves. Just before the Civil War, 5 percent of the farmers owned over 35 percent of the agricultural wealth. The largest farm in Madison County was owned by brothers Samuel and Edmund Townsend in the Hazel Green area; this covered some 4,800 acres (7.5 square miles) in three separate plantations, with over 300 slaves.

From the time of first planting, the land in Madison County was, for the most part, used year after year for the same crop – cotton. Artificial fertilizer had not yet been developed; although it was known that cow manure was beneficial, it was not available in sufficient quantities to be of much help. As a consequence, by mid-century much of the land had decreased significantly in productivity. To counter this, more land was put into cotton farming, and the production of lint continued to increase.

The U.S. Census of 1840 shows 10,358,897 pounds of cotton gathered in Madison County. Since the cotton is indicated as "gathered," it is assumed that this is the non-ginned amount; the lint amount would be about one-third of this figure. Unlike the earlier bags, bales by then were well-compressed bundles, averaging in weight about 375 pounds.

Cotton became the dominant sector of the Southern economy, and the number of slaves increased proportionally – from about 700,000 in 1790 to 3,200,000 in 1850. By the mid-1800s, the Southern states were producing about two-thirds of the world’s cotton supply, with most of it going to England. The cotton gin led the South to become the world’s first agricultural powerhouse; “King Cotton” was a slogan used to indicate the importance to the South.
Water Transportation

Alabama is blessed with more miles of navigable waterways than any other state. There is little indication, however, that the original Indians made use of the rivers and streams for other than local transportation. With the first pioneers, the Tennessee River – forming the southern border of Madison County – was looked upon with great potential for long-distance transportation, but it would be many years before this potential was fully attained.

Tennessee River – The Tennessee River is formed at the confluence of the Holston and French Broad Rivers just east of present-day Knoxville, Tennessee, and flows along the top of Alabama, then back into Tennessee, and finally joins the Ohio River near Paducah, Kentucky – a total path of about 650 miles. The Ohio River flows into the Mississippi River near Cairo, Illinois; then the river flows freely past Memphis and on to New Orleans, both important ports for cotton milling and exporting.

In Alabama, starting a few miles downstream from Decatur, the Tennessee River has a 38-mile stretch of shoals and shallow rocks ending near Tuscumbia. The shoals cause the river at points to expand to as wide as three miles, but with little depth; this stretch divided the river into upper (up-stream) and lower (down-stream) segments. In the early years, this had limited navigation between the two segments to canoes, rafts, and flatboats.

The most important characteristic of flatboats was having a small draw (depth in the water), allowing passage over shoals and shallow rocks. The load-carrying potential of any boat is given by Archimedes principle: it is buoyed up by a force equal to the weight of displaced water. For a flatboat 10- by 20-feet in size and a draw of 12 inches, this would be over 12,000 pounds; for a large, long-distance boat 20-by 80-feet (sometimes called a New Orleans boat), this would be about 100,000 pounds. Early bales of ginned
and compressed cotton usually weighed around 350 pounds; thus, allowing for the weight of the boat itself, a small flatboat might carry up to 30 bales, and a large New Orleans boat could transport 300 or more bales.

In about 1815, flatboats started to be used to carry bailed cotton from Ditto's Landing and, somewhat later Triana – the second town incorporated in Madison County – downstream to New Orleans. Once there and the cotton delivered, the flatboat would be sold for salvage and the pilot and boat hands would make the long walk, or horseback ride, through Choctaw and Chickasaw country back to Huntsville. As flatboat traffic increased, licensed pilots who knew safe paths through the shoals would be hired for the stretch between landings at Decatur and Eastport, where the river returns into the State of Tennessee.

To reach the Tennessee River from Huntsville, an early toll road had been built to Ditto's Landing. It was expensive, however, to transport cotton this way – about one-third of the cost for river shipping all the way to New Orleans. Although canals had been used for waterways in Holland and England for many years, they only came of interest in America during the late 1790s. With the opening of canals in New York, consideration was given to having a canal serving Huntsville.

