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The Union Navy's Blockade Reconsidered

David G. Surdam

THE UNION NAVY'S BLOCKADE during the American Civil War (1861–1865) possesses a blemished reputation, as it did not completely deprive the Confederacy of imports of food, arms, and munitions. Historian Stephen Wise provides a typical summation:

> In terms of basic military necessities, the South imported at least 400,000 rifles, or more than 60 percent of the nation's modern arms. About 3 million pounds of lead came through the blockade, which by [Josiah] Gorgas's estimate amounted to one-third of the Army's requirements. Besides these items, over 2,250,000 pounds of saltpeter, or two-thirds of this vital ingredient for powder, came from overseas. Without blockade running the nation's military would have been without proper supplies of arms, bullets, and powder.[1]

However, the blockade's contributions to the war effort have been largely underestimated. Some of this underestimation arises from the focus on imports, but there were other major effects of the blockade. The antebellum South was the nation's primary export region; exports of cotton constituted the bulk of American exports. The blockade severely reduced exports of staple products and curtailed Southern purchasing power. The blockade also deranged intraregional movement of goods, particularly fodder and meat. Finally, although enough arms and munitions were smuggled through the blockade to equip the Confederate armies, the inability to import bulky rail iron and iron

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plating contributed to the deterioration of Southern railroads and to delays in constructing Confederate ironclads.

The blockade was a long-term form of attrition. The sailors were unable to see many dramatic victories that historians would later call "turning points." Instead, their efforts led to a gradual exhaustion of the Confederacy's ability to sustain its military. While one hesitates to label the blockade a "sufficient condition" for Union victory, one can think of it as a "necessary" one.

The first section of this article describes previous analyses of the blockade; the second examines the data commonly used in assessing the blockade, then develops a more complete analysis. The third and fourth sections describe the antebellum Southern economy, in order to contrast the antebellum trade flows with the wartime flows. The fifth section discusses the blockade's effect upon the Confederate war effort.

Previous Commentators on the Blockade

When we examine opinions regarding the efficacy of the Union navy's blockade, we discover a wide range of opinions. Among the detractors are Richard Beringer et al., Raimondo Luraghi, Frank Owsley, Stephen Wise, and William Still, Jr. Luraghi disputes the primacy of the blockade in defeating the South economically, instead touting the collapse of the Southern rail system as instrumental in the defeat: "The Confederacy was being defeated, and not, as the legend still maintains, because of the blockade. Simplifying the issue, one might surmise that the basic cause of defeat was, rather, the breakdown of the Confederate railway system." Beringer and his colleagues believe that a collapse in morale, triggered by religious guilt, caused the South's defeat and that an "effective" blockade could "not have equaled the task of crippling quickly so large and nearly self-sufficient a country as the Confederacy." Moreover, they do not believe that the Union navy's blockade was effective; indeed, at best they view it as a sieve with holes of varying sizes. In addition, in their view, the Union's failure to knock out or capture a few key Southern ports reduced the effectiveness of the blockade. Further, these authors conclude that even with those ports rendered useless,

> in view of the Confederate ability to improvise, the quantity of consumer goods brought in throughout the war, and the relative Confederate independence of imports in the latter part of the war, it seems unlikely that a more effective blockade would have broken the military stalemate or seriously affected the capabilities of the Confederate armies.

A third critic of the blockade, Frank Owsley, claims that the blockade was easily penetrated and that Southern leaders were therefore largely unconcerned

about its economic effects. In fact, he points to these leaders' self-righteous anger that England was allowing the North to perpetrate a "paper blockade." The most recent and most thorough student of the blockade, Stephen Wise, also criticizes it. He asserts that the blockade was not a key contributor to the Confederate defeat as it did not prevent sufficient munitions and supplies from reaching the Confederacy. Finally, in the pages of this journal William Still, Jr., has concluded that

> it would be an oversimplification to say that [the blockade] was either effective or not effective. It was both. In general, its effectiveness increased as the war progressed. . . . Was it an important fact . . . in the Confederate defeat? In this case, the answer is no. It was not a major factor in the collapse of the Confederacy.[2]

The blockade also has its defenders. Edwin Coddington disputes the alleged ineffectiveness of the blockade:

> Such analyses are unconvincing because they tend to divorce a study of the blockade and its effects from a consideration of Southern wartime economy in its entirety. It is hard to imagine a conquest of the South without the establishment of a blockade, defective as it may have been.

Coddington agrees with Luraghi that the deplorable state of the Southern railroads was a major reason for the Confederate defeat, but he credits the blockade with starving the South of needed replacement rails, locomotives, and rolling stock. He concludes that "even an imperfect blockade was an important element in weakening the Southern economy under the stress of war" and that blockade running could meet only "the immediate, but not the basic requirements of Southern war economy." He also believed that the Union chose to "loosen" the blockade when doing so would serve Northern interests (such as to procure cotton for Northern mills and perhaps to help the British cotton industry).[3]

Bern Anderson, a naval historian, is a more enthusiastic believer in the blockade's effectiveness. He credits it with disrupting the normal channels of trade to an extent that smuggling could never rectify. While he admits that other factors beside the blockade created the chaos in the Southern economy, he still gives it top billing: "Yet it should be recognized that it was the chief instrument for bringing about that condition [Southern economic chaos] directly or indirectly." Anderson claims that "the Confederacy was drained of essential goods to the point that it could not continue the war" and that "the Union Army's major victories did not occur until the South was suffering from shortages imposed by the Union blockade." William Seward, U.S. secretary of state during the war, may have provided the best gauge of the blockade's effectiveness, when he wrote the following to the minister in France, William Dayton:

> The true test of the efficiency of the blockade will be found in its results. Cotton commands a price in Manchester and Rouen, and Lowell, four times greater than in New Orleans. . . . Judged by this test of results, I am satisfied that there was never a more effective blockade.

Stanley Lebergott too has commented on the burgeoning price differential between the price of raw cotton in Southern port cities and in New York: in 1864, cotton sold for six cents per pound at Houston and fifty-six cents in New York.[4]

The Data and a More Complete Analysis

We begin by examining the capture rates of blockade runners. Marcus Price demonstrates that throughout the war the majority, even a vast majority, of recorded attempts to run the blockade were successful (Table 1). However, Price touches upon some facets of these rates that demand caution in their interpretation. Successful operators of blockade runners increasingly had to rely upon steam power instead of sail. By the end of 1862, they used specialized ships; as a result, the supply of ships that could attempt a run became constricted. These new vessels were designed to elude the Federal fleet both by speed and by such characteristics as shallow draft and low silhouette; they also burned expensive "smokeless" coal. Price also points to the uncounted ships that turned back when sighted by Federal patrol vessels and, of course, ships that decided not even to try to smuggle goods. Thus the capture rates are as liable to mislead as to illuminate, and a key argument in the detractors' arsenal becomes suspect.

