

Meanwhile, *Lazzaronian* Benjamin Peirce founded the Harvard Observatory, and Harvard's Lawrence Scientific School; Yale's Sheffield Scientific School was created by Bache-ites Oliver Wolcott Gibbs and Benjamin Silliman, Jr.

During the Civil War of 1861-65, Bache was the recognized chief of America's scientists, with his *Lazzaroni* at the center of military strategy and intelligence. President Lincoln often consulted with Joseph Henry, and enjoyed rolling up his sleeves to help Henry at his experiments.

At the outbreak of the war, the President asked four men to sort out the loyalties of the naval officer corps: Alexander D. Bache; *Lazzaronian* Adm. Charles H. Davis, chief translator of Carl Gauss into English; Adm. Samuel F. du Pont, close collaborator of Bache and Davis; and Commodore Hiram Paulding. These men later swung the decision to produce the new *Monitor* ironclad warship.

National institutions had thus been formed, beginning in the 1830s, that could sharply upgrade U.S. technical competence and power. But radical free-trade dogma had dominated Congress and the Presidency; manufacturing was suppressed, and by the late 1850s, slave-grown cotton had become the leading product and export of the United States. By the time the slave owners' rebellion started the Civil War, the country was utterly bankrupt. New national life would come from Abraham Lincoln's revolution in economic strategy, as well as his war leadership.

5. Why Lincoln built the nation's railroads

During the Civil War, American armed force reunited the country. At the same time, President Abraham Lincoln ended and reversed the rule of "free trade" or "laissez-faire," by which the London-allied opponents of the American Revolution had expanded plantation slavery to the detriment of American industrial power.

Lincoln's breathtaking economic development program, begun when the country was bankrupt, continued in effect at least long enough after his assassination, for the United States to make itself the world's greatest industrial power. Lincoln's measures remained in force for several decades, controlling inflation through industrial innovation, and raising U.S. living standards to unprecedented heights.

Abraham Lincoln's economic program as President cohered with his long political career as a partisan of nationalist leader Henry Clay (1777-1852), and a follower of Philadelphia economist Henry C. Carey (1793-1879).

From the late 1840s until several decades after his death, Henry Carey shaped the thinking of nation-builders throughout the world. In his widely translated books, Carey demon-

strated that the free trade proposed by the "classical" school of economics was cheap British imperial propaganda. Henry Carey assumed personal leadership of the nationalist political-industrial-scientific complex in Philadelphia, that was the backbone of support to Lincoln as President. After the Civil War, this "private" apparatus, overlapping with the government and the military, would create huge, new American industries under government protection and subsidy.

Carey and his allies formed the Republican Party in the mid-1850s. As the party's 1860 Presidential candidate, Abraham Lincoln asked Carey to write his campaign's economic platform; it was a "statist" proposal, for protectionist tariffs to revive American industry. As President, Lincoln asked Carey to pick some significant Treasury Department appointees, so that the free trade policy of the slave owners could be erased completely from national government practice.

While President Lincoln built the world's most powerful armed forces, he put through an extraordinary program of economic measures, including:

- ultra-protectionist tariffs which virtually forced into existence a new American steel industry;
- government organization of railroad systems reaching across the wilderness to the Pacific Ocean;
- the sharp upgrading of U.S. agriculture, by such methods as government-directed agricultural science, free land for farmers, creation of the Agriculture Department, and promotion of new farm machinery and cheap tools;
- recruitment of immigrants, to rapidly increase population;
- free higher education throughout the United States through the Land Grant College system;
- reestablishing national control over banking, with cheap credit for productive purposes.

In this report we will focus on the railroad project and the creation of modern agriculture, which we chose in order to correct popular prejudice: that railroads were built by "robber barons" (in truth, they only stole them after they were built), and that government support for farmers is a "giveaway" (the government actually created the private family farm in America).

When Lincoln's first transcontinental railroad was completed in 1869, the 1,776 miles of new track took passengers and freight across mountains and desert from Iowa to California. Historians usually ascribe the building of this railroad, which immensely strengthened the United States, to such historical facts as the withdrawal from Congress of its Southern opponents. Abraham Lincoln's unique, lifelong, personal identification with the fight for Western development, is covered over with contemptuous, patronizing remarks, from Lincoln's ostensible supporters, and charges of corruption from his obvious detractors.