**Alabama's First Canal** - In December 1820, the Indian Creek Navigation Company was chartered by the Alabama Legislature to build and operate the first canal in Alabama. Primarily using the Indian Creek, the canal ran from Big Spring to the Tennessee River near Triana. Many prominent men invested in the stock, including

[Image: Thomas Fearn]
Thomas Fearn and LeRoy Pope. Fearn – a well-known local physician nationally credited with discovering the nature of quinine – was the firm’s president and also led in much of the canal’s design.

Many problems were encountered, but it eventually began operations in 1931, with down-stream flatboats boats carrying up to 100 bales of cotton and 50 passengers. Loads on returning pole-powered boats included columns and copper roofing for the masterpieces being built in the area. It was found, however, that maintenance on the canal was an expensive, continuing process, and it finally closed operations in 1841.

**Early Streets and Roads**

In late 1808, the Governor of the Mississippi Territory began appointments for officials in Madison County. Two of the first were Hugh McVay as County Surveyor, and John Martin as Road Apportioner – the official to determine road needs and authority to exercise eminent domain. John Leake was already performing as a surveyor, so McVay only served until Leake could be appointed. The initial town is believed to have been laid out by Leake in 1810; it covered about 60 acres in a grid of 20 square blocks. The original plan was not recorded and is nonexistent; the plat often called the original was actually drawn by Hunter Peel in 1821.

Hunter Peel (1786-1831) was born at Lancashire, England, and came to Huntsville in 1816. Having earlier served as an engineer in the British Army, he was soon appointed as the Madison County engineer and was responsible for much of the subsequent surveying in this area.

Peel’s 1821 map of Huntsville shows the then-existing boundary streets named Holmes, Lincoln, Williams, and Henry (east side of Big Spring) and Gallatin (west side). The streets were not due
north-south or east-west as is customary, but aligned with the bluff above the Big Spring at about 34 degrees north of west – roughly parallel with the edge of the bluff. In later surveys, the original 20 blocks were retained, but most new straight streets were oriented north-south or east-west.

An 1825 map of the Huntsville area prepared by Peel shows the following highways connecting with the town: Athens Road, Ditto’s Landing Road, New Market Road, Meridian Road, and Pulaski Road (these were sometimes called Pikes).

The Postmaster General designated certain mail routes. Postings in the Alabama Republican newspaper of 22 September 1820 included the following between the Madison County Seat (Huntsville) and five other county seats: No. 304 to Russellville (Franklin County); No. 305 to Columbus, Mississippi; No. 308 to Winchester, Tennessee; No 309 to Scottsboro (Jackson County); and No. 310 to Centerville (the present Birmingham).

Utilities

Whether private or public, the utilities of a city or area provide a strong indication of the community’s evolution. From its beginnings, Huntsville has been a utilities leader in Alabama and the Nation.

Water System - In 1823, Hunter Peel was given a contract to develop a basic waterworks for Huntsville – the first water system in Alabama and one of the first 30 in the Nation. The water flow from Big Spring was so large that a small amount could be diverted for the town’s waterworks and hardly affect the availability downstream. (Big Spring has an average flow of about 12.6 million gallons per day, the third largest of Alabama’s 440 springs.) LeRoy Pope, then owner of Big Spring, gave permission for a small dam to be placed on the out-flowing stream, creating a
holding pond and giving head (water energy) for a water wheel. Pope’s permission had the condition that his home would be supplied with running water.

James Barclay, a local practical machinist (an early name for mechanical engineers), built the pumping equipment totally from wood. The waterworks consisted of a breast-shot water wheel driving a reciprocating pump to force water from the pond through hollowed-out cedar logs to a 7,500-gallon, 9-foot deep reservoir on the 60-foot bluff over the spring. From the reservoir, underground log pipes ran to hydrants along the street and in the yards of customers. It was soon realized that Pope’s hill-top home was 96 feet higher than the surface of the pond, much more than the 69-foot head available from the system.

The initial waterworks was completed without Pope’s segment. It was somewhat upgraded over the next years but was not totally sufficient until Thomas Fearn and others acquired it in 1836, installing adequate pumps, metal pipes, a large reservoir, and fireplugs along the square.