Moreover, these historians may be asking the wrong questions. The effectiveness of the blockade cannot be measured solely by how many vessels ran through it or how frequently blockade runners succeeded in piercing it. After all, for a high enough price there will always be someone willing to smuggle goods. Indeed, the claim that "a lot" of materiel was brought through the blockade is inconclusive; we can use the same evidence to make the blockade look effective. The fact that 5,389 successful runs (roughly 2,700 round trips) occurred during the blockade seems impressive until we realize that in a typical year at New Orleans alone more than 1,900 vessels entered from the Gulf of Mexico.[5] Clearly, such data does not give an unambiguous picture of the blockade's effectiveness.

Moreover, the volume of imports is an incomplete measure of the blockade's effects upon the Confederacy's imports. The blockade raised the cost of carriage and eroded the Confederacy's ability to purchase war materiel. The shortage of purchasing power has been noted by most commentators; a finding that the blockade was a significant contributor to that loss of purchasing power (because of increased shipping costs) would help redeem its reputation.

Table 1

Number and Percentage of Successful Runs through the Blockade, 1861–1865

Year	Attempts	Successful Attempts	Unsuccessful Attempts	Success Percentage
		Steam Vessels		
1861	1,411	1,407	4	99.7
1862	205	155	50	75.6
1863	545	472	73	86.6
1864	474	401	73	84.6
1865	108	90	18	83.3
Total	2,743	2,525	218	92.5
1862–5	1,332	1,118	214	83.9
		Sailing Vessels		
1861	2,168*	2,058	108	94.9
1862	653	413	240	63.2
1863	458	259	199	56.6
1864	249	121	128	48.6
1865	45	13	32	28.9
Total	3,573*	2,864	707	80.2
1862–5	1,405	806	599	57.4
		All Vessels		
1861	3,579*	3,465	112	96.8
1862	858	568	290	66.2
1863	1,003	731	272	72.9
1864	723	522	201	72.2
1865	153	103	50	67.3
Total	6,316*	5,389	925	85.3
1862–5	2,737	1,924	813	70.4

* Price's figures are off by 2.

Source: Price, 1948, 1951, and 1955.

Factors that increased freight rates included the necessity to use less cargo-efficient vessels; having to burn "smokeless" coal, for at least part of the journey; inability to choose ports freely; longer turnaround times in blockaded ports; and having to put into Caribbean ports to unload cargo and transfer it to blockade runners. The buildup of supplies in the Caribbean harbors awaiting the final run into Southern ports is indirect evidence of increased shipping costs.

If sufficient ships consistently could not be found to ferry the supplies the last several hundred miles, one should wonder why. The blockade raised transportation costs enough to preclude entirely the shipment of many bulky products, especially railroad iron and machinery. Thus although the blockade failed to "starve" the Confederacy of all necessary war materiel, it severely constricted its supply and therefore impeded the Confederacy's war-making ability.

Thus the focus upon imports has been somewhat myopic and misses what may have been the blockade's most important achievement. Although some historians have lauded the blockade for its adverse impact upon the Confederate economy, none has measured the full extent of its deleterious effect upon the exports of Southern staples. Owsley and others have documented the reduction in the physical flow of raw cotton, but they have not estimated the revenue shortfall. The seven hundred thousand bales of cotton that slipped through the blockade to Europe during the war pale beside the antebellum South's normal European shipment of two to three *million* bales per year.[6] Considering that raw cotton was the most important Southern export, this gap is striking.

The war and the blockade also disrupted the internal movement of goods. The naval blockade offers an opportunity to examine the costs imposed by disruption of the internal movement of goods, as well as a region's ability to minimize these costs. In order to address these issues we need to establish what the antebellum trade patterns were and why they developed as they did. An important facet of the antebellum trade was the coastwise trade. In the absence of customs records this traffic is difficult to document; however, it appears to have been significant. Although the war itself would disrupt the normal flow of such trade, the use of Southern coasters to transfer produce from region to region might have spared the railroads excessive use, lowered shipping costs, and allowed resources to be used elsewhere. The blockade made this transportation alternative impossible and thereby imposed a cost upon the Confederacy. Was it significant?

The Movement of Goods in the Antebellum Economy

In the years before the war, Southern ports were leading exporters of domestic produce. Although New York was the largest, New Orleans, Mobile, Charleston, and Savannah ranked second through fifth, respectively. New Orleans handled about 90 percent of the value of New York's domestic exports, while the other three Southern ports easily outranked Boston (the sixth-largest exporter). Richmond and Texas ports were also significant export centers, rivaling Philadelphia in terms of value.[7] New Orleans was the great Southern trade center, dwarfing all the remaining Southern ports; indeed, the value of its domestic exports was more than those of the remaining Southern ports

combined. The antebellum South exported primarily staple products, ranging from raw cotton to naval stores. Raw cotton, of course, dominated the value of exports, but such other staples as tobacco, rice, naval stores, and lumber were at least locally important (Table 2). New Orleans exported almost half of the South's raw cotton, as well as the bulk of foodstuffs and provisions from the Mississippi Valley (including goods from the upper Mississippi). Mobile was a large exporter of cotton, as were Charleston and Savannah. Richmond and New Orleans were the two main Southern exporters of tobacco; New Orleans exported $7.4 million worth of tobacco, while Richmond exported $3.0 million. Richmond's other lucrative export was wheat flour ($1.9 million), while New Orleans had only half a million dollars' worth of flour exports. Charleston handled almost a million dollars' worth of rice exports; Savannah also exported rice. Wilmington's exports were largely naval stores; Charleston had a smaller share of this trade. The Texas ports shipped hides and a growing amount of raw cotton.[8]

Table 2

Value of Domestic Exports from Leading Southern Ports

(Year ending 30 June 1860)

Port	Total Value	Raw Cotton Total Value
New Orleans	$107,812,580	$96,166,118
Mobile	38,670,183	38,533,042
Charleston	21,179,350	19,633,295
Savannah	18,351,554	17,809,127
Texas	5,772,158	5,744,981
Richmond	5,098,720	41,483
Wilmington	650,092	0
Key West	580,165	401,919
Norfolk	479,885	14,783

Source: U.S. Department of the Treasury, 1860, pp. 317 and 350.

Direct Southern imports of foreign goods were relatively small. The region's imports ($30 million) were only one-seventh the value of its exports. However, this ratio understates the Southern importation of foreign goods, many of which initially arrived in Northern ports. Still, an examination of direct Southern imports is illuminating. In terms of value of foreign imports, New Orleans took in over five-sixths of the Southern ports' total value. What wartime officials (and historians) would later characterize as luxuries constituted a significant share of the imports. Coffee accounted for over six million dollars' worth of

imports; surprisingly, no tea imports were listed (New York dominated this import for the United States). Alcoholic beverages and cigars amounted to well over three million dollars. Over $800,000 worth of china and earthen, porcelain, and stone wares were also imported. New Orleans imported $122,000 worth of musical instruments. More practical items included over four million dollars' worth of manufactured cotton and woollen goods. Fruits (green, ripe, or dried) accounted for another third of a million dollars. Molasses imports amounted to over $750,000. The Southern ports directly imported only trivial amounts (fewer than seven thousand pairs) of boots and shoes; however, New Orleans did import $141,000 in tanned and dressed leather skins. Southerners imported large quantities of manufactured iron and steel, the bulk of it railroad iron (almost two million dollars' worth). Tin imports were valued at $460,000. The Southern ports imported no saltpeter prior to the war, and only a handful of guns.[9]

