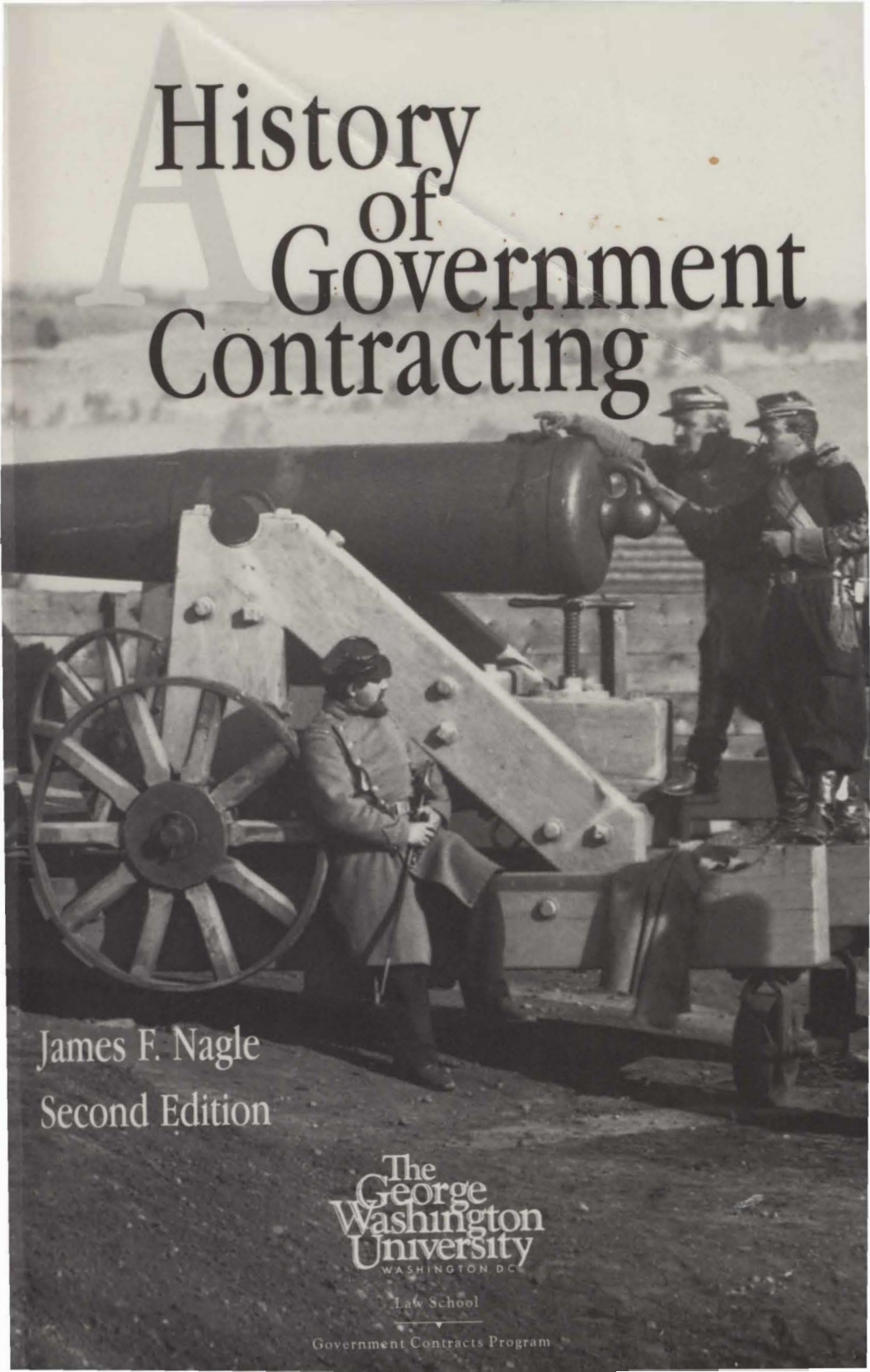
1999

# A History of Government Contracting, Second Edition

James F. Nagle

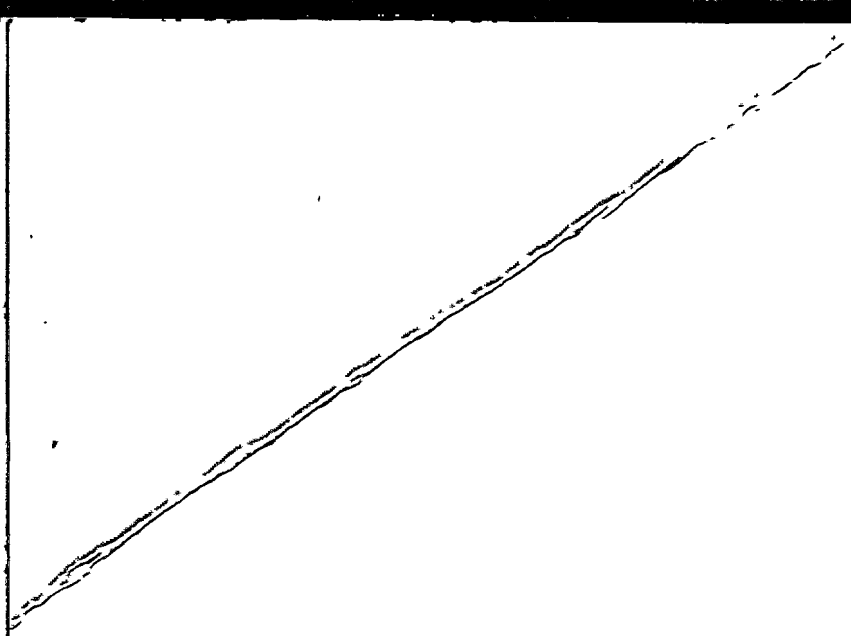
# A History of Government Contracting



James F. Nagle

Second Edition

The George Washington University
WASHINGTON DC
Law School
Government Contracts Program



# A History of Government Contracting

Second Edition

# A History of Government Contracting Second Edition

James F. Nagle

The George Washington University
WASHINGTON DC

LAW SCHOOL

GOVERNMENT CONTRACTS PROGRAM

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.

— From the *Declaration of Principles* jointly adopted by a Committee of the American Bar Association and a Committee of Publishers and Associations.

This book does not represent an official position of the U.S. Government or any U.S. Government agency.

Library of Congress Catalog Card Number: 99-71547
ISBN 935165-69-x (softcover)

# CONTENTS

To my wife
Ann
and
my children
James, John and Steve

for helping me keep things in perspective

# ACKNOWLEDGMENTS TO FIRST EDITION

Writing a book is a cooperative effort, no matter how many names appear on the title page. Many people contributed to this book, in a variety of ways. People like Mike Hordell, Thomas Payne, B. Alan Dickson, Dorn McGrath, Leroy Haugh, Jacques Gansler, William Kovacic, Ed Leakley, Robert Leslie, Bob Titlow, and F. Trowbridge vom Baur all provided me with material. Richard and Heather Click generously allowed me the use of their private library. Paul Dembling helped me by sharing his experiences during the early days of NASA. Ralph Nash and John Cibinic, the leading experts in the field, helped me first by educating me, as they have thousands of others, on government contracting. Chuck Culver helped and supported by sharing his extensive knowledge. The National Contract Management Association provided a grant of financial support to begin this project, and Professor Stanley Sherman, the grant director, was especially encouraging. I must also thank all the authors noted in the Bibliographical Essay, whose research and scholarship enabled me to compile this history. I am solely responsible for the contents.