The waterworks were acquired by the City in 1858, and major improvements were made in 1887. This included a 600,000-gallon reservoir installed on Echols Hill (formerly Pope’s Hill). The reservoir top was 120 feet above the square, allowing service throughout the city. An 1889 report showed that connected to the system were 591 hydrants, 162 water closets (toilets), 24 urinals, 63 baths, 89 sprinklers, and 7 soda fountains. There was no metering at the consumer – the water was sold at a flat rate. When the Monte Sano Hotel was being built atop the mountain in 1887, a special force-pump was installed at Big Spring to raise water up 1,000 feet for supplying the hotel. In 1898, a new facility at Big Spring was built; this had a steam-driven pump handling up to 3-million gallons of water daily (about a fifth of the total flow)
Gas Works - A product called manufactured gas had been used for lighting in Great Britain since the early 1800s, and manufacturing plants at large cities of the United States began in the 1820s. Francis H. Newman, a Huntsville physician and part-owner of a drug and chemical supply store, experimented with various materials for producing this gas, and was successful with rosin (a substance made by distilling sap from pine trees). In 1856, Newman formed the Huntsville Gas Light Company to build and operate a gasworks plant. A similar plant using wood as the fuel had been built in Atlanta in 1855, possibly inspiring the effort in Huntsville.

The development of the gasworks was the first activity in Huntsville that, in the future, might be called chemical engineering. The gasworks was divided into sections for the production, purification, and storage of manufactured gas. At the plant, rosin was superheated in a low-oxygen retort, boiling off lighter constituents. The separated gasses then passed on to a condenser – a bank of air-cooled gas pipes – where heavier components were removed. It then bubbled through a sealed tank containing water, removing undesirable lighter compounds. The basic equipment for these processes was obtained from a firm in New York. A pump increased the pressure of the remaining gas and forced it into a storage tank; this tank had a moving top that would rise and fall to maintain even pressure in the distribution pipes.

The plant was located near Big Spring, and pipes from the storage tank were initially run up the bluff to eight gas lamps around the city square. In a short time, the lines were extended throughout much of the residential area. There was no metering of the gas supplied. The city paid the Gas Light Company for each street light installed, and Aaron Franks was hired as a "lamp
lighter,” turning the gas lamps on and off each day. Similarly, private customers simply paid a flat fee for the gas connection. For several years, the company operated the gasworks with only minor changes, mainly for increasing the output.

In 1872, the gas plant was moved from the Big Spring area to a three-acre plot on the corner of Dallas and Holmes Streets; with the move, it was completely rebuilt, converting to coal as the fuel and greatly increasing the gas production. In the late 1880s, as electric power became available for lighting, the company then promoted its manufactured gas for cooking and water heating.

**Electrical Power** - From the time that electric generators became available, researchers in many countries pursued devices for using electrical power to provide lighting. These devices were primarily carbon arc lamps and incandescent lamps, both eventually demonstrated in the 1870s. The arc lamp contained a carbon rod with a gap; voltage applied across the gap caused an arc, producing a brilliant blue-white light. The incandescent lamp used a filament in a vacuum bulb that produced light when heated by an electric current; the best known and eventually the most used of these was an incandescent lamp patented by Thomas Edison in 1878.

Electrical power sources were either direct current (DC) or alternating current (AC). One major difference was that AC systems could have a large central generator and use transformers to compensate for voltage lost along the power lines, but DC systems could not incorporate transformers and needed power generators at intervals in the transmission lines. During the last decades of the 19th century, there was great debate concerning DC versus AC power systems.

Over the years, dissatisfaction grew with the old gas street-lighting in Huntsville, and a group was appointed by the mayor to examine existing electric lighting systems. In early 1887, the
Jenny Electric Company invited the group to visit Indianapolis and see the DC-powered carbon-arc system that they had installed in that city. Pleased with what they found, the Huntsville Electric Company was incorporated as a private enterprise in April 1887; Charles H. Halsey was president and Robert E. Spragins the secretary and treasurer.