Although the United States was amply endowed with salt deposits, Southerners often found it cheaper to buy salt from British suppliers. The salt arrived as ballast at the Southern ports (where it was removed to make room for return cargoes of raw cotton). An adjutant-general of Alabama stated that the Confederacy required, at a minimum, 300 million pounds of salt per year. Much of this salt was needed to preserve pork, a mainstay in the diet of Southerners. Virginia was the South's leading producer of salt in terms of production and value. However, Virginia's output of two million bushels was not nearly enough to supply the entire Confederacy; Southerners imported 6.5 million bushels of salt in the year ending 30 June 1860.[10]

Northern products and reexports of foreign products were more important sources of supplies for the South. For instance, Boston shipped 182,634 cases of boots and shoes to Southern ports in 1860. Memphis received over sixteen million dollars' worth of manufactured goods during the year 1859–1860.[11] Indeed, some Southerners thought that Northern ports like New York and Boston would in wartime lose not only from the cessation of the raw cotton trade but also from the loss of Southern imports of domestic products and of foreign products sent via the North. *DeBow's Review* summarized this belief:

> The fact must continually be borne in mind that the Middle and New England States can, of themselves, have little or no trade with England and Western Europe, because they are producers of the same articles. New England competes with Old England in the purchase of raw materials and food, and the sales of manufactured articles. There are no trading interests between them. Of the importations that are brought into New York, a large portion goes to the South, which raised the produce with which they were purchased through New York commercial houses. . . . What England receives is Southern produce, direct from the South; but what she sends to the North, that is to say, New York, is on its way to the South.[12]

While the author simplified the situation, Southerners did consume more foreign products than indicated by the import statistics.

What goods did the South receive from the North? The census provides clues as to the likely commodities traded between the North and the South. In most manufacturing categories, the Southern states produced less than 10 percent of the value of the total United States production (see Table 3). The South's production of woollen goods, men's clothing, boots, and shoes were each less than 5 percent of total national output; the region's production of cotton goods and leather was only slightly more than 5 percent. The Southern production of agricultural implements was roughly 6 percent of the nation's

Table 3

Value of Manufacturing Production

	Confederate	Total U.S.
Agricultural Implements	$ 1,018,913	$ 17,597,960
Scythes	$ 0	$ 552,753
Shovels, Spades, Forks, Hoes	$ 0	$ 1,638,876
Boots, Shoes	$ 3,973,313	$ 91,889,298
Cotton Goods	$ 8,072,067	$ 107,337,783
Firearms	$ 72,652	$ 2,362,681
Flour and Meal	$37,996,470	$ 248,580,365
Bar, Sheet, Railroad Iron	$ 2,449,569	$ 31,888,705
Bar (tons)	14,072	227,682
Rail (tons)	12,180	235,107
Boiler Plate (tons)	0	30,895
Car Wheels (Railroad)	$ 0	$ 2,083,350
Locomotive Engines	$ 133,000	$ 4,866,900
Engines (number)	19	470
Machinery, Steam Engines	$ 5,750,650	$ 46,757,486
Pig Iron	$ 953,903	$ 20,870,120
(tons)	36,790	987,559
Men's Clothing	$ 2,573,045	$ 80,830,555
Provisions	$ 145,000	$ 31,986,433
Salt	$ 451,484	$ 2,289,504
Ship and Boatbuilding	$ 772,870	$ 11,667,661
Wagons	$ 1,381,887	$ 8,703,937
Woollen Goods	$ 1,995,324	$ 61,895,217

Source: U.S. Bureau of the Census, *Eighth Census of the United States—Manufacturing*, 1865, pp. clxxviii–clxxxvi, 715–8, and 733–42. (Data from 1860.)

output; indeed, the census did not list any Southern production of shovels, spades, forks, hoes, or scythes, although some such tools may have been produced by blacksmiths on plantations or in the towns. Southern output of wagons and carts was about 16 percent of the national output, while the region's share of ship and boat building was 7 percent. The Southern states built eighty-four of the nation's 1,071 vessels, including forty-five of the 264 steamers, with Virginia, North Carolina, and Louisiana building the most. Southern output of railroad iron (12,180 tons) was about 5 percent of the national figure. All of the railroad car wheels were produced by Northern firms, as were all but nineteen of 470 locomotive engines. The South produced less than 4 percent of the pig iron (36,790 tons). The region also lagged in producing machinery, steam engines, and guns.[13]

The Confederate states did produce more home manufactures (goods produced and used on tbe farm or plantation) than the rest of the country. The Southern states produced about 14 percent by value of the nation's flour and meal; Virginia was the nation's fifth-largest producer of flour and meal; it produced half of the South's value. Virginia was the nation's second-largest producer of salt, but its output was only a twelfth of the nation's.[14] Southern states produced a trivial proportion of the nation's output of provisions (packed meat, lard, butter, potatoes).

Thus, the South needed to import boots and shoes, clothing, heavy manufactures, arms, munitions, and railroad supplies. A railroad official estimated that almost fifty thousand tons of rails were needed annually just to *maintain* the Southern railroads and that existing iron mills in the South were capable of supplying less than half of the fifty thousand tons. Indeed, during the antebellum era Southern railroads had imported the bulk of their railroad iron from Europe; in some years, these imports amounted to sixty-five thousand tons.[15]

However, the South was not entirely bereft of the heavy industry needed to supply its railroads and new navy. The Tredegar Iron Works, near Richmond, Virginia, was a major producer of iron products. The company had experience in producing naval ordnance, but the Confederate states were destined to be short of iron for armor plating and rails.[16] The Confederate secretary of the navy, Stephen Mallory, sent a naval officer to Tennessee and Georgia to see whether rolling mills there could produce the requisite iron plating; this officer reported in late May 1861 that the mills south of Kentucky were unable to roll iron of the desired thickness.[17] In addition, the seceding states could not manufacture the large engines and boilers necessary for ironclad warships. The Confederacy's inability to roll iron plating of sufficient thickness or to produce propulsion machinery would not have been severe drawbacks had the Confederate navy enjoyed easy access to British production.

The antebellum South required considerable intra- and interregional movement of foodstuffs. Large quantities of Northern packed meat were shipped down the Mississippi River to New Orleans for consumption there or for reshipment to river towns and Gulf ports. In addition, New Orleans received over fifty thousand head of cattle per annum from "Western" and Texas sources. Many of the Texas cattle arrived via the Gulf of Mexico; Mobile too received cattle via trans-Gulf shipments. Along the eastern seaboard, Virginia and South Carolina required imports of meat. Both states probably received meat from Tennessee and the Old Northwest (today's upper Midwest) via internal movement (trails, rail, or canals). However, Tennessee's ability to sustain large Confederate armies for extended periods was questionable. The state's holdings of hogs were impressive but easily exhaustible, and those of beef were less large. Richmond may have received up to four thousand tons of bacon annually from Baltimore. The Southern states probably did not receive much meat from the northeast ports of New York, Boston, and Philadelphia; nor did the South receive substantial amounts from foreign producers. In the event of a war and commercial nonintercourse, the South might turn to Texas and, to a lesser degree, Florida and Arkansas: the antebellum trans-Gulf shipments of Texas cattle represented a potential solution to the South's meat supply problem.[18] In addition, in the absence of an effective blockade, foreign and even Northern producers could have alleviated any potential shortages of meat.