When President Andrew Jackson (1829-37) broke the Bank of the United States, and halted national support to road,

canal, and railway construction, he put the brakes on pioneer settlement of the West. But American nationalists, mostly members of Henry Clay's Whig Party, fought to continue the "internal improvements" construction policy, with the action of state governments to replace the missing federal support.

State legislator Abraham Lincoln, then 27, led this fight in Illinois. He sought to turn the mud- and ice-bound Midwest into the new industrial center of the continent, beginning with the construction of 2,000 miles of railways and canals to criss-cross Illinois. Here is what his first important biographers, John G. Nicolay and John M. Hay, report:

"If Mr. Lincoln had no other claims to be remembered than his services in the Legislature of 1836-7, there would be little to say in his favor. Its history is one of disaster to the State. Its legislation was almost wholly unwise and hurtful. . . . In the account of errors and follies committed by the Legislature . . . he is entitled to no praise or blame beyond the rest. He shared in that sanguine epidemic of financial and industrial quackery which devastated the entire community, and voted with the best men of the country in favor of schemes which appeared then like a promise of an immediate millennium, and now seem like midsummer madness.

"He entered political life in one of those eras of delusive prosperity which so often precede great financial convulsions. . . . It was too much to expect of the Illinois Legislature that it should understand that the best thing it could do to forward this prosperous tendency of things was to do nothing."

"Madness"? "Delusive prosperity"? In fact, as the *Encyclopaedia Britannica* puts it, "The growth of manufacturing in Illinois, largely because of the development of the state's exceptional transportation facilities, was the most rapid and remarkable in the industrial history of the United States. In 1850 the state ranked 15th; in 1870, 6th."

Yet virtually all historians, and Lincoln biographers, reiterate the Nicolay and Hay vituperation of Illinois' "internal improvement follies" of 1836-37. Since Nicolay and Hay were secretary and assistant secretary to Lincoln during his Presidency, their 10-volume biography was given almost unlimited credence.

Abraham Lincoln was the sprited young leader of the "Long Nine" (all over six feet tall), Sangamon County's representatives who went to the Illinois Legislature in December 1836. Lincoln's forces pushed through plans for the state to build a series of rail lines and canals, taking a leadership that marked his first important political role. Twelve million dollars was appropriated, \$3.5 million for the state-chartered Illinois Central line to be built from Galena in the north, to Cairo in the south. The state would borrow money on U.S. and European capital markets, taking advantage of the great excitement internationally over America's development prospects, the success of the Erie Canal and the giant Pennsylvania program.

Lincoln also took the lead in defending and trying to expand the capital of the state bank of Illinois, hoping that, for

Illinois' purposes, it could stand in for the moribund Bank of the United States.

Construction began with the Northern Cross Railroad, projected to be built from Quincy on the Mississippi River eastward across Illinois to the Indiana line. The first locomotive to be put in operation in the Mississippi Valley was delivered from Paterson, New Jersey by riverboat in November 1838. The line was in operation from the Illinois River to the new state capital of Springfield by May 1842.

British tighten the credit screws

But British-centered opposition to this American development proved too strong. The Bank of England withdrawal of credit from all American enterprises, following President Jackson's closing of the U.S. Bank, resulted in a terrifying credit squeeze.

In the spring of 1837, the British concentrated their attack on New Orleans. Agents in New Orleans were ordered to stop all purchases for British merchants and manufacturers. With American credit now draining away to England, there were no U.S. buyers to replace the British. New Orleans banks were forced to deny credit to merchants, factors, and banks serving the entire Mississippi Valley.

The Illinois railroad building project failed for want of credit, though the Illinois-Michigan Canal, connecting Lake Michigan with the Mississippi River system, was completed by the state government in 1848.