A contract was awarded to Jenny Electric for “32 street arc-lamps and 300 incandescent lights with sufficient power to double the capacity when needed.” There was no further specification for the power, but since Jenny Electric built dynamos, the generator must have produced direct current (DC) with the output likely 100 volts (an early standard). For driving their dynamos, Jenny Electric used steam engines rated at about 10 horsepower. The equipment was set in place on Miller Street by Jenny Electric workmen. In July 1887, the arc-lights between towers around the square were turned on; other street lights slowly followed.

In 1892, a franchise was awarded to William S. Wells for provide lighting in Huntsville homes; his rate was $1.00 per month per 16-candlepower incandescent lamp. Incandescent lamps from Jenney were rated from 16 to 150 candlepower, and they advertised that their generators could provide an average of 200 candlepower per generator horsepower. Huntsville’s first incandescent lighting was installed at the home of Samuel B. Moore, just in time for a great party celebrating his World champion cow, Lily Flagg. In 1898, lines were run to atop the Monte Sano Mountain, providing power to the hotel being built there. As the 1890s passed, Cyrus F. Sugg gradually acquired Huntsville Electric stock and became the sole owner.

Alabama Statehood
The Mississippi Territory was divided in March 1817. The western portion became the State of Mississippi, and the eastern portion
became the Alabama Territory, with St. Stephens, a few miles north of Mobile on the Tombigbee River, as the temporary seat of government. In January, the first session of the Alabama Territorial Assembly met at St. Stephens and created 14 new counties to accommodate the increasing numbers of settlers. U.S. President James Monroe signed the enabling act for statehood in March 1819.

With Madison County having the largest population in the Alabama Territory, Huntsville claimed the title of provisional capital and invited delegates of the other 21 then-existing counties to meet in Huntsville and write the State’s first constitution. On 5 July 1819, forty-four delegates met in a building on the corner of Gates and Franklin Streets, and by 2 August the draft constitution was completed. On 14 December 1819, the U.S. Congress converted the Alabama Territory into the State of Alabama – the nation’s 22nd state.

A temporary Alabama State Capital was set up in Huntsville, and William Wyatt Bibb, who had previously served as the Governor of the Territory, was elected as the first State Governor. It was realized that the Capital should be more centrally located, and in 1820, it was relocated to Cahawba in Dallas County. The State Capital was moved to Tuscaloosa in 1826, and finally to Montgomery in 1840.

**Slavery**

There is no question that the early success of cotton farming in Madison County was largely through the use of slaves. Many of the settlers brought slaves with them, and, at the time of the first land sale in 1809, the total squatter population was 2,545 persons, including 322 slaves. In 1820, the county population was 19,565, including 9,323 slaves, and the 1860 Census for Madison County
showed a total population of 26,450, made up of 11,685 Whites, 14,573 Black slaves, and 192 free Blacks. This census also showed 114 slaveholders with an average of 51 slaves each; and 1,003 slaveholders with an average of 8.7 slaves each. The Patton, Donegan & Company (operators of the Bell Factory) at one time had 147 slaves working in the facility.

In the North, many church ministers and other leaders became activists in the abolition of slavery. To a degree, this was also taken up in the South. Some newspapers, including one in Huntsville, ran articles condemning slavery. Thomas Fearn, the prominent Huntsville physician and businessman, at one time owned as many as 80 slaves but later called slavery “that foulest blot in our national character; that damning curse entailed on us by our forefathers.”

The Civil War

For a number of years, there had been harsh debates in the U.S. Congress concerning States Rights. A constitutional convention was held in Montgomery, and on 11 January 1861, the majority of the delegates voted to declare Alabama's immediate independence from the United States. North Alabama voted with the minority who did not want to secede, and three of the five non-secessionists leaders were delegates from Huntsville. One month later, delegates from other seceded states met in Montgomery to create the new government of the Confederate States of America (the CSA). Eventually, the CSA was composed of 11 states: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

The first hostilities occurred on 12 April 1861, when CSA artillery fired upon Fort Sumpter in South Carolina; this was ordered by Leroy Pope Walker of Huntsville, the CSA Secretary of
In 1862, the Union Army of Ohio assembled at Nashville, preparing for a thrust into Alabama. About 8,000 troops were ordered to Huntsville to sever the Memphis and Charlestown Railroad, as well as control the local telegraph operation. In the early morning of 11 April, they entered the city outskirts without being detected, and by dawn they were at the railroad depot.