As to grain, while the antebellum South's production paled in comparison with the Middle West's, it was adequate for Southern needs. The Mississippi Valley was the main import section of the South; New Orleans retained hundreds of thousands of barrels of Northern-produced flour per annum. If this supply of flour were cut off, the Valley might be forced to increase its own production of grain or attempt to get flour from states in the eastern Confederacy. Virginia was the main wheat-producing state in the Confederacy, and antebellum Virginia growers frequently had exported hundreds of thousands of barrels of flour per annum to northeastern and foreign ports. The Carolinas were more modest exporters of flour and other grains. Still, the eastern Confederacy appears to have been fairly well supplied with grain; there is little evidence that northeastern or foreign ports shipped much grain to South Atlantic ports. Virginia's relatively low production of corn partially offset its wheat production. However, northeastern North Carolina produced significant amounts of corn for export, and Norfolk, Virginia, received almost two million bushels of corn in 1859 from its surrounding vicinity.[19]

Most of the grain shipped along the Atlantic seaboard went by sailing vessels. In addition, much of the wheat received internally at Richmond arrived via river and canal; railroads typically were not the main carriers of foodstuffs. A similar situation occurred in the Mississippi Valley. Loss of water transportation

(whether through blockade or nonintercourse) would force an overreliance upon rail and wagon transportation.

Supplying cavalry, artillery, and transport animals with adequate fodder was potentially a greater problem than supplying humans with food. When an army was on the march its animals might find adequate grazing along the way; however, a stationary force would rapidly deplete available forage and require shipments of bulky foodstuffs. The Confederate states were not large producers of hay, so the region imported it; New Orleans imported twenty-five thousand tons in 1859–1860. Virginia produced the most hay in the Confederacy, but that state itself imported hay from other states. Richmond received over 12,500 tons of hay from coastwise shipments in the three years prior to the Civil War. In addition, Richmond received hay via canal, river, and railroad, although the last was probably a minor carrier for this bulky and not very valuable commodity. Southern livestock probably subsisted more on forage and corn than did Northern livestock. However, the difficulty of collecting adequate amounts of fodder and transporting it by rail might prove insurmountable during a war.

Transportation Facilities

The antebellum Southern transportation system was designed to drain goods toward such ports as New Orleans, Richmond, Norfolk, Charleston, Savannah, and Wilmington. It was not meant to ship tbem across the South. Indeed, the provincial nature of the system was quite marked.

The antebellum Southern railroads were a fragile foundation upon which to rest the Confederate logistical needs. Many of the Southern railroads were primarily intended to ship cotton to navigable rivers and seaports or to protect local commercial interests. Tbe system suffered from differing gauges, incomplete linkages between lines in major cities, critical gaps in the east-west rail lines, and dependence upon Northern and foreign suppliers. Even if these deficiencies had been remedied, the Southern railroads' ability to meet a significant increase in demand would have been dubious: almost all were single tracked, as the antebellum volume of traffic had not warranted the expense of double trackage. One official reckoned that a double-tracked line could handle up to five times the volume of a single-track railroad.[20]

Jefferson Davis's journey in 1861 to his inauguration as president of the Confederate States of America (at Montgomery, Alabama, then the capital of the Confederacy, less than three hundred miles due east of his plantation at Vicksburg, Mississippi) should have alerted him to the deficiencies of the Southern railroad system. Davis had to turn north at Jackson, Mississippi, because of gaps in the rail lines between there and Montgomery. He traveled to Grand Junction, Tennessee, and then east to Chattanooga. From there he rode

to Atlanta. Finally, he headed back west again to the temporary capital. While Davis was able to mitigate the effects of the long trip by making speeches and appearances along the way, the journey boded ill for Confederate logistics.[21]

The Southern railroads' deficiencies were unlikely to improve during wartime. An effective blockade coupled with the nonintercourse acts* would force Southern railroads to rely upon domestically produced railroad supplies; while the South was capable of supplying modest quantities of locomotives, cars, rails, and supplies, doing so would forfeit the large gains from the comparative advantages of dealing with Northern and foreign producers of such items. Collectively, the deterioration of the Southern railroads, an effective blockade, nonintercourse acts, and the necessary rearrangement of intraregional movements of goods to supply new concentrations of men and animals in armies and in Richmond were to increase dramatically the demands on rail services. Clearly, the Southern railroads would have had to perform extraordinarily well in order to meet the new requirements.

Although Southern railroads have received most of the attention of historians, water transportation loomed large in the Southern economy. For moving bulky goods any considerable distance, water transportation was the most efficient means. Historian Archer Jones has astutely assessed the merits of railroads and river steamers:

> Although the railroads . . . were primitive by modern standards, they enabled armies far from water transport to supply themselves. Yet the slow, short trains, which carried 10 to 15 tons of cargo per car, were less efficient than large river steamers, which could carry 500 tons of cargo. A river could easily carry more steamers than a rail line could trains, a factor counterbalancing the higher speed of locomotives. Sabotage or destruction by raiders could disable railroad tracks far more easily than it could harm steamers in a river.[22]

The Mississippi River was certainly the most important artery in the Southern transportation system, while other rivers and canals conveyed upland produce to ports. Coastwise movement of goods was also important, from Texas cattle shipped across the Gulf to bulky grainstuffs moved along the Atlantic coast.

Animal-drawn transport was another mode of conveying supplies, but one that was feasible for short hauls only. There were a number of difficulties in wartime: a typical military wagon required six mules; bad roads and forage requirements limited the range of wagon hauls. The antebellum South produced only one-fifth the Northern states' output of wagons. Fortunately for the Confederacy, Virginia and Tennessee were two of the largest Southern producers of wagons, but

* Both the Federal and Confederate governments passed laws prohibiting their citizens from trading with the enemy.

Virginia's per capita holdings of horses and mules were lower than the Southern per capita figure. Of the eleven Confederate states, Texas and Arkansas had the largest per capita number of horses and mules, although Tennessee was fairly well endowed with such animals. However, Tennessee was vulnerable to Northern attack. Had Kentucky and Missouri joined the Confederacy, the supply of draft animals would have heen more bountiful.

The Blockade's Effects upon the Confederate War Effort

Southern revenues from exporting raw cotton, tobacco, rice, and other staple products dropped precipitously during the war. Table 4 shows the diminution of trade at New Orleans: even with the resumption of trade at that port in mid-1862, the port's exports plunged. Mobile and Savannah suffered even greater relative declines in export revenue, as very few blockade runners left those ports during the war. Charleston and Galveston probably had decreased export revenues too. Of the remaining ports, Wilmington, North Carolina, and the Rio Grande towns had greater export revenues during the war, but these fell far short of offsetting the decline in export revenues of other Southern ports.