I am indebted to Bill Reilly for his careful editing to improve the clarity of the text throughout, to Midge Easter for editorial support, to Claudia Jao for page design, and to Clare Perry for cover design. I must extend a special heartfelt thanks to Maureen Fountain, a true wizard of the keyboard, who for years has been able to read my hen-scratch penmanship and follow my convoluted instructions to return, in amazingly short time, error-free typewritten pages.

Finally, I must thank my family, whose support and tolerance of me during this project is admirably summarized in the words of my nine-year old son, John. I apologized to him one morning after I had shooed him out of the room in which I was working the night before. He replied, in an analogy he understood, "That's OK Dad, I don't want you to get a bad mark on your book."

# PREFACE

In the first edition of this book, I stated that people would be surprised at how many important recent events I had omitted. While such happenings have great import now, I explained that in the stream of history, they have no more than a temporary ripple. So writing a chapter for this second edition which focuses on the last 15 years gives me great trepidation.

To condense the past 15 years into one average size chapter, I have selected only those milestones which appear to represent significant trends which a historian even 50 years from now will still consider important.

In addition to the fore people listed in the acknowledgments section for the first edition, I would like to thank two more people: Karen O'Brien, the director of publications for the George Washington University Law School's Government Contracts Program who sheparded the project to completion and Christine Jordon Smith, my secretary, who typed, edited and formatted my words with speed, clarity and cheerfulness.

# ABOUT THE AUTHOR

James F. Nagle is a nationally known expert in government contracts and construction law. Mr. Nagle received his Bachelor's degree from Georgetown University School of Foreign Service; his J.D. from Rutgers; and his LL.M. and S.J.D. in government contracts from the National Law Center, George Washington University. He is one of only an estimated three people who have ever received this distinction.

In addition to *The History of Government Contracting*, Mr. Nagle has written three other books on federal contracting, *Federal Procurement Regulations: Policy, Practice and Procedures* (American Bar Association Press, 1987); *How to Review a Federal Contract and Research Federal Contract Law* (American Bar Association, 1990); and *Federal Construction Contracting* (Wiley Law Publications, 1992). His over 75 articles, on subjects as diverse as protests, changes, terminations, claims, and the Federal Acquisition Regulation, have appeared in such publications as the *Public Contract Law Journal*, *Military Law Review*, *National Contract Management Association Journal*, and *Contract Management*.

He is a partner with Oles Morrison Rinker & Baker, LLP in Seattle, Washington. He is a former Chief of the Logistics and Contract Law Branch of the Department of the Army Staff and trial team chief in the Army's Contract Appeals Division. His extensive experience includes supply and services, international, major system and construction contracts. Besides representing contractors, he has mediated disputes both between the government and the prime, and between the prime and its subcontractors. Other lawyers often consult Mr. Nagle on government contracts and use him as an arbitrator. Both the Justice Department and contractors have used him to explain federal contracting as an expert witness. Mr. Nagle often advises clients on ethics issues stemming from his experience as an ethics advisor in the government, culminating with his serving as Ethics Advisor with the Office of Chief of Staff of the United States Army.

Actively involved in professional organizations, Mr. Nagle serves as the past President of the BCA Bar Association; on the Board of Editors of the *NCMA*

*Journal*, as the Book Review Editor for the *Public Contract Law Journal* and *The Construction Lawyer*, and as the Director of Publications for several organizations. He has won the Federal Bar Foundation Award for Distinguished Accomplishment in the Study of Procurement Law and is listed in *Who's Who in American Law*.

He has lectured in nineteen states, the District of Columbia, and three foreign countries on all aspects of government contracts, construction law and contract management for the Graduate Program on Contract Management at the Florida Institute of Technology, the George Washington University's School of Business and Public Management, the George Washington University Law School, the University of Washington, and other professional organizations.