There was no warning to Huntsville of their approach (the telegraph operators were employees from the North). The troops captured 18 locomotives, many passenger and freight cars, and the railroad shops. They also chased and captured a recently departed train carrying mainly wounded Confederate soldiers, impounding the men in the upper floor of the depot.

Except for a 10-month period during 1862-1863 when the troops were sent elsewhere, Huntsville was occupied until the end of the war; during this, there was little property destruction or harsh control of the population. In Madison County, there was no major military action but there were skirmishes and bush-whacking; consequently, some of the plantations and villages, including Whitesburg and Vienna, and essentially all of the school buildings were put to the torch by the occupying Union Army.

The Civil War ended when General Robert E. Lee surrendered to General Ulysses S. Grant at Appomattox, Virginia, on 9 April 1865. With some 365,000 total military dead and 275,000 wounded, this war was the bloodiest conflict in America's history. Madison County suffered 147 men killed in battle, and 214 others died from diseases and weather exposure – often while prisoners of war.

**Reconstruction**

Following the Civil War, Huntsville and Madison County had their share of scalawags and carpetbaggers – both were derisive
labels applied by the native Whites to persons who they believed to be profiting from the South’s misfortunes. Scalawags were White southerners who, for various reasons, saw an advantage in backing the policies of Reconstruction. Carpetbaggers were opportunists from the North looking to exploit and profit from the region's depressed condition. Many carpetbaggers acquired land through payment of unpaid taxes and outright purchases at bankrupt prices.

Congress established the Freemen’s Bureau, intended to assist former slaves in finding employment, providing medical services, and opening schools. A Freemen’s Bureau center was set up in Huntsville but there is little evidence that this Bureau was very helpful. In the last decades of the 19th century, a large part of Huntsville’s Black population was crowded into ghettos called Georgia and Jonesville, where they received little assistance and hope for improvement was low.

A number of leaders did emerge in the Black population; several will be noted. Born a slave, Burgess E. Scruggs received his basic education in Huntsville, attended medical school in Nashville, and then returned to practice in Huntsville where he was respected by both races. Charles Hendley, Jr., was a teacher, editor of the Huntsville Gazette newspaper, and outstanding chess player. William H. Councill, although largely self-educated, was a lawyer and Methodist minister; he was the founder and first principal of the Colored Normal School at Huntsville, forerunner of Alabama A&M. Samuel R. Lowery was a prize-winning silkworm culturist and the first Black attorney to practice before the Supreme Court.

Not all Northerners who came to Huntsville following the war were carpetbaggers; a number were wealthy businessmen and industrialists who recognized further opportunities in the recovered South. The O’Shaughnessy brothers, Michael J. and James F., from Cincinnati used their father’s wealth to start in Nashville one
of the South’s first cottonseed oil factories. In 1881, they came to Huntsville to open another of these factories. The O’Shaugnessys led in forming the North Alabama Improvement Company, a corporation to develop the real estate, mineral, and transportation resources of the region.

One of the North Alabama Improvement Company’s notable achievements was developing the Monte Sano Hotel on a bluff overlooking the city. Opened in June 1887, it attracted wealthy investors and vacationers from across the nation. The hotel had the most modern of service facilities; included was its own manufactured-gas plant, and it also had service from the local power company with lines up the mountain. To transport guests between the downtown Huntsville and the Monte Sano Hotel, a special railroad was built; this was 7 miles in length and had an elevation change of near 1000 feet. The hotel’s overall operating cost, however, was huge; it closed operations in 1900.