Table 4

Volume and Value of Receipts Received at New Orleans from the Interior

Year	Cotton	Sugar	Molasses	Tobacco	Value
1856–57	1,573,247	43,463	84,169	58,928	$ 158,061,000
1857–58	1,678,616	202,783	339,343	90,147	167,156,000
1858–59	1,774,298	257,225	353,715	85,133	172,953,000
1859–60	2,255,448	195,185	313,840	95,499	185,211,000
1860–61	1,849,312	174,637	313,260	43,756	155,864,000
1861–62	38,880	225,356	401,404	7,429	51,511,000
1862–63	22,078	85,531	202,616	4,774	29,766,000
1863–64	131,044	75,173	143,460	15,547	79,234,000
1864–65	271,015	9,345	18,725	16,346	111,013,000

Year: 1 September through 31 August
Cotton: in bales
Sugar: in hogsheads
Molasses: in barrels
Tobacco: in hogsheads and bales
Value: value of all receipts received from interior

Note: New Orleans surrendered to Farragut's forces in May 1862; the capture of Vicksburg opened the entire Mississippi River to Union commerce in July 1863.
Source: New Orleans Price Current, "Annual Reports."

Although the informal Confederate-imposed embargo on raw cotton exports initially helped squash export revenues, the blockade was the main impetus for their reduction. Southern planters produced some six million bales of cotton during the war; an actual shortage of cotton to export was not the cause of the diminished exports. Large amounts of raw cotton were stored in Alabama, for instance, until near the war's end; shipping the cotton to blockade-running ports and then through the blockade was so difficult that neither the Confederate government nor planters were able to market much of their cotton.[23] During the war the South exported perhaps 1.5 to 1.9 million bales of raw cotton, much of which was traded across the lines with Yankees. This volume of exports was roughly one-ninth the antebellum volume.

The Southerners would have had to receive nine times the antebellum price per bale of raw cotton for export revenues not to have been adversely affected during the war; unfortunately for the Southerners, real prices of raw cotton only trebled or quadrupled, so export revenues tumbled. A conservative estimate of the revenue shortfall is $500 million during the four years of the war; if, as has been estimated, the real cost of the war to Southerners was $1.1 billion, the revenue shortfall from exports of raw cotton was significant.[24]

The nonintercourse acts and the Northern blockade of the mouth of the Mississippi River and of Mobile wrecked the Valley's economy. Cotton growers in Mississippi, Louisiana, Arkansas, and western Alabama were left with unattractive alternatives for marketing their crop: to ship cotton by wagon and rail to eastern ports; to ship it by river and wagon to Texas ports (or even to the Rio Grande); or to store the cotton on the plantation, subject to deterioration, burning, confiscation, and theft. *DeBow's Review* showed in 1861 that sending raw cotton from Memphis to Norfolk (or other eastern ports) by rail was significantly more expensive than shipping downriver. According to its article, shipping cotton from Memphis to Liverpool via Norfolk would cost roughly twelve dollars per five-hundred-pound bale, while sending it from Memphis to Liverpool via New Orleans cost $8.25 per bale. The author used antebellum rail freight rates, so the disadvantage of shipping by rail across the Confederacy was understated; since the railroads were unlikely to be able to accommodate large increases in shipments, any increased demand for rail services across the Confederacy would surely ignite freight rates.[25] The blockade of Galveston, Texas, caused desperate growers to resort to a two-hundred-mile wagon haul to the Rio Grande, where their cotton faced Mexican duties and dilatory loading aboard cargo ships.

The revenue shortfall contributed to the Confederacy's chronic lack of purchasing power. Purchases of foreign-produced arms, munitions, food, iron plating for warships, machinery, and other war materiel were delayed while the Confederate and state governments scraped together the requisite funding. Of course, such purchasing-power deficiencies were part of a larger failure by the

Confederate government adequately to finance the war; government purchases of domestic produce were also often delayed for lack of funds.

The rising cost of importing goods also contributed to the Confederate government's problem. Although the government imported enough war materiel to keep the troops fighting, the blockade raised the cost of such supplies, through higher shipping costs and through actual losses and captures of vessels conveying the Confederate purchases. The Confederate secretary of the treasury, George Trenholm, described the expense of importing goods via private blockade runners:

> The Collie contract [between a British firm and the Confederate government] alone will furnish supplies to the extent of £200,000, and this amount and all others of like character should be deducted from the estimates. Two steamers under this contract have already arrived. By the terms of this agreement 50 per cent. is to be added to the value of the goods, so that the sum to be allowed for these supplies in reduction of the estimates is in fact £300,000. And as payment is to be made in cotton at 6 pence, it will require 30,000 bales of cotton for this single contract. As 5,000 bales at present prices in England would have yielded £200,000, this unfortunate arrangement entails a positive loss of 25,000 bales of cotton, and places in a conspicuous point of view the necessity that existed for abandoning this mode of obtaining supplies.[26]

Chief of Ordnance Brigadier General Josiah Gorgas, equally frustrated, lamented that "a large proportion of his [purchasing agent's] purchases have fallen into the hands of the enemy."[27]

Despite these disadvantages, imports were the main source of small arms for the Confederacy, as the Southerners were able to manufacture only modest numbers of these weapons. It is estimated that the South imported at least the majority of its total arsenal of shoulder-fired arms. The Confederacy also needed to import nitre, as it had been unable to stockpile enough from British India before the blockade became stringent. Although some nitre seeped through the blockade, the Confederacy was forced to establish a Nitre Bureau in early 1862; the bureau succeeded in providing the South with minimal levels of the chemical, but the cost was very high, perhaps five times as high as the market price in Britain.[28] One list of blockade runners passing through Bermuda reveals the continued need for imported saltpeter and lead. Of the 179 vessels headed into the Confederacy, fifty-two listed saltpeter on their manifests (roughly ten thousand sacks, bags, and barrels), and fifty-nine listed lead (over ten thousand pigs). Iron was also imported (in bundles, plates, and sheets), especially after 1863. Cartridges and ammunition were imported until 1863, but the traffic fell off in 1864.[29]

Since blockade running was so expensive, some Confederate leaders urged Jefferson Davis to promote interbelligerent trading—that is, with the North.

Davis never reconciled himself to the necessity of such trade, unlike some of his secretaries of war. One of them, George Randolph, advised Davis that the Confederate government (but not private citizens) could legally trade with Northerners; indeed, he argued, that such trade was necessary to sustain the Confederate army.[30]

In addition to the increasing difficulty of importing foreign supplies, moving supplies intraregionally proved an insuperable problem, as the blockade also disrupted the movement of foodstuffs within the Confederacy. The Texas cattle shipments across the Gulf of Mexico disappeared almost immediately with the onset of the war. Although some Texas cattle were driven across the Mississippi River, these drives were limited by forage, lack of wranglers, and by Union patrols along the river.[31] The coastwise trade between the Atlantic ports was also disrupted. The Confederacy's supply situation would have been considerably eased if coastwise shipments had been available. Grain produced in North Carolina and Georgia could have been shipped by rail or water to Norfolk, Wilmington, Charleston, Savannah, or other ports and then coastwise and upriver to Richmond, relieving pressure on the railroads into the capital. Also, of course, the South could have more easily imported goods from foreign and Northern producers in the absence of an effective blockade; indeed, Northern packed meat could have been the most convenient source of supply for Lee's troops in Virginia had there been no blockade.

