The Northern Railroads, April, 1861
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THE NORTHERN RAILROADS, APRIL, 1861

Of the superabundant material on the military history of the Civil War, by far the greater portion has been written for the generation that fought it. The emphasis has been upon the battle-field, and upon achievements and mistakes that parallel those of warfare since history began. As it recedes from the popular memory, and scientific interest replaces personal, attention will tend to be focused rather upon those features which distinguish it from other conflicts, and particularly those that time shows to mark stages in the development of war. For the student of military history, of whatever nation or time, it will always prove a fruitful field, being the greatest military episode, as well as the midway point, between the two world-war cycles of the modern period. Of the innumerable developments affecting the conduct of war, which the Civil War enables us to study in mid-career, the most important seem to the writer to be the progress of democracy, of the humanitarian spirit, and of transportation. The present paper is a contribution to the last-named subject, being a study of the railroad situation in the North at the opening of the war.

Ropes contents himself with saying: "The railroad systems of the North were far more perfect and extensive, and the roads were much better supplied with rolling-stock and all needed apparatus."[1] The Comte de Paris, with a better appreciation of the importance of the subject, devotes nine pages to the railroad situation.[2] The official French observers, however, failed to give it so much attention, or, at any rate, their government failed to profit by our experiences, for Lanoir says that the War of 1870 found France with no military organization of railroads, no act, administrative or ministerial, no decree, no plan.[3] Nor have English military writers, in spite of their interest in the war, studied this field in which it was the first experiment ground; although in 1862 W. B. Adams devoted a chapter of his book on *Roads and Rails* to the question of the rela-

[1] *The Story of the Civil War*, I. 99.

[2] *History of the Civil War in America*, I. 208–217.

[3] Lanoir, *La Question des Chemins de Fer*, p. 48; *Organisation Militaire des Chemins de Fer* (L. Bowdoin et Cie., 1884), p. 7, states that the Germans were the first to understand and press to its consequences the revolution that steam produced in the economy of defense and attack. It mentions the Crimean and Italian wars, but not the Civil War.

tion of railroads to national defense. Very different has been the attitude of the Germans. In 1867 J. G. Laszmann published *Der Eisenbahnkrieg,* of which the theories are based on our experience combined with that afforded by the War of 1866. In 1882 H. C. Westphalen published *Die Kriegführung unter Benutzung der Eisenbahnen und der Kampf um Eisenbahnen,* which gives a most detailed account of the handling of railroads for war purposes between 1861 and 1865, and the most unqualified praise to General McCallum, who chiefly handled them. As late as 1896, Dr. Joesten in his *Geschichte und System der Eisenbahnbesuchung im Kriege,* drew a large part of his material from the same struggle. When one remembers that one of the German staff of observers was Count Zeppelin,[4] one is inclined to believe that the best accounts of the whole problem are probably in the archives of the Prussian staff, and that our experience was probably the basis upon which was built their system,[5] which in 1866, for the first time in Europe, made effective war-use of railroads.

Before the Civil War, railroads had been used for military purposes in the Mexican War, the Crimean War, and the Italian War. Their use in these instances had, however, been comparatively unimportant. It was, therefore, a new problem which confronted the Union and Confederate governments in 1861. Already, however, some thought had been given to it. In 1851 the secretaries of war and the navy, under instruction from Congress, addressed a circular letter to certain officers, requesting their opinion as to how far changing circumstances affected the great plans of coast defense outlined in 1816 and 1836; in particular: "How far the invention and extension of railroads have superseded or diminished the necessity of fortifications on the seaboard".[6] The replies varied greatly in the care devoted to them, and in point of view. The majority held that railroads were not a substitute for fortifications, although they changed the requirements. It is not surprising that the most interesting was from Lieutenant Maury. He wrote:

> The part that railroads and magnetic telegraphs are to play in the great drama of war with this country has not yet been cast, much less enacted. In a military point of view, they convert whole States into

[4] *Cassier's Magazine,* August, 1910, p. 383.

[5] Westphalen, *Kriegführung,* pp. 398, 403, reports the study of American experience in Prussia.

[6] *House Ex. Doc., No. 92,* 37 Cong., 2 sess., pp. 297–387. This elaborate report includes a great mass of material, including the report of General Gaines of 1836, in which he discusses, not very significantly, railroads and frontier defense.

compact and armed masses. They can convey forces from one section of the Union to another as quickly as re-enforcements can be marched from one part of an old-fashioned battle-field to another.