There was a good railroad system throughout the southern states prior to the Civil War, but major sections of the tracks and bridges were destroyed by both armies. Being one of the most important lines in the South, the Memphis and Charleston Railroad (M&CR) that had served Huntsville since 1855, was an early restoration. William Echols, a native of Huntsville and a graduate of West Point, made major contributions to this restoration. The M&CR was a forerunner of the Southern Railway.

In 1887, the Nashville, Chattanooga and St. Louis (NC&StL) Railway opened a line between Nashville and Huntsville, with a spur extending to Whitesburg on the Tennessee River. Starting in 1893, freight cars could be rolled onto a barge and pushed by the steamboat *Guntersville* between White’s Landing and Gunter’s Landing some 25 miles upstream. This opened another rail route between Huntsville and cities further southeast in the State. The
NC&StL later became the Louisville and Nashville (L&N) Railway.

**Cotton Farming**

With the surrender of the CSA in 1865, cotton farming in the South essentially started anew. The economy was broken, the labor force scattered, and there was a dearth of horses and other farm animals. Most of the plantation owners were forced to break up their lands into smaller farms; these were worked by families, share-croppers, and tenant farmers, mainly growing crops that required minimal labor. The opening of the Suez Canal in Egypt allowed less expensive shipping from India, reducing the demand in England for cotton from the south.

There were also beneficial changes in this period. Many of the former slaves – finding that work was not available elsewhere – returned to employment as hired hands and supervisors on farms. The cotton gin was greatly improved in design; new machines that were faster and required less operator labor came on the market. These gins were mainly manufactured in Southern states, and were thus quickly accepted in the cotton-growing region.

By the 1880s, cotton farming in Alabama had largely recovered; gins were no longer privately operated on plantations but were centrally placed for common use by the many smaller farms. In 1889, there were about 2.761 million acres producing about 426.6 million pounds of lint, an average productivity of 155 pounds per acre.

In Madison County, however, there was not a comparable recovery. In 1889, with near 75,200 acres in cotton producing about 6.273 million pounds of lint, the average was only 83 pounds per acre. This productivity was barely half the State average of 155 pounds, and only about a quarter of the estimated 330 pounds
per acre when cotton was first grown in the county. As previously noted, the productivity had been steadily decreasing as cotton was continuously planted, depleting the soil.

Fertilizing the soil to improve the productivity of food plants had been known and practiced for centuries, and it was finally tried in cotton farming. Manure from farm animals was some help, but the importing of guano (bat manure) from Chile – although requiring scarce money – provided the greatest relief. Nitrogen-based artificial fertilizer later became available. In Madison County, the 1899 figures were 70,000 acres in cotton and 10.421 million pounds of lint, giving 149 pounds per acre; this was a significant improvement over the 83 pounds per acre of 10 years earlier, perhaps largely due to artificial fertilizer, but still only some 45 percent of that from the original virgin soil. Alabama-wide, the 1899 productivity was 171 pounds per acre.

**Electrical Communications**

**Telegraph** - Credit for the first practical electrical telegraph apparatus in America is usually given to Samuel Morse for a development in 1836. The initial apparatus only functioned over short distances; his assistant, Alfred Vail, improved the receiver, making distant communications possible. Vail also developed the Morse Code for converting between electric pulses and alphanumeric characters. The first major demonstration by Morse was from Washington to Baltimore on 24 May 1844; over this, the first message began, “What hath God wrought.” Initial lines were strung along railroad right-of-ways, and railroads began using the telegraph for dispatching trains in 1851.

In 1858, the North Alabama Telegraph Company of New York began services in Huntsville; the operator was at the Huntsville depot, and a line ran along existing railroad tracks from Huntsville
to Stevenson, Alabama, where there were lines to Memphis and Montgomery. Initially, messages sent to stations not directly connected required that they be physically relayed (copied and resent).

Western Union started telegraph exchanges in 1861, allowing switching between different systems and bringing widespread communications. Multiple local circuits using separate power sources could be relayed from a single long line. Western Union soon dominated the telegraph business by acquiring small local firms, including the one in Huntsville.