Southern railroads also suffered because of the Northern blockade and nonintercourse. They were inadequate conduits for the mass of war materiel and foodstuffs required to sustain the Confederate armies and the burgeoning population of Richmond (as well as other urban centers). The Confederate government attempted to improve the railroad system by filling in some of the gaps between lines; the Piedmont Railroad was the most important upgrade. These improvements, however, were delayed by shortages of rail iron and other supplies.

The Southern railroads were hard pressed just to maintain themselves; domestic resources were woefully insufficient for improving the existing lines. However, in the absence of an effective blockade, Southern railroads might have easily purchased and shipped the requisite material from Europe (and perhaps even from the North). After all, the Southern railroads had imported most of their rails and other supplies from Europe and the North during the antebellum period. Southern railroads attempted to import railroad iron and supplies through the blockade, but with limited success. With the growing stringency of the Federal blockade, blockade runners naturally preferred to bring in small-volume, high-value commodities, not bulky iron rails and railroad equipment. The railroads decided in January 1862 to press the Confederate government for help in importing supplies, but it declined. Eventually the Confederate War Department assisted some Virginia railroads in

obtaining supplies from England, but such instances were isolated. Some companies used cotton exports as a basis for purchasing supplies to be smuggled through the blockade; however, those efforts netted trivial amounts. As a sop to the railroads, the Confederate government rescinded its duty upon railroad iron and other supplies.[32]

In addition to their physical shortages of equipment, many Southern railroads faced financial difficulties. The initial uncertainty triggered by secession, the imposition of an informal embargo on exports of raw cotton, and eventually the Federal naval blockade combined to disrupt the normal flow of raw cotton to the ports, so receipts from shipping private freight plummeted. Thus many railroads found themselves in financial trouble early in the war, impeding their ability to maintain themselves. The government's policy of paying below-market freight rates exacerbated the railroads' situation.

As the war continued, the Southern railroads' carrying capacity dwindled significantly. Assistant Adjutant-General [of Railroads] William Wadley issued a gloomy report on the condition of Southern railroads in April 1863, estimating freight capacity for thirty-four of the key lines. Fourteen were able to run only one train in each direction per day, or fewer, and none of the lines was able to send more than three trains in each direction per day. The daily tonnage capacity was equally distressing.[33] Unfortunately for the Confederacy, the dwindling carrying capacity of Southern railroads coincided with growing burdens on rail shipment due to wartime and blockade-induced changes in shipping patterns. The loss of Gulf and Atlantic coastal shipping and the interruption of inland traffic on the Mississippi River and Chesapeake Bay compounded the demand for rail service.

The increasing cotton trade at Wilmington reflected a fundamental derangement of the intraregional movement of goods. Antebellum Wilmington had been a minor exporter of raw cotton, typically shipping coastwise fewer than twenty-five thousand bales per year. During the war, exports of raw cotton from Wilmington increased to perhaps seventy thousand bales per year. Railroads carried most of the raw cotton into the port, but the increased cotton shipments tied up a significant proportion of the limited carrying capacity of the Wilmington & Manchester Railroad, which entered Wilmington from the west.[34] Thus, the shipments of raw cotton clogged inbound freight to Wilmington, lessening the ability of the port to forward supplies from the Deep South to the armies in Virginia and North Carolina. Confederate military leaders complained about the diversion of rail traffic from military supplies to raw cotton.[35] Of course, however, without the raw cotton shipments into Wilmington, much-needed military materiel from Europe could not have been obtained. Still, the derangement of the pattern of raw cotton shipments added to the burdens of the Southern railroads.

The Rio Grande cotton trade demonstrates the desperate lengths to which Southerners were driven in seeking outlets for their cotton. Blockade runners had an easier time getting materiel into the Rio Grande area; with Mexican neutrality and international jurisdiction on the other side of the river, Federal blockaders were unable to interdict trade there as effectively as at other ports. While a significant amount of cotton (probably three hundred thousand or more bales) crossed the Rio Grande at Brownsville, Texas, and was then exported out of Matamoras and Bagdad, Mexico, it is doubtful that the Confederacy derived much benefit from rhe trade.[36] The Confederates had to expend a great deal of effort to transport cotton to the Rio Grande and then move the imported materiel back into the interior, greatly reducing net profits. In addition, the Mexican authorities levied import and export taxes upon the cotton, further reducing its vitality as an economic asset. The loss of oxen and wagons en route to Matamoras was large; the South possessed few wagon manufacturers, so the Texans were often unable to make good their losses of the latter.[37]

There were five additional disadvantages to the Texas cotton trade with Matamoras. First, there was a shortage of rope and bagging to bale the cotton; indeed, rope and bagging were high on the list of goods shipped to Matamoras. Second, Matamoras was ill equipped to handle the volume of trade; because of the shallowness of its harbor, lighters had to be employed. Not many lighters were available, and they could not operate when the tide was low; thus many ocean vessels were forced to wait for cotton, sometimes for months. Third, the long overland haul exhausted the forage en route, and droughts sometimes halted movement. Fourth, the volatile political situation in Mexico occasionally disrupted the trade.[38] Finally, the Confederate officials were on tenuous ground generally: Texas contained a significant number of Unionists and lukewarm secessionists. Government action to impress or regulate the cotton trade was constrained by the possible reaction of the citizenry.

These factors combined to create a huge wedge between the price of raw cotton in Texas and those in Liverpool and New York. In 1864, raw cotton sold for six cents in Texas but almost fifty-six cents (in gold) in New York. One scholar has broken down the difference in price. First, a trader had to obtain an export permit, valued at five cents. The cost of transportation to the Rio Grande accounted for three cents; smuggling expenses (including transferring cargoes in Cuba) amounted to almost fourteen cents; the Mexicans levied taxes in excess of seven cents per pound; the final transportation cost from Cuba to Liverpool was twenty cents.[39] Presumably, shipping from Galveston to Cuba instead of smuggling across the Rio Grande would have avoided the twenty-four cents incurred by transporting raw cotton across the river and paying Mexican duties. We can deduce, then, that people who opted for the Rio Grande faced blockade-running costs (from Galveston) in excess of twenty-four cents per pound.[40]

A final effect of the blockade on the Confederate war effort was that in the process of enforcing it, the Union navy helped stunt the embryonic Confederate navy. By blockading the mouth of the Mississippi River, the Federals forced the New Orleans shipbuilders to bring the iron and machinery they needed from Virginia and the eastern Confederacy by rail. The rickety Southern railroads were inadequate to transport these vital materials. Completion of the CSS *Mississippi* was delayed while a Richmond firm shipped the propeller shaft (recovered from a vessel that had been burned) across the Confederacy to New Orleans, and while railroad iron was collected for the ship's armor; the vessel was not completed in time to contest Farragut's attack on New Orleans and was destroyed to prevent its capture.[41] Since Southern manufacturers lacked sufficient raw material, skilled labor, and in some cases the ability to produce machinery and armor for warships, the strategic necessity for a rapid buildup of ironclad vessels entailed imports from England and France. Indeed, a Confederate naval officer, James Bulloch, advised the secretary of the navy, Stephen Mallory, that instead of concentrating on buying European-built warships and risking violation of neutrality laws, the Confederacy should import the iron plates, rivets, bolts, and other supplies needed to construct the warships in Southern ports.[42] Clearly, the Federal blockade stymied any such possibility; blockade runners were hesitant to ship those bulky and relatively low-value items. Finally, the Federal navy's capture of New Orleans and Memphis as well as the reoccupation of Norfolk eliminated key Confederate shipbuilding centers. The Federal blockade was a form of self-protection for the U.S. Navy: a weak blockade would have eased the Confederacy's difficulties in constructing or obtaining a force to sweep away the blockaders.