He recommended the building of a railroad to the Pacific as the most effective measure for defending the California coast-line.[7]

Other officers complained that railroads would not be built where military necessity required them; few conceived, as did Maury, the building of them by the government. Yet the idea was not a startling one. Military wagon roads were built,[8] and so strict a constructionist as President Buchanan informed Congress, in 1857, that the national government not only "possesses the power, but it is our imperative duty, to construct" such military roads as are necessary to our defense, making his argument an introduction to a friendly discussion of the Pacific railroad proposal.[9]

The only action taken before the war, however, was the insertion of a clause in the railroad land grants declaring that the roads built therefrom be "free from toll or other charge upon the transportation of any property or troops of the United States", that is, at a rate based on the cost of equipment and motive power.[10] While so little was done, it is apparent that the subject was not entirely unconsidered, and it is not surprising that Jefferson Davis, the chief official patron of the Pacific railroad, made the completion of the missing links in the Southern railroad system one of his early recommendations to the Confederate Congress.[11] It is, in a way, more surprising, though but another indication of the native clarity of his vision, that Lincoln, in December, 1861, recommended the construction of a military railroad through Kentucky into East Tennessee and western North Carolina.[12]

Nevertheless it was by private initiative alone that the railway system of the United States in 1861 had been created, and private initiative had naturally followed for the most part the dictates of commerce and commercial opportunity, though political considera-

[7] *House Ex. Doc., No. 92,* 37 Cong., 2 sess., p. 335 ff., especially p. 357.

[8] *Statutes at Large,* 33 Cong., 2 sess., p. 608; 34 Cong., 3 sess., p. 162; *Report of Secretary of War,* 1856, p. 371.

[9] Richardson, *Messages and Papers of the Presidents,* V. 456–457.

[10] *Statutes,* 34 Cong., 1 sess., May 15, May 17, June 3, 1856, etc. Before this date there is no mention of troops. After its first insertion this clause became standard in railroad land grants. It was, of course, not retroactive.

[11] Richardson, *Messages and Papers of the Confederacy,* I. 139–140.

[12] Richardson, *Messages and Papers of the Presidents,* VI. 46. This proposal was endorsed by Kentucky, December 23, 1861. *Sen. Misc. Doc., No. 14,* 37 Cong., 2 sess.

tions had played some part, particularly in the South.[13] With such incentives there had developed a system which, east of the Mississippi, was comparatively independent of, though it did not ignore, water transportation; or rather two systems, for the states which seceded had one system, those which did not, another. Including the Kentucky Blue Grass with the North and western Kentucky with the South, the Southern system comprised about 9000 miles, and employed about 7500 railroad men, the Northern about 22,000 miles, employing about 29,000 men. There was only one point of physical contact between them: the Louisville and Nashville at Bowling Green. Long Bridge at Washington was not strong enough to bear trains, and between Cairo and Columbus was a two-hours' steamboat connection.[14] It is evident that most of the heavy intersectional trade was carried by the Mississippi and coastwise shipping, being distributed from such ports as Memphis, Vicksburg, Charleston, and Savannah.

The Northern system was the more complete. It left out the northern portions of Maine, Michigan, and Wisconsin, with the Adirondacks, and but barely touched Minnesota and Iowa, but within this area there were but few places, such as northwestern Pennsylvania and the Catskill plateau, as much as twenty-five miles from a railroad. Ten roads connected the Ohio with the Lakes, where ten years before there had been but one; eight linked the Mississippi with the same artery, where ten years before there had been none. Its point of strain was at the crossing of the mountains. Here it must bear the increased traffic between East and West caused by the war, as well as the extra requirements of the upper Mississippi and Ohio valleys caused by the closing of the Mississippi. Moreover, of the four roads into which the traffic was here compressed, corresponding to what are now the New York Central, the Erie, the Pennsylvania, and the Baltimore and Ohio systems, the latter was, for the first year of the war, closed by the enemy.[15] Yet the roads that remained were adequate to the task. They were put to it for men, as many joined the army just when business increased, and they had to increase wages, but they did their work, and there is no evidence that the government or business felt, except

[13] *Calhoun Correspondence,* Am. Hist. Assoc. *Report,* 1899, II. 701, 1062–1063.

[14] The following description is based on the railroad map for December, 1860, drawn by Professor R. H. Whitbeck for the Atlas of the Historical Geography of the United States now in preparation by the Carnegie Institution.

[15] *House Ex. Doc., No. 15,* 38 Cong., 1 sess., *Report of Gen. George B. McClellan,* pp. 52–53. It was closed about the end of April, 1861, and opened late in March, 1862.

during a brief period of adjustment, the pinch of inadequate transportation.[16] In fact, when the war was over, satisfied trade could not be enticed away from the routes to which war had forced it.