A machine for printing telegraphic information on paper tape was invented in 1856. This was used in devices, called stock tickers, to provide stock and commodity prices ("quotes") by telegraphic means. The most successful of these, the Universal Stock Ticker, was developed by Thomas Edison in 1869. Western Union acquired the rights to the Universal Stock Ticker, and by the mid-1880s, thousands of these were installed, allowing very rapid trading; this had a major influence on the financial market. Western Union provided telegraph services for Huntsville, and brokers in the city were early users when the stock ticker became available.

In 1874, Thomas Edison made the most revolutionary invention in telegraphy – the quadruplex telegraph. With this, four messages could be sent simultaneously over a single line. Acquired by Western Union, it enabled the company to greatly increase its messaging capacity at a minimum of cost; by 1878, there were 13,000 miles of quadruplex lines. The quadruplex telegraph continued to be used well into the twentieth century.

**Time Signal** - The U.S. Naval Observatory, the keeper of standard time in America, started sending out a time signal on a dedicated wire in 1865; this was a telegraph "click" each second.
that started a minute before the hour, paused for a few seconds, and then gave a final click marking the new hour. Western Union picked up this service, renting to subscribers large clocks that were set every hour by using the hour pulse to slap the second and minute hands together. Besides the train depot, banks and other firms wishing to impress their clients with the precisely correct time were early subscribers in Huntsville.

**Telephone** - Credit for the invention of the telephone in America is usually given to Alexander Graham Bell. Like Edison, Bell was working on a telegraph apparatus for simultaneous communications when what became the telephone instrument originated. On 10 March 1876, his assistant in a separate room heard, over the apparatus, Bell saying, "Mr. Watson, come here! I want to see you!"

The Bell Telephone Company was organized in 1877, initially producing instruments for single point-to-point operations. The usefulness of the telephone was greatly expanded by the introduction of the telephone switchboard. Bell Telephone quickly incorporated this technology and began a wide expansion by organizing local and regional operating firms. One of these was the Southern Bell Telephone & Telegraph Company, started in 1879. Western Electric had been a strong competitor of Bell, and, in 1881, this firm was acquired by Bell as their manufacturing subsidiary.

In 1883, the Southern Bell Telephone & Telegraph Company brought the telephone to Huntsville; R. A. Moore was the local manager. Initially, there were only 32 individual and business subscribers. This was one of the first locations for incorporating a new telephone manufactured by Western Electric; called a magneto wall-set; this had internal batteries for power and a crank on the side used to “ring” the operator. Long distance service
became available in 1886, and by the end of the century, there were over 250 subscribers in Huntsville.

Industry Emergence

Starting in the second half of the 1800s, there was some modest emergence of industrial and other technical firms in Huntsville and Madison County. Several of these will be described.

Iron Foundry - Opened in the 1850s, the Madison Iron Foundry was the first Huntsville firm that might be called an industry. At different times, this used other names, such as Madison Iron & Brass Foundry and Madison Foundry & Machine Works. Their foundry capability included a blast furnace, one of the first in the South.

Just before the Civil War started, Madison Iron Foundry received a contract to build howitzers for the CSA. The war began before manufacturing got underway, and the foundry was sent to a safer city. After the war, the equipment was eventually returned to Huntsville, and foundry and machine shop work continued into the 20th century.

Cotton-Seed Oil Mill - Roughly 60 percent of the weight of harvested cotton is in the seed. Originally, cotton seed was considered essentially worthless except for planting new crops. By the 1870s, a means for extracting oil from the seed was perfected, and it was found to be suitable for cooking. Since it came from a by-product, it cost much less than olive oil or oil from other plants such as sunflowers; thus, it quickly became popular in the U.S. and Europe.

Michael and James O’Shaughnessy started in Nashville one of the South’s first cottonseed oil factories, and in 1881, they came to North Alabama to open another large factory, the Huntsville
Cotton Oil Mill. This was the county's first major post-war industry and soon had 80 employees. Within a few years, it evolved into a cottonseed oil empire with nine plants throughout Alabama.