# Introduction

## General

Most people have neither the time nor the inclination to examine the intricacies of our modern government procurement system and the Buck Rogers-type equipment it buys. Nearly anybody, however, would recognize the folly of a system that purchased hammers for $400 apiece. Such horror stories have made government procurement synonymous with corruption and inefficiency. While headline-grabbing episodes are not new, the history of government contracting is not all scandal, of interest only to those who thrive on tales of greed and sensationalism. Much of value has been accomplished through government contracting.

A history of government contracts is a chronicle of the country's changing goals and needs. The government has long used the procurement process to further social and economic objectives. In 1969, the Administrative Conference of the United States noted that the procurement process had been one of the government's primary weapons in the fight against such societal ills as poverty, discrimination, and environmental blight. Indeed, many socioeconomic statutes, such as those prohibiting discrimination, had their origins in government contract clauses.

A historical review of the government's contracts traces the country's most important priorities contemporaneous with those contracts. It demonstrates, for instance, the country's exploration of the West and later the heavens, the purchase and manufacturing of armaments for national defense, and advances in transportation for faster and farther mail delivery. We shall see how seemingly unconnected events began a chain reaction that altered the course of government contracting and the history of the nation it served. For example, the Quasi War with France in 1798 started a series of events that led to the American system of mass production and machine tools. An accidental discovery in California in 1848 triggered the westward expansion of the transportation industry and, with it, the development of the continent.

## Military Contracting

Military contracts command center stage in any history of government procurement. Merritt Roe Smith has pointed out that military enterprise has been vitally important to America's status as an industrial power.[1] The noted American anthropologist Otis T. Mason concluded as early as 1895 that "war . . . stands forth preeminently as an incitement to the genius of invention and discovery," and Werner Sombart, in his *Krieg und Kapitalismus* a generation later, argued that Western military enterprise had mainly caused the rise of modem industrial capitalism. Since the country's birth, industrial development has been tied to military contracts. Besides mechanized production itself, such items as computers, sonar, radar, jet engines, swept-wing aircraft, insecticides, transistors, fire and weather-resistant clothing, antibacterial drugs, numerically controlled machine tools, high-speed integrated circuits, and nuclear power are just a few of the best-known industrial products of military enterprise since World War II.

Two of the most important technological innovations are the establishment of specifications and the spread of designs.[2] By establishing standards and specifications for various goods and contracting with private manufacturers to produce them, military contracts spread the design of many inventions throughout the civilian community. That community often quickly accepted such items as cooking pouches, weather-resistant shoes, Air Force parkas, or dehydrated foods. Not only have the end products received acceptance, but the manufacturers have often adapted and used for commercial ventures the related processes, production methods, machine tooling or numerically controlled tools. The explosion of consumer goods and mail order catalogs in the last thirty years of the nineteenth century resulted from industries converting to commercial use the mass production and other techniques they had learned on contracts for the Union army.

William H. McNeill, in his sweeping survey, *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000*, noted that: "Anyone looking at the equipment installed in a modem house will readily recognize how much we in the late twentieth century are indebted to industrial changes pioneered in near-panic circumstances when more and more shells, gunpowder, and machine guns suddenly became the price of survival as a sovereign state."[3]

On the other hand, the convergence of almost incomprehensibly large sums of money and, especially in wartime, relatively scant oversight have brought out the venality in many contractors and government personnel alike. Winning certain contracts, whether major weapons contracts of today, airmail contracts of the 1920s, or stagecoach contracts of the 1850s, can make the difference between financial success and power for decades—or quick descent into bankruptcy and oblivion. Since staggering sums of money and power are involved, it is not surprising that scandals have been a major part of the history of government procurement. Such scandals, however, have not erupted solely as a result of greed. Other causes have included inefficiency bordering on criminal negligence, personal ambition, or merely the desire to do what one believes is best for the country, the laws be damned. Some of these scandals were mere theatrical sound and fury designed for political headlines. Others involved such horror stories as sending men into battle with defective weapons.