The reason is plain. In the fifties the gold of California, the optimism of the American people, the rivalry of cities, had overbuilt the railroad system.[17] The panic of 1857 had checked growth but promoted consolidation and improvement. The railroads were ready, were panting, for an increase of business. The war saved them. In return they saved the country. At least, civil war in 1850 would have meant that the valleys of the Mississippi and Ohio would have been bottled up; the railroads could not have carried their products to the East or to the Lakes, nor could the canals. The harvests which in 1861 saved our foreign credit could not have been sold, the population, restless even in 1862, and unmodified by the strong Union elements entering in the fifties, would have been a very doubtful element. The historian can explain why the Civil War occurred just when the North was supplied with a railroad system unnecessarily extensive for business in sight, but the average man might be excused for calling it "bull luck".[18]

The main military obligation which the war threw upon the railroads was that of maintaining the industrial life of the nation under changed conditions. Nevertheless the part they were to play in strictly military operations, was hardly second to that of the navy. In a report of August 4, 1861, General McClellan says:

> It cannot be ignored that the construction of railroads has introduced a new and very important element into the war, by the great facilities thus given for concentrating at particular positions large masses of troops from remote sections, and by creating new strategic points and lines of operations.[19]

[16] *Official Records, War of the Rebellion,* third series, I. 710–711, December, 1861. Cameron reports that the opening of the Baltimore and Ohio was important for purposes of trade; *American Railroad Journal* (weekly, ed. H. V. Poor and J. H. Schultz), 1861, pp. 401, 428, 476, 505–506, discusses the dislocation of trade.

[17] *The Capitalists' Guide,* 1859, states that 20,000 miles are all the inland commerce of the country requires, that 8000 are a dead loss. From a narrowly financial aspect this was probably true. The railroad time-tables at once illustrate that the roads were not used to capacity, though, of course, they could not be used as much as now, owing to the character of the grades, the slight development of double-tracking and inadequate sidings, and the crudity of signalling and switching systems. According to the *Census,* 1860, *Miscellaneous,* p. 324, the railroads carried about 850 tons per mile, per annum.

[18] In addition, there was the Erie Canal, and the Boston and Ogdensburg, the latter tapping Lake Ontario, p. 323.

[19] *Report of General McClellan,* p. 4.

It is characteristic that he adds: "It is intended to overcome this difficulty by the partial operations suggested." And yet it is difficult to see that the situation was not as advantageous to Northern as to Southern strategy. To be sure, McClellan, railroad man though he was, preferred to advance upon Richmond from the coast, and left the railroad advantage almost entirely to his opponents. In the direct advance upon Richmond, however, the railroads of northern Virginia were quite as useful to Union as to Confederate troops, while, as Alexander points out, the absence of north and south railroads in western Maryland and Pennsylvania was a constant check to Lee in his invasions.[20] Alexander, himself, regarded the interior railroad lines of the South as a great and neglected advantage.[21] Yet, when in 1863 Longstreet was sent West, it took Alexander eight days and ten hours to go from Petersburg to the vicinity of Chickamauga, while in the same campaign[22] Hooker went from Culpeper Court House to Bridgeport, Alabama, a longer distance over a more indirect route, in eight days.[23] This, of course, involved the use of part of the Southern system, but it renders it difficult to see why McClellan might not have considered the opportunities which railroads afforded him, as well as the difficulties they involved.

By using the word system it is, of course, not intended to imply that the Northern railroads had unified organization, yet they were by no means disjointed units. As the efficiency of a transportation system so largely depends upon organization, it is vital to an understanding of the part the railroads played to know at what precise degree of integration they had arrived. The original segments had nearly all been short; independent roads from Providence to Boston, Providence to Worcester, Boston to Worcester, Worcester to Springfield, were typical. This was, in part, due to the fact that capital was conservative and preferred to stay near home. In the fifties confidence in corporations and far-distant investments increased and greater enterprises were undertaken. John M. Forbes was able to attract Boston capital to the Chicago, Burlington, and Quincy;[24] the Erie grew from New York to Lake Erie; the Illinois Central stretched nearly the length of that long state. By 1861 these units had begun to unite into larger entities, some of which were the ancestors of the great systems of to-day. This was prompted by

[20] Alexander, *Military Memoirs of a Confederate,* pp. 221–222.

[21] *Ibid.,* pp. 220, 364.

[22] *Ibid.,* p. 449.

[23] Rhodes, *History of the United States,* IV. 399; Westphalen, *Kriegführung,* pp. 172–177.

[24] Pearson, *An American Railroad Builder,* p. 86 and *passim.*

desire for administrative convenience and, particularly after 1857, by financial pressure.[25] On the whole, consolidation was favored by public sentiment,[26] and the local restaurateurs and omnibus men, who still in the South very generally prevented the physical connection between lines having their terminals in the same city,[27] had, after the Erie riots in 1854, largely lost sympathy in the North.[28] The unions were of many kinds: agreements, leases, operating contracts, joint ownership of connecting lines; practically all modern devices except the holding company and even this was in process of evolution. Owing to the complexity of these arrangements, it is impossible to state the exact limits of the real sovereignty of the several administrative units.[29] The most extensive was that of the Pennsylvania system, stretching from New York to Chicago. The New York Central was more loose-jointed, but was developing in a promising manner. The Boston and Maine was already beginning to spin its tangle to the delight of lawyers and the confusion of laymen. Still it was impossible to go from Boston to New York over one system, or from New York, or even Philadelphia, to Washington. The war caught the railroads at about one-quarter the way from the original diversity to the situation of 1916.[30]

American ingenuity, however, had rendered the situation less annoying to the traveller than might be supposed. In 1855, at Pittsburgh, there had been formed a national association of general ticket agents.[31] At first in the nature of a lark, if not a spree,[32]

[25] Pearson, p. 89 ff.