**Horse-Drawn Vehicle Works** - In this time period, there were three firms in Huntsville building coaches, buggies, wagons, and similar horse-drawn vehicles. These were the J. W. Skinner Carriage Works, the Columbus Buggy Works, and the Alabama Wagon Works. Skinner Carriage had a two-story factory near the railroad depot employing a number of wheelwrights and blacksmiths and displayed their products on the square in downtown; a number of patents were issued on their products. Another local manufacturer, the Coyle Saddlery and Harness Works, supplied these vehicle firms with auxiliary items.

**Farm Machinery Factory** - Burwell J. Curry, owner and operator of a large farm in Madison County, recognized that mechanical agricultural equipment would be vital for economical farming. A graduate from the University of Virginia and a practical mechanic (mechanical engineer), Curry used his personal wealth to start a firm in Huntsville to develop and manufacture such equipment. Located near the Huntsville Depot, the plant had a range of iron works and machine shops.

The first of Curry's inventions, the Cotton Cultivator and Chopper (Patent US238028), was shown in 1881. Drawn by a horse or mule team, it was advertised as doing the work of 10 or more men in performing cultivating tasks. In 1885, Curry released his Cotton Compress (Patent US327435). Powered by a coal-burning steam engine, this could take up to 500 pounds of ginned cotton and compress it to a density of 28 pounds to a cubic foot, giving a bale volume of about 17.9 cubic feet – measures that are
still considered standard. Curry also opened plants in Florence, Alabama, and Holly Springs, Mississippi. Sales were good, and rights were eventually sold to newly evolving national firms.

**Civil Engineering Firm** - In 1886, George Walter Jones started the firm G.W. Jones, the first civil-engineering company in Huntsville / Madison County. Jones had not attended college but learned from an uncle who did private surveying work. As his sons graduated from college, they joined their father and the firm was renamed GW Jones & Sons Engineers, Inc. The firm, continuing into the present century, concentrated on land surveying and engineering projects such as bridges, paving, and water and wastewater systems.

**Spanish-American War**

The Spanish-American War lasted only 109 days – from 25 April to 10 December 1898. When it began, Joseph Wheeler, former CSA Major General and hero in the Civil War, was serving in Congress representing the 8th District of Alabama; this included Madison County. He applied for a commission and entered the U.S. Army as a Major General (the only person to ever hold this rank in both the CSA and U.S. Armies). Sent to Cuba, he led the cavalry troops, including those of Theodore Roosevelt in the battle of San Juan Hill. In one battle, Wheeler is said to have shouted, "Charge on, men; we have these damn Yankees on a run!"

As the war closed, the U.S. Army decided to keep the troops at readiness training sites in the U.S. where they could be quickly returned to Cuba. Since the Civil War, the Army had, off and on, maintained camps with various names at Huntsville (in 1888, it was called Camp Monte Sano). A new training camp, initially called Camp Joseph Wheeler, was opened at Huntsville in August 1898; some 14,000 troops camped at locations across the city.
When General Wheeler returned to the States in late 1898, he was appointed camp commander and immediately renamed it Camp Albert G. Forse, honoring a cavalry Major killed in action at San Juan Hill in Cuba.

Camp Forse was closed in 1899. Overall, the Spanish-American War had little lasting effect on Greater Huntsville.

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About the Author: Raymond Coke Watson, Jr., Ph.D., P.E., was born at Anniston, Alabama, in 1926, and raised on a small farm during the Great Depression. After completing a special non-degree program preparing “instant engineers” to meet wartime needs, he began his career in 1942, including two years in the U.S. Navy. Through the years, part-time studies at several institutions led to degrees in engineering, physics, mathematics, and business administration, with undergraduate minors in history and literature.

In 1960, Watson came to Huntsville and established the Research Laboratories of Brown Engineering Company (later Teledyne Brown Engineering) – the first high-technology firm in the city. His overall career has combined a broad variety of industrial and academic positions. He has some 450 reports, papers, and presentations, including 5 books and about 50 Wikipedia and magazine articles. To date, Watson is still fully engaged as a consultant and writer. His latest book is Huntsville’s Technological Evolution (Trafford, 2015).

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