At the beginning of every war, a cleavage develops between supply and demand that entrepreneurs, both scrupulous and unscrupulous, rush to fill. The result is as chaotic as a barroom brawl. Wars are the severest yet truest test of the procurement system because they test not merely how the system works after the battles begin but how well the nation had equipped its armed forces for hostilities. Until World War II, America supplied its soldiers and sailors on a bare subsistence basis between wars. Thus, when wars came, no matter how long anticipated or even sought with jingoistic oratory, they prompted a frenzy of activity as the country tried to overcome its pre-war lethargy and field enough food, clothing, and equipment to supply the flood of military recruits.

Exasperating slowness is the hallmark of the military weapons acquisition process and does not always result from painstaking deliberateness. Such contracting occurs in a vortex of politics, economics, technological advances, and personality. The slowness can result from simple resistance to change (what Harry Truman in 1941 called the generals' and admirals' "neophobia" or the fear of the new), bureaucratic turf battles, pork-barrel parochialism, or the more credible concerns of funding and maintenance. Orr Kelley's *King of the Killing Zone* chronicling the M1 Abrams tank, and Thomas L. McNaugher's, *The M16 Controversies* tracing the development of the M16 rifle, provide fascinating glimpses and excellent studies of the milieu in which weapons acquisitions evolve. The M1 faced a tremendous

debate over how much it should weigh and whether the engine should be a turbine or diesel. Proponents of each position cited numerous advantages about which reasonable people could and did differ.

Similarly, in selecting new rifles for the infantry, the army moves with glacier-like slowness. Such slowness is not always bad. Considering what the Army does and the rifle's role in that mission, generals should not and do not change weapons as cavalierly as law firms change stationery. In the 1930s, Army Chief of Staff Douglas MacArthur selected a .30 caliber weapon despite the benefits of a lighter weapon that the Army had exhaustively studied. He decided for logistical and financial reasons, not technological ones, that the industry and arsenals were already tooled to produce .30 caliber weapons and ammunition.

Slowness also results because new weapons normally force an advance in the present technology. Such advances are not easily and quickly won. Norman Augustine wrote that most of the problems in the acquisition process occur in getting that last 10 percent of expanded performance.[4] Nevertheless, such advances and the inevitable problems will continue for a most basic reason—fear. Weapons designers have a recurring nightmare—that of a new weapon that is so advanced it becomes a lion among sheep, killing with impunity. Imagine today's world if Hitler's jets or V1 or V2 rockets had gone into full production—or worst of all—if he had developed the atom bomb first.

For these reasons and more, the weapons acquisition process is an important aspect of our history. The contracts of even a young country like America demonstrate the remarkable development of weapons in the last two centuries. The United States has issued contracts for everything from the edged weapons used in hand-to-hand combat from antiquity, to the muzzle-loading muskets that required the marksman to see the individual he was about to kill, to today's long-range anonymous weapons of mass destruction.

## Civilian Contracting

Focusing myopically on wars and the military would overlook a tremendous source of history. The activities of civilian agencies such as the Departments of the Post Office and Treasury and the Bureau of Reclamation provide a rich panorama.

The Post Office has dramatically affected America's transportation industry and everyday life. The American orator Edward Everett regarded "the Postal Service next to Christianity as a right arm of our modern civilization."[5] It was usually the first agency to gamble on a new method of transportation, such as stagecoach, railroad, steamboat or airplane, in an ever-continuing effort to get the mail a little farther, faster. These contracts were not mere largesse generously bestowed and graciously accepted. Many of these contracts, such as those requiring the crossing of the plains in the 1850s, could involve as much danger as any military operation. Often the mail subsidies meant the difference between survival and failure for these fledgling industries. So, contractors competed for these contracts as fiercely and with as much intrigue as for any defense contract.

The Treasury Department has periodically reigned supreme in the procurement hierarchy as it has assumed responsibility for all the nation's contracts. Its practices, stemming from the days of its first secretary, Alexander Hamilton, have established procedures that continue today.