[26] *Capitalists' Guide,* 1859. This point is strongly emphasized in a study of corporations to 1860, made by Theodore Gronert in his doctoral thesis, Wisconsin, 1917.

[27] Phillips, *A History of Transportation in the Eastern Cotton Belt,* pp. 383–384; Ramsdell, "The Confederate Government and the Railroads", pp. 794–810 of this journal.

[28] Rhodes, *United States,* III. 21–23.

[29] *Capitalists' Guide,* 1859, gives many data on this subject. In many cases where no other information is given, the lack of any data on equipment indicates that the road was operated by another, although in some cases such lack may be due to failure to report. Material on this subject is also given in the *American Railroad Journal,* every weekly number giving a railroad list with equipment, as well as financial data.

[30] I note 22 railroads with track in more than one state, out of 340 listed.

[31] *Records of the National General Ticket Agents Association* (Chicago, 1878). The first meeting was on March 13. In 1856 they met at Hamilton, Baltimore, Boston, and St. Louis; in 1857 at Indianapolis; in 1858 at Chicago and Philadelphia; in 1860 at Cleveland; in 1861 at Cincinnati, January 10, Louisville, April 9 (the largest meeting, 51 roads, of which one was Southern), and Detroit, October 2. The Detroit and later meetings took up the war situation, see particularly pp. 76–77.

[32] *Ibid.,* pp. 17–25.

their meetings rapidly developed into important business conferences. In 1862 they resolved that it was "inexpedient . . . to accept invitations which interfere with . . . business".[33] Here was evolved a system of coupon tickets which in 1859 enabled the traveller to buy his transportation through from New Orleans to Bangor, Maine.[34] As the baggage check system was also in use,[35] and universal railroad guides in circulation,[36] the worry of travel was already largely reduced for the traveller, while the facilitation of freight was also provided for.

With this spirit of accommodation, through cars were run over some connecting lines, as between Boston and New York.[37] This movement, however, had made but slight progress, and the trains, both freight and passenger, nearly always presented an appearance very different from that of those we watch in the yards to-day, for practically every car belonged to the road on which it was running. This was in large measure due to the physical inheritance from the days of still greater diversity, the difference in gauges. In the North, I have noted eleven different gauges, running from 4.4½ to 6 feet.[38] Out of this chaos there was coming some order. Four feet, ten inches was an Ohio favorite, but such roads were not extending. Four feet, eight and one-half inches was the general favorite in the North, but the New York Central was 4 ft. 8 in. The battle between broad and narrow gauge could not be said to be won;[39] the Erie used the 6-foot, and its growing ally the Atlantic and Great Western was pushing that form of track across the Middle States toward St. Louis. In the South an even 5-foot was general, but did not hold a mastery. A change of gauge meant, of course, change of cars; between Philadelphia and Charleston there were eight. Even the Pennsylvania had to announce one change between New York and Chicago, at Pittsburgh, where every pound of its freight had to be transferred, as its Eastern and Western systems had different gauges.[40] The standardization of gauge was beyond

[33] *Ibid.*, p. 81.

[34] *Capitalists' Guide*, 1859, p. 318; see also Johnson and Huebner, *Railroad Traffic and Rates*, II. 22.

[35] Ferguson, *America by River and Rail* (London, 1856), p. 41, etc.

[36] Rhodes, *Railroad and Steamboat Directory* (Philadelphia, 1857); Dinsmore, *Railroad and Steam Navigation Guide* (New York, 1858); perhaps the best was Appleton's, which was supposed to be issued semi-monthly.

[37] Ferguson, *America by River and Rail*, p. 41.

[38] Ashcroft, *Railroad Directory for 1862*, gives the gauges.

[39] There was much literature on this subject.

[40] Ferguson, p. 248, describes the methods in this greatest of freight transfer stations.

the expectation of the day, and inventors were at work, as yet unsuccessfully, on adjustable running gear.[41]

Another factor necessary to an understanding of the part played by railroads in the war is a knowledge of the character of the roads themselves and their equipment. Inferior as were the best to the average of to-day, there was probably more variety than there is now. Yet American railroads were as distinct from the European as they are to-day; their development had been largely a native growth, and the difference was not alone one of inferiority.