In 1850, the U.S. government, temporarily in the hands of the Whigs, authorized the granting of federal land to the state of Illinois for the construction of a north-south railroad with a Chicago spur: Three square miles of land were to be granted for each mile of railway constructed. In February 1851, the state legislature, frightened by the earlier collapse of its plans for state-owned enterprise, chartered the Illinois Central Railroad Company. The state gave the federal land grant as inducement to Eastern private investors to buy into the construction. Lincoln reluctantly supported this scheme as unavoidable, given the lack of national sovereignty over credit issuance. But we notice, that private capital was never expected to be able to *initiate* a significant railroad construction in America without the sponsorship and subsidy of the government.

The rail network which Lincoln had planned and championed was now quickly built, and eventually made Chicago the rail center of the continent.

John Hay: 'a thousand ties to Britain'

Turning back again to the attack on Lincoln's legislative "follies" by his supposedly friendly biographers: John Hay wrote the first volume of the Nicolay-Hay biography, on Lincoln's first 50 years, and he steered and edited the other nine volumes, covering Lincoln's remaining six years. But his motives may come out more clearly in his 1883 novel, *The Bread-Winners*, where Hay attacked the working people of America,



Abraham Lincoln (1809-65), shown here with his son Tad, revolutionized the U.S. economy at the same time as he led the Union to victory in the Civil War. Lincoln's "statist" measures built the great railroads and heavy industries that made the country a superpower.

and "the restless haste and hunger to rise which is the source of much that is good and most that is evil in American life."

Lincoln's opposite worldview was expressed to a German group in Cincinnati in 1861: "I hold the value of life is to improve one's condition. Whatever is calculated to advance the condition of the honest, struggling laboring man . . . I am for that thing."

Hay later became famous as an atrociously Anglophile diplomat and secretary of state. Hay expressed his own sense of identity in 1898, as U.S. ambassador to Great Britain: "Knitted as we are to the people of Great Britain by a thousand ties . . . there is a sanction like that of religion which binds us to a sort of partnership in the beneficent work of the world. . . . No man and no group of men can prevent it. . . . We are bound by a tie which we did not forge and which we cannot break."

His "definitive" biography of Lincoln, published in 1886, does not even mention Lincoln's role in building the Pacific railway, next to nothing on his economic measures, and not a hint of the lifetime of dirigist philosophy behind them.

Moving mountains

In August 1859, a year before Lincoln was elected to the Presidency, he visited Council Bluffs, Iowa, meeting privately there with a young railroad engineer/surveyor named Granville Dodge, who, as Lincoln's Army officer, was to be the chief engineer of the Pacific railroad.

As Dodge wrote later, Lincoln asked "what I knew of the country west of the Missouri River. He greatly impressed me by the marked interest he displayed in the work in which I was engaged, and he expressed himself as believing that there was nothing more important before the nation at that time than the building of a railroad to the Pacific Coast. He ingeniously extracted a great deal of information from me about the country beyond the river, the climate, the character of the soil, the resources, the rivers and the route. When the long conversation was ended, I realized that most of the things that I had been holding as secrets for my employers in the East, had been given to him without reserve. . . ."

Dodge continued that there was "a high bluff known as Cemetery Hill, just north of town. . . . He was greatly impressed with the outlook; and the bluff from that time has been known as Lincoln's Hill. . . . From here he looked down upon the place, where by his order, four years later, the terminus of the first trans-continental railway was established."

Lincoln signed the Pacific Railway Act July 1, 1862, authorizing huge government land grants to finance the construction. Two years later a second bill doubled the land grants and sweetened the other terms. Altogether 45 million acres of land were given away, and the government laid out some \$60 million in cash, compared to only \$4 million invested from private capital.

Lincoln was determined to "conquer space" to the west. At one point, when the project seemed dead for lack of funds, he arbitrarily redefined the Rocky Mountains as starting in their foothills, so that more money could be paid to the builders under the legislated formula—\$32,000 in the mountains, as against only \$16,000 per mile in the flatter land. It was said at the time, "Abraham's faith moves mountains."

6. How Lincoln made farmers scientific

The power of the Union's arms abolished black chattel slavery, the legal remnant of the British imperial past. But America still had to construct a positive alternative to the colonial plantation system. Abraham Lincoln's abiding passion for the protection and productivity of labor, shows up boldly in his Presidential action to bring scientific thinking into agriculture. To modernize America's farms, Lincoln's administration organized a national teaching apparatus run