* * *

The Union Navy's control of the American waters had three main effects: denying the Confederacy the badly needed purchasing power that exporting its staple products would have generated; raising the costs, and reducing the volume, of imported goods; and deranging intraregional trade. While it would be too much to claim that the Union naval superiority alone tilted the scale against the Confederacy, these factors demonstrate that without its superior naval power the North would have faced much greater and perhaps insuperable difficulties in subduing the South.

Notes

1. Stephen R. Wise, *Lifeline of the Confederacy: Blockade Running during the Civil War* (Columbia: Univ. of South Carolina Press, 1988), p. 226.

2. Raimondo Luraghi, *The Rise and Fall of the Plantation South* (New York: New Viewpoints, 1978), p. 137; Richard E. Beringer, Herman Hattaway, Archer Jones, and William N. Still, Jr., *Why the South Lost the Civil War* (Athens: Univ. of Georgia Press, 1986), pp. 139 and 201; Frank L. Owsley, *King Cotton Diplomacy: Foreign Relations of the Confederate States of America* (Chicago: Univ. of Chicago Press, 1931), p. 290; Wise, pp. 26–7; and William N. Still, Jr., "A Naval Sieve: The Union Blockade in the Civil War," *Naval War College Review*, May–June 1983, p. 44.

3. During the war, Northerners traded crucial quantities of meat, salt, and other goods to Southerners for raw cotton and other staple products. The meat and salt obtained from Northern traders were necessary in sustaining the Army of Northern Virginia near the end of the war, while the Lincoln administration believed that the amounts of cotton obtained helped alleviate the distress caused by the shortage of raw cotton in the North and Europe. The Lincoln and Davis administrations sanctioned some of the interbelligerent trade, but much of it was illegally conducted by private parties. Ludwell Johnson, "Blockade or Trade Monopoly: John A. Dix and the Union Occupation of Norfolk," *Virginia Magazine of History and Biography*, January 1985, pp. 54–78.

4. Edwin B. Coddington, "The Civil War Blockade Reconsidered," in *Essays in History and International Relations in Honor of George Hubbard Blakeslee*, ed. D. L. Lee and G. E. McReynolds (Worcester, Mass.: n.p., 1949), pp. 299, 300, and 304; Bern Anderson, *By Sea and by River: The Naval History of the Civil War* (New York: Alfred A. Knopf, 1962), pp. 232 and 303; Carlton Savage, ed., *Policy of the United States towards Maritime Commerce in War* (Washington, D.C.: U.S. State Dept., Govt. Print. Off. [hereafter GPO], 1934), pp. 440–1; Stanley Lebergott, "Through the Blockade: The Profitability and Extent of Cotton Smuggling, 1861–1865," *Journal of Economic History*, December 1981, p. 896; and Arthur Fremantle, *Three Months in the Southern States* (New York: John Bradburn, 1864), p. 10.

5. Marcus Price, "Ships That Tested the Blockade of the Carolina Ports, 1861–1865," *American Neptune*, July 1948, pp. 196–241; "Ships That Tested the Blockade of the Gulf Ports, 1861–1865," *American Neptune*, October 1951, pp. 262–90; "Ships That Tested the Blockade of the Georgia and East Florida Ports, 1861–1865," *American Neptune*, April 1955, pp. 97–132; and *New Orleans Price Current*, 1859–1861 (first September issues).

6. Lebergott, p. 881, and *Hunt's Merchants' Magazine*, 1858–1861.

7. U.S. Treasury Dept., *Report of the Secretary of the Treasury: Commerce and Navigation, for the Year ending June 30, 1860*, 36th Cong., 2nd Sess., S. Ex. Doc. 8 (Washington, D.C.: GPO, 1861), pp. 350–1.

8. U.S. Treasury Dept., pp. 316–49. Charleston exports are also listed in the *Charleston (South Carolina) Daily Courier* (various annual reports in early September); Savannah and Wilmington exports are from *DeBow's Review*, 1860, vol. 29, pp. 669–70, and 1861, vol. 30, p. 369.

9. U.S. Treasury Dept., pp. 408–517.

10. U.S. War Dept., *Official Records of the War of Rebellion* [hereafter *OR*] (Washington, D.C.: GPO, 1880–1900), ser. IV, vol. 1, p. 1010; Ella Lonn, *Salt as a Factor in the Confederacy* (Tuscaloosa: Univ. of Alabama Press, [1933] 1965), pp. 13–7; U.S. Bureau of the Census, *Eighth Census: Manufacturing* (Washington, D.C.: GPO, 1865), p. cciv; and U.S. Treasury Dept., p. 489.

11. *Hunt's Merchants' Magazine*, 1861, vol. 44, p. 352, and *DeBow's Review*, 1860, vol. 29, p. 667.

12. *DeBow's Review*, 1862, vol. 32, pp. 122–3.

13. U.S. Bureau of the Census, *Preliminary Report on the Eighth Census* (Washingtnn; D.C.: GPO, 1862), p. 107.

14. Ibid., pp. 177 and 188.

15. *OR*, ser. IV, vol. 2, pp. 512–3; U.S. Treasury Dept., p. 461; Angus J. Johnston II, "Virginia Railroads in April, 1861," *Journal of Southern History*, August 1957, p. 317; and Robert C. Black III, *The Railroads of the Confederacy* (Chapel Hill: Univ. of North Carolina Press, 1952), p. 23.

16. For a description of Confederate production of heavy ordnance, see Charles B. Dew, *Ironmaker to the Confederacy: Joseph R. Anderson and the Tredegar Iron Works* (New Haven, Conn.: Yale Univ. Press, 1966), pp. 50 and 277.

17. U.S. Navy Dept., *Official Records of the War of Rebellion: Navy* [hereafter *ORN*] (Washington, D.C.: GPO, 1894–1922), ser. II, vol. 2, pp. 72–3.

18. See David G. Surdam, "The Antebellum Texas Cattle Trade across the Gulf of Mexico," *Southwestern Historical Quarterly*, April 1997, pp. 477–92; and *Richmond (Virginia) Whig*, 7 January 1861.

19. *New Orleans Price Current* (first September issues, 1857–1861); U.S. Bureau of the Census, *Eighth Census: Agriculture* (Washington, D.C.: GPO, 1865); and *DeBow's Review*, 1860, vol. 28, pp. 100–1.

20. *OR*, ser. IV, vol. 1, p. 1094; and Dennis Showalter, *Railroads and Rifles: Soldiers, Technology and the Reunification of Germany* (Hamden, Conn.: Archon Books, 1975), p. 45.