The laying out and grading of the road represented about one-third of its cost.[42] From a military standpoint this was a permanent accomplishment for it resisted destruction. During the Civil War such masonry also as existed appears to have survived,[43] but there was little compared with what we expect to see. The tracks were very slightly ballasted,[44] but the ties were laid closer than in Europe,[45] and efforts were already being made to prolong their life by injecting creosote.[46] No steel rails were in use.[47] Although the wooden rail, really a wooden rail capped with iron and weighing about fifteen pounds to the yard, had gone out of use in the North, it was still used in the South. During the war the Pennsylvania experimented with a 67-pound rail, but 64 was the heaviest lying in 1861.[48] The form of the rail, however, was more nearly modern than were those then used in Europe.[49] Double-tracking was making rapid progress to the north, but had made but little progress in the war region.[50]

41 Malézieux, *Travaux Publics des États-Unis d'Amérique en 1870* (Paris, 1875), p. 134; this superb study gives many facts in engineering history.

42 *The Capitalists' Guide* gives the cost of the Memphis and Ohio as $681,036 for grade, ties, and bridges; $592,900 for superstructure, and $250,000 for equipment. No figures give exactly what is wanted here, but the statement is a rough estimate drawn from many such accounts as the above.

43 See *Photographic History,* I. 27, 213; V. 75, etc.

44 Malézieux, *Travaux Publics,* p. 132.

45 *Ibid.,* pp. 134–135.

46 *Ibid.*

47 Taylor, *Distinctive Features,* p. 8. In 1863 the Pennsylvania road experimented with steel rails, axles, and ties.

48 Wilson, *Reminiscences of a Railroad Engineer* (Philadelphia, 1896), p. 55.

49 Malézieux, *Travaux Publics,* p. 135.

50 Statistics on double-tracking are very difficult to obtain. In New England it had made considerable progress, as in New York, New Jersey, Pennsylvania, and on the Baltimore and Ohio system; elsewhere it was rare. The Pennsylvania road began double-tracking in 1854, in 1860 its length was 331, with 262 miles of double-track. In New York state in 1860 there were 2656.10 of road, of which 1053.40 were double-tracked, but these figures included sidings. Seminary study by Mr. H. K. Murphey, 1916.

The Americans were the cleverest bridge-builders of the world. Already the first suspension bridge across Niagara had been in place five years and carried trains.[51] Iron bridges were coming in, but most were wooden, and the easiest way to cripple a railroad was to destroy its bridges. The war began with their destruction north of Baltimore. Again and again did those of Virginia go up in smoke, only to rise again, beautiful tissues of wooden trestle, almost over night.[52] Across the Susquehanna at Havre-de Grace was a car-ferry.[53] Here and there, in their pride, successful roads had begun to erect splendid terminals. That at Providence was one of the most graceful buildings ever created in America; but these stations were much further removed from the modern terminal than were roads and trains. It would still take fifty years to adjust architecture to the new requirements.

The cars were of the modern American type,[54] but lighter. Murray wrote in 1855 that an American car to seat fifty weighed from ten to twelve tons and cost £450, while accommodation for fifty in England cost £1500. At present our cars are the heavier. We already, however, used the double-pivoted wheel-base, generally with eight wheels, which allowed for sharper curves in the road.[55] The smoking-car, the water-filter, the toilet, and the omniferent newsboy were already in evidence.[56] Stoves were used for heating. The sleeping-car was in use, and the Woodruff type seemed to young

[51] Malézieux, *Travaux Publics*, pp. 63–69; *The American Railroad* (New York, 1889); *American Railroad Journal*, 1861, pp. 357, 468, 476.

[52] Beautiful examples are to be seen in the *Photographic History*, V. 252, 272, 278, 294, 298.

[53] Malézieux, *Travaux Publics*, p. 32; *Harper's Weekly*, June 8, 1861, p. 361.

[54] For an appreciation of the physical characteristics of railroads no better material exists than the contemporary photographs. The *Photographic History*, V. 271–302, is devoted to railroads and the army; I. 193, shows Illinois Central cars at Cairo; p. 325, the Richmond and York River Road, with light rail and poor grade, but good flat-cars. *Harper's* and *Leslie's* give sometimes photographs, sometimes sketches. *Harper's Weekly*, November 9, 1861, gives a good bird's-eye-view railroad map; May 11, it illustrates the repair of the Annapolis road with wooden rails, while *Leslie's* of the same date shows troops diving to recover sunken rails. *Leslie's*, April 30, shows troops in passenger-cars at Baltimore; June 15, Camp Dennison, Ohio, with a railroad passing through it; June 29, a fight about a train; October 5, a wreck; August 3, the first picture of troops in freight-cars, which becomes a common sight. These same authorities illustrate also water transportation; *Harper's*, September 28, for instance, shows troops in canal-boats.

[55] Murray, *Lands of the Slave and the Free* (London, 1855), II. 45–52, 146, a very good account

[56] Thornbury, *Criss-Cross Journeys* (London, 1873); he travelled in the spring of 1861.