The Bureau of Reclamation's contracts for the construction of Hoover Dam and the other great dams of the 1930s exemplify the use of the procurement process to correct social problems. Besides providing needed electrical power, the government designed these projects to alleviate unemployment during the Great Depression.

## Historical Themes

In this two-hundred-year history of government contracting, several themes keep recurring. The same problems that bedeviled us in the Revolution continue to plague us today.

### *Military-Industrial Complex*

First, the country's relationship with what is now called the military-industrial complex has been characterized by both respect and hatred. That relationship has three phases. As the nation mobilizes for an emergency or a great task, such as World War II or the construction of the Hoover Dam, it looks on with reverential awe as America's industrial strength turns to the task. Then, during performance, the nation begins to complain about the speed, efficacy and (more often) the quality of the product—and the cost.

Finally, after the task has been completed and the staggering bills must be paid, the nation reels at the price and the profits.

### Profiteering

Second, much of the history of government contracting involves periodic attempts to curtail excessive profits, especially in war contracting. Price gouging is not new to the twentieth century and the multinational conglomerates. Farmers during the Revolution did not miss the chance to hike their prices as the law of supply and demand gave them the opportunity. The government has resorted to various methods to ensure that it only pays reasonable prices: price controls, excess taxes, contract renegotiation techniques, and the forced disclosure of a contractor's cost and pricing data, plus extensive rights to audit a contractor's books and records.

### Government versus Contractor Sources

This fear of excessive prices leads to the third theme. Throughout our nation's history, some have argued that the government should produce its own goods and services rather than depend on contractors. They advocated everything from small government-operated factories as yardsticks against which to compare a contractor's prices to the nationalization of entire industries such as shipbuilding, munitions, or aircraft.

### Ethics

Fourth, the twin issues of standards of conduct and revolving-door employment have perplexed the nation. In early days, favoritism in awarding contracts and conflicts of interest were so widespread that they did not have to be hidden and were not considered corruption. Even after such brazen problems were corrected, people were selected for their talent, experience, and connections, and that practice continues today. In both world wars, industrialists such as Charles Schwab of Bethlehem Steel and William Knudsen of General Motors were pressed into service. Knudsen was even inducted into the army as a lieutenant general. The highest echelons of the Defense Department are filled with people from the executive suites of the major contractors.

### *Competition*

Fifth, the country, especially Congress, has idealized competition and fixed-price contracts. Since the early days of the Republic, Congress has clearly preferred a competitive bidding system in which contracts are advertised, all bidders given a fair opportunity to compete, and the lowest bidder receives a fixed-price contract. Competitive bidding is often the least efficient way to contract and has often obstructed America's ability to prepare for war. A major part of America's preparation for its wars, both in the nineteenth and especially in the twentieth centuries, has been the need to suspend or modify the competitive bidding rules as the country rushed to overcome decades of neglect in a few short months.

## The Contracting Process

Much of the country's contracting history has been spent trying to find the best combination of three factors: the right contracting apparatus, the right government-contractor relationship, and the correct contract form itself.

In its search for an efficient, fair, and reasonably priced procurement apparatus, the government has tinkered endlessly with its procurement agencies. It has experimented with centralized czars of government-wide procurement, decentralized, overlapping contracting agencies; and variations in between. Originally, contracting officers were vested with a great deal of discretion, hampered by very few regulations which constricted their judgment. They could adapt contracts and clauses to individual circumstances. Throughout the nineteenth century, as the individual services and agencies began to impose standardized contracts, that discretion decreased. The beginning of the twentieth century saw the first government-wide standardized forms and clauses. These now pervade the procurement process and literally strip the contracting officer of discretion. Contracting officers today are told what to do and how to do it, down to the most minute details. This process took a great leap forward under Robert MacNamara, the secretary of defense under Presidents Kennedy and Johnson. Such a process is disconcerting for contracting officers because it stifles their ingenuity and individuality; at the same time, it discourages contractors because it presents them with a contract virtually on a take-it-or-leave-it basis.