21. William C. Davis, *Jefferson Davis: The Man and His Hour* (New York: HarperCollins, 1991), pp. 304–6.

22. Archer Jones, *Civil War Command and Strategy* (New York: Free Press, 1992), p. 129. Henry Sharpe, a former Union commissary officer, wrote that an "ordinary Ohio River steamer" could carry five hundred tons of supplies, which would supply forty thousand men and eighteen thousand animals for two days. Henry G. Sharpe, "The Art of Supplying Armies in the Field as Exemplified during the Civil War," *Notes on the Supply of an Army,* ed. O. Espanet (Kansas City, Mo.: Hudson-Kimberly, 1899), p. 189.

23. Walter L. Fleming, *Civil War and Reconstruction in Alabama* (New York: Peter Smith, [1905] 1949), pp. 187 and 286.

24. See David G. Surdam, "Northern Naval Superiority and the Economics of the American Civil War," Ph.D. dissertation, Univ. of Chicago, 1994, pp. 14–41; and Claudia Goldin and Frank Lewis, "The Economic Cost of the American Civil War," *Journal of Economic History,* June 1975, pp. 299–326.

25. *DeBow's Review,* 1861, vol. 30, pp. 142–3.

26. *OR*, ser. IV, vol. 3, p. 588; see p. 529 in the same volume for the contract. Of course, Trenholm is ignoring the fact that the Confederate government would face high transportation costs in smuggling its five thousand bales overseas.

27. *OR*, ser. IV, vol. 1, pp. 220 and 343, and vol. 2, p. 227. Allan Nevins suggests that had Northern purchasing been better organized, it might have purchased all of the existing European weapons and contracted for the entire European output for the remainder of the year, thereby hindering the Confederates in getting sufficient weapons. Allan Nevins, *War for the Union* (New York: Charles Scribner's Sons, 1959), vol. 1, p. 351. For Gorgas's lament, see *OR*, ser. IV, vol. 2, p. 227.

28. Alfred Chandler, "DuPont, Dahlgren, and the Civil War Nitre Shortage," *Military Analysis of the Civil War: An Anthology by the Editors of Military Affairs,* American Military Institute (Millwood, N.Y.: KTO Press, 1977), pp. 199–200; *OR*, ser. IV, vol. 2, pp. 299 and 957, and vol. 3, p. 987; and Ralph Donnelly, "Scientists of the Confederate Nitre and Mining Bureau," *Civil War History,* December 1956, pp. 69–92.

29. Frank Vandiver, *Confederate Blockade Running through Bermuda, 1861–1865* (Austin: Univ. of Texas Press, 1947), pt. II.

30. *OR*, ser. IV, vol. 2, p. 151.

31. See Surdam, "Northern Naval Superiority," pp. 139–87.

32. *OR*, ser. IV, vol. 1, pp. 844 and 868; vol. 2, pp. 381, 388–9, 394–5, 409, 842, and 852; and vol. 3, pp. 9–10, 442, 478, 508, and 514. Also, Confederate States of America, "Proceedings of the First Confederate Congress," *Southern Historical Society Papers,* 1925, vol. 7, p. 67. Historians Ramsdell, Diamond, Black, and Johnston characterize the results as "trifling" and "negligible." Charles Ramsdell, "The Confederate Government and the Railroads," *American Historical Review,* July 1917, p. 804; William Diamond, "Imports of the Confederate Government from Europe and Mexico," *Journal of Southern History,* November 1940, p. 487; Black, p. 134; Angus J. Johnston, *Virginia Railroads in the Civil War* (Chapel Hill: Univ. of North Carolina Press, 1961), p. 225.

33. *OR*, ser. IV, vol. 2, pp. 485–6.

34. William Wadley estimated that the freight capacity of the two major railroads leading into Wilmington—the Wilmington & Weldon and the Wilmington & Manchester—was 150 tons of freight per day (*OR*, ser. IV, vol. 2, pp. 486–7). Conveying seventy thousand bales per year would tie up 25 percent of this carrying capacity; however, since the Wilmington & Weldon entered Wilmington from the north, that railroad probably did not carry much of the cotton. Trotter and Wise discuss the overburdened Wilmington railroads. William R. Trotter, *Ironclads and Columbiads: The Civil War in North Carolina: The Coast* (Winston-Salem, N.C.: John F. Blair, 1989), p. 301; and Wise, p. 218.

35. General Joseph Johnston, in particular, complained about the use of freight cars to convey raw cotton to Wilmington. See *OR*, ser. I, vol. 52, pt. II, pp. 585–6 and 593.

36. The materiel obtained in return was quite likely required to sustain the ragtag trans-Mississippi Confederate forces, even though these troops were of minor importance to the war's outcome. It was difficult to ship from Texas across the Mississippi. Since Confederate troops in the trans-Mississippi were chronically short of arms and other supplies, most of the Rio Grande imports were probably retained there, and only a fraction of what entered Matamoras ever helped the main Confederate effort east of the Mississippi. James Irby believes that different Confederate policies might have made better use of the Rio Grande as a supply source for the Confederacy as a whole, but in light of the transportation difficulties, he may be too optimistic. James A. Irby, "Backdoor at Bagdad: The Civil War on the Rio Grande," in *Southwestern Studies,* monograph 53 (El Paso: Texas Western Press, 1977), p. 52.

37. New York merchants were willing to remedy some of the wagon shortage by shipping wagons to Matamoras (*ORN*, ser. I, vol. 20, pp. 741–2).

38. U.S. House of Representatives, *Trade with Rebellious States,* House Report No. 24, 38th Cong., 2nd Sess. (Washington, D.C.: GPO, 1864–1865), pp. 79–80. For international considerations, see Ronnie C. Tyler, "Cotton on the Border," *Southwestern Historical Quarterly,* April 1970, p. 463; Tuffy L. Ellis, "Maritime

Commerce on the Far Western Gulf, 1861–65," *Southwestern Historical Quarterly,* October 1973, pp. 209- 10; and Tom Lea, *The King Ranch* (Boston: Little, Brown, 1957), vol. 1, pp. 195 and 222. The political system in Mexico was a wild card for the policies of both Union and Confederate officials (Irby, p. 44).

39. Lebergott, p. 869.

40. If Secretary of State William Seward had desired an outlet for Southern cotton to relieve European demand for raw cotton, the Rio Grande must have been pleasing, as the trade was not particularly harmful to the Union cause.

41. *ORN,* ser. II, vol. 1, pp. 461, 534 -5, and 605- 6. Dew describes the Tredegar Iron Works' difficulties in getting pig iron from New Orleans in late 1861: the railroads needed months to get the material to Richmond, and the freights were greater than the original cost of the pig iron; in addition, 120 tons were lost in transit (Dew, p. 103).

42. *ORN,* ser. II, vol. 2, 184. Tom Wells believes that Bulloch's idea was feasible and astute, but Raimondo Luraghi disagrees. Tom H. Wells, *The Confederate Navy: A Study in Organization* (Tuscaloosa: Univ. of Alabama Press, 1971), p. 136; and Raimondo Luraghi, *A History of the Confederate Navy* (Annapolis, Md.: Naval Institute Press, 1996), p. 203.

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