Andrew Carnegie a promising field for his energy.[57] To judge from descriptions, however, it would seem that had the mechanism not improved, most persons would still prefer the day-coach.[58] The restaurant-car was not yet, and the ordinary passenger, like the soldier, ate a casual apple or descended to a Gargantuan gorge at properly spaced twenty-minute stops.[59]

The locomotives with their turnip-shaped stacks and slight bodies looked more unlike those of to-day, than did the cars. Europeans noted, with praise, the house for the engineer, and the musical warning of the bell.[60] The cow-catcher lived up to its name; the Philadelphia and Reading often made a century a week, for tracks were practically never fenced in.[61] Most engines were named, and a typical good one was the *Vibbard,* which weighed 59,000 pounds, cost $11,845, and ran 5709 miles for $4,318.79 in the year ending June, 1865.[62] Most engines burned wood, though experiments were being made with coal.[63] The train was governed by the conductor. The Pennsylvania had its own system of telegraphic control,[64] as did many others in the North, while in the South the railroad telegraph was little used.[65] Couplings and safety-switches were engaging attention, but were unsolved problems. The snow-plow was used in the North,[66] and many of the bridges were covered.[67] Better time was made on the main lines than a study of conditions would lead one to suspect. In 1857 trains were scheduled from Boston to Chicago in forty-two hours, to New York in twelve and a half hours, to St. Louis in forty-eight; from New York to Chicago in thirty-six hours, to Charleston in sixty-two; from Charleston to Nashville in thirty-three, to Memphis in forty-two. In 1861 the

[57] *Who's Who in America,* 1916–1917, p. 400.

[58] Thornbury, *Criss-Cross Journeys,* I. 34–47; he slept well on the third trial; Charles Francis Adams, *Autobiography,* p. 65. McPherson, *When Railroads were New,* p. 171, gives the cost as about $4000. The first "Pullman", built during the war, cost $18,000.

[59] Ferguson, *America by River and Road,* p. 43; Moore, *History of the Cooper Shop Volunteer Refreshment Saloon* (Philadelphia, 1866).

[60] See *Photographic History,* VIII. 277, etc.

[61] Malézieux, *Travaux Publics,* p. 132.

[62] *Am. Railroad Journal,* 1861, pp. 498, 540, gives results of tests on Illinois Central; *Photographic History,* V. 287. A similar locomotive to-day would weigh about 180 tons and cost about $30,000.

[63] Taylor, *Distinctive Features,* p. 10. Experiments were being made in smoke consumption.

[64] Plum, *The Military Telegraph during the Civil War in the United States* (Chicago, 1882), I. 66–67.

[65] Phillips, *Transportation in the Eastern Cotton Belt,* p. 385.

[66] *Capitalists' Guide,* 1859, p. 105, etc.

[67] Ferguson, *America by River and Road,* p. 42.

New York Central and Pennsylvania both scheduled forty-hour trains from New York to Chicago. These, however, were exceptional routes, and the average train made its way in leisurely fashion, as the habit of smoking on the car platforms reveals.

The *Capitalists' Guide* of 1859 reported that the Southern roads were in better shape than the Northern, but this was a matter of finance alone. A glimpse at the pages of the same book giving the equipment of the individual roads reveals the discrepancy. The Memphis and Charleston, with 290 miles of track, owned 35 locomotives, 32 passenger, 449 freight, and 42 service cars; the Philadelphia, Wilmington, and Baltimore, with about one-third the track, had about the same equipment; the Baltimore and Ohio had more than half as many freight-cars as were reported in the whole South, the New York Central more than half as many passenger-cars, and the Pennsylvania and Erie together, almost as many engines.[68]

Ties, rails, bridges, and equipment were liable to destruction on capture,[69] and, therefore, the possibility of replacement was of obvious moment. Nor was this less true of the North than of the South, for it is apparent that the larger equipment of its roads was fully used by the business of those roads, and the special requirements of the army were mostly for cars and engines to run conquered Southern roads of different gauge.[70] If this paper were devoted to the South, this would be the vital problem to discuss, as it was the vital problem for the Confederate government to solve. If as vital for the North, it was at any rate small cause for worry. The American railroad system was practically self-sufficing, and it was the manufacturing North which had supplied the lion's share. The shops which had equipped the mushroom growth of the fifties were eager, after the slack since 1857 and the loss of the Southern market, to supply the war-drain. It is perhaps sufficient to state that there is not the slightest evidence of shortage or strain, except that occasioned by sudden crises in special localities.[71]

[68] The reports are not complete, but the lines not reporting were mostly small.

[69] *Harper's Weekly*, July 20, 1861, p. 455, illustrates the destruction of 50 Baltimore and Ohio locomotives; August 3, p. 491, of 42 at Martinsburg, W. Va., etc.; see also Imboden, "Jackson at Harper's Ferry in 1861", in *Battles and Leaders of the Civil War* (1884), I. 122–125, on Jackson's trap for trains.