The nation has sought to find the best relationship with its contractors. Should it be a completely arms-length relationship in which the government contracts only with those who offer the lowest price at a given time, disregarding past service or future potential? Or should it be a long-term nurturing relationship in which contracts are constantly renewed so that a strong and vibrant contracting base is available when an emergency arises? Or should there be any relationship at all? Should the nation, instead, supply its needed goods and services through its own employees with minimal reliance on contractors?

Finally, the nation has vacillated on the form of the contract itself—the umbilical cord connecting the contracting parties. At times, it has required the firm-fixed-price contract in which the price is set in concrete, the government knows exactly what it is buying, and it wants or needs no deviation. At other times, the nation has used cost-reimbursement contracts in which the government agrees to pay a contractor's costs. The problems with each type and the search for acceptable compromises have complicated the process and been a breeding ground for controversy.

## This Book's Approach

Writing any history, especially one as broad as that of government contracting, involves selectivity. Thus, readers may be surprised at the extensive treatment afforded some episodes and the relatively scant treatment afforded others of seemingly greater importance today. I have done this for two reasons. Many items in today's headlines and congressional reports that seem so earthshaking are relatively insignificant when viewed from the perspective of history. Not many of these events in government contracting will be remembered fifty years from now. Moreover, many episodes of the post-1945 period are treated summarily because others have already subjected them to the most intense scrutiny. Books and articles have already analyzed Lockheed's C-5A problems, the contracting for America's nuclear submarines, and the scandals over the prices of Allen wrenches and toilet seats. Many people will be surprised at the more extensive treatment I have given to fiascos like the Johnson contracts in 1819 or the contracts with William Duer to supply the St. Clair expedition against the Indians in the 1790s. Such relatively unknown episodes warrant attention because they caused fundamental changes in the contracting process.

This book could not have been written, and must not be read, in a vacuum. For example, to understand contracting from 1820 to 1850 requires at least a nodding acquaintance with the "manifest destiny" philosophy of American history. So I have tried to weave in national traumas and impulses at the time to explain why certain contracts were needed. To do that, this study often discusses the subjects of logistics, mobilization, and weapons development which are scrutinized more incisively elsewhere, most recently in Robert O'Connell's *Of Arms and Men* and Martin Van Creweld's *Technology and War*. This book necessarily intersects with books and numerous other publications, but it supplements them by studying the process by which a weapon, once invented, is purchased and put in the hands of a soldier. In so doing, it tries to fill a gap that must be filled to prevent a recurrence of the debacles of the past.

*Chapter 1*

# French and Indian and Revolutionary Wars

## Ignominious Beginnings

The French and Indian War, and even our own War for Independence, are ancient history—more so because of a sea change in warfare than the mere passage of time. In those wars, soldiers did not kill a distant enemy wholesale, by pulling lanyards, pushing buttons, or opening bomb bays. They killed, and were killed, one at a time with face-to-face deliberateness. Separated only by the range of a musket or the length of a sword or bayonet, the victor heard his enemy's screams and saw his fall.

Some basics have not changed, however. Then as now, generals strove for mass and surprise. Then as now, the troops had to be supplied. The items needed and the methods used to obtain them may seem light years away from those we know today. But those tasked with meeting the requirements confronted a perennial wartime challenge: how to get a crucial job done effectively, efficiently, and accountably, under conditions that seem to pit all odds against success.

The French and Indian War was the culminating seven-year-long phase of a protracted British-French struggle for supremacy in North America. With British victory sealed by the 1763 Treaty of Paris, it paved the way for the American Revolution. It rid the American colonies of the French threat, and it gave the colonies experience in fighting a war, including experience in supplying troops. It should have been for the Revolution what the Mexican War was for the Civil War and the Mexican Expedition was for World