[70] *House Ex. Doc., No. 1*, 39 Cong., 1 sess., vol. IV., app., pt. 1, p. 18, on the struggle for the equipment of the Louisville and Nashville. In Virginia McCallum changed the gauge to 4.8½ so that he could use northern equipment. *Am. Railr. Journ.*, 1862, p. 398.

[71] In an emergency the factories delivered to McCallum in Nashville, in February, 1864, 13 locomotives; March, 7; April, 10; May, 23; and kept up the

The effectiveness with which the railroads could be used depended in large measure on the control which the government could exert over them. In 1870 the French government requisitioned all means of transport.[72] The United States government never undertook any such comprehensive measure. In fact it was neither desirable nor necessary. The roads showed a ready spirit of helpfulness.[73] On April 26, 1861, the directors of the Illinois Central placed their road at the disposition of the government, with its 110 engines, 2600 freight cars, and 3500 men. Compensation would be expected for the use of the rolling-stock, but it could be arranged later.[74] On the whole the roads were willing, the government generous, and the pressure was better met by the regular officials than it would have been by direct government control.

Where the situation called for it, however, the government showed no hesitation in exercising power. "About the close of April" 1861, the government took control of the Washington branch of the Baltimore and Ohio, and the Annapolis and Elk Ridge. Both were returned to the companies when order in eastern Maryland was restored, and before the seizure was reported to Congress.[75] Cameron reported July, 1861: "Supervision of railroad and telegraph lines will remain a necessity."[76] January 31, 1862, Congress authorized the President to take possession of railroads so that they should be considered part of the military establishment of the United States, subject to all the restrictions imposed by the rules and articles of war. February 11, 1862, Brigadier-General McCallum was appointed "military director and superintendent of railroads in the United States" with authority to "enter upon, take possession of,

latter rate as long as he called for them. The *Census* of 1860, *Manufactures*, clxxx–cxcvi, gives a production of railroad iron in the North of 222,577 tons; in the South, of "bar and railroad iron", 26,252 tons; 19 factories producing "wholly or chiefly" locomotives in the North, to 1 in Virginia; Virginia stood well in car-springs, etc., but no manufacture of car-wheels is reported in the South. Obviously, considering the difference of gauges, the manufacture of railroad-cars was more widely distributed, the iron parts being assembled. Virginia, South Carolina, and Tennessee produced each a respectable number, but Pennsylvania produced twice as many as the entire South. This branch is not discussed in the census, the figures being given with the several states.

[72] Lanoir, *La Question des Chemins de Fer*, p. 54.

[73] Fish, "Raising of the Wisconsin Volunteers", *Military Historian and Economist*, I. 258–273 (July, 1916). See also Wilson, *Reminiscences*, p. 41.

[74] *Offic. Rec.*, third series, I. 121. This put their road on the same basis as the other land-grant roads.

[75] *Ibid.*, p. 673.

[76] *Ibid.*, p. 307.

hold and use all railroads, cars, locomotives, equipments, appendages, and appurtenances, that may be required".[77] The government had already taken possession of the railroads in the region occupied in Northern Virginia, seized three engines, and "borrowed" three from the Philadelphia and Reading, reconstructed Long Bridge, laid tracks across it, and made connection with the Alexandria and Orange, thus originating a system of military railroads under its own management.[78] Before the Baltimore attack on the Sixth Massachusetts, a government telegraph system had been begun, although it was dependent for seven months for money and supplies upon E. E. Sanford, president of the American Telegraph Company. No moment of doubt or hesitation is shown in exercising all needed control; the question of its extension was one of policy alone.[79] Nor did the government show more hesitation in upholding its own railroad men in their relations with commanders in the field. A special order of November 10, 1862, read:

> Commanding officers of troops along the United States military railroads will give all facilities to the officers of the roads . . . for unloading . . . working parties will always be in readiness for that duty, and sufficient to unload the whole train at once.
>
> Commanding officers will be charged with guarding the tracks, sidings, wood, water-tanks, etc., within their several commands, and will be held responsible for the result.
>
> Any military officer who shall neglect his duty in this respect will be reported to the quartermasters and officers of the railroad, and his name will be stricken from the rolls of the army.....
>
> No officer, whatever may be his rank, will interfere with the running of the cars as directed by the superintendent of the road.
>
> Any one who so interferes will be dismissed from the service for disobedience of orders.[80]

Therein spoke the ablest railroad lawyer of the country, Edwin M. Stanton. The possibilities of direct service in the war lay not only in the stage of development they had attained, but in the men they had prepared.

The story is familiar how when railroad and telegraph connection between Washington and the North was broken, a Massachusetts regiment arrived at Annapolis. The road from that port to the Baltimore and Ohio had been damaged, and the only available engine was broken down. A call was made for men who could

[77] *House Ex. Doc., No. 1,* 39 Cong., 1 sess., vol. IV., app., pt. 1, pp. 1–39.

[78] *Ibid.*

[79] *Offic. Rec.,* third series, I. 673.

[80] *House Ex. Doc., No. 1,* 39 Cong., 1 sess., vol. IV., app., pt. 1, p. 33. Contrast this with the slower appreciation of the need of control in the South, as shown in Mr. Ramsdell's article, ensuing.

repair it, whereupon a man stepped forward who had helped build it,[81] and speedily found competent mechanics to help him put it in repair. Within a few days a regular connection by boat was established between Havre-de-Grace and Annapolis, over which not only troops but regular passengers were taken. With the almost unnoticed rebuilding of the bridges between Baltimore and the Susquehanna, the regular railroad route was reopened, and that by Annapolis vanished.[82] It is not so important that there were thirty thousand miles of railroad in the United States in 1861, as that twenty thousand of them had been built in the last ten years. In those ten years greater progress had been made in transportation than in any other twenty of our existence to the present time. The number and variety of the problems to be solved, financial, administrative, and engineering, had demanded and developed extraordinary talent. Sound and careful judgment was a necessity, but tradition had no hold. New problems did not terrify, but the railroad men of the country were not untutored dreamers.[83] The profession was at an ideal point to meet an unexpected situation. Moreover, the railroad system was the only "Big Business" in the country. No other institutions drew their capital from as widely extended territory, did business of as far-flung scope, or handled male labor of such number and variety.

It was no accident, therefore, that the leading military organizer, McClellan, had been chief engineer and then vice-president of the Illinois Central, and had become in August, 1860, president of the Ohio and Cincinnati, although Ropes fails to mention his railroad experience. Equally with McClellan, credit for the prompt utilization of railroad possibilities must be given to the Secretary of War, Cameron, who was familiar, perhaps too familiar, with the Pennsylvania railroad men. He immediately called as assistant-secretary Thomas A. Scott, vice president of that road. If Scott was too liberal in his compensation to the railroads,[84] at least there can be no criticism of the effectiveness of his acts. He at once called four Pennsylvania men to assist him, one of whom, Strouse, took charge of the telegraphs, and one, twenty-four-year-old Andrew Carnegie, who had risen from telegraph messenger to telegraph

[81] Butler, *Butler's Book* (Boston, 1892), pp. 201–202.

[82] These were rebuilt by the company. *Offic. Rec.*, third series, I. 673; first series, II. 616–617, 635.

[83] Westphalen, *Kriegführung*, p. 545, comments on this resourcefulness. Note also a railroad battery pushed by a locomotive, *Photographic History*, V. 51, and a search-light, *Leslie's*, July 6, 1861.

[84] *House Ex. Doc., No. 18*, 37 Cong., 2 sess.

operator, and superintendent of the Pittsburgh division, to be superintendent of telegraph lines and railroads in the East.[85] Cameron, McClellan, and Scott left under various clouds, and Carnegie followed them with a disgust for war which later made him the benefactor of pacifism, but the railroad work and the army organization had been well done. Cameron, moreover, was succeeded by Stanton, familiar with the railroads as one of their own officers, thoroughly able to understand "that the management of railroads is just as much a distinct profession as is that of the art of war".[86] He promptly called to the transportation service General Haupt, a West Point graduate of 1835, from 1846 with the Pennsylvania road, and after the war, builder of the Hoosac Tunnel.[87] More important, he called D. C. McCallum, an architect and engineer, general superintendent of the Erie, to take general charge of the military railroad situation.[88]

The most striking work of McCallum was the organization of reconstruction work. Roads and bridges were sometimes destroyed and rebuilt five times with the ebb and flow of the battle lines.[89] It was accomplished to the wonder and admiration of the most intelligent foreign observers.[90] The work itself belongs to the story of the war, but it would have been impossible if the railroad development to 1860 had not reached the point it had in accomplishment and public recognition. With the possible exception of the Navy Department, it was the most efficient of the public services, and ranks in that regard with the United States Sanitary Commission. These two contributions of our Civil War have been incorporated into the mechanism of all civilized war.[91]

CARL RUSSELL FISH.

[85] Plum, *Military Telegraph*, I. 66–67.

[86] *House Ex. Doc., No. 1*, 39 Cong., 1 sess., vol. IV., app., pt. 1, p. 34.

[87] *Photographic History*, V. 277.

[88] Wilson, *Reminiscences*, p. 45; the chief engineer of the Pennsylvania was appointed aide of General Couch during the Gettysburg campaign.

[89] Westphalen, *Kriegführung*, p. 419, etc.

[90] *Ibid.*, p. 398, and *passim*.

[91] *Ibid.*, p. 398, referring to McCallum's report, *House Ex. Doc., No. 1*, 39 Cong., 1 sess., vol. IV., app., pt. 1; pp. 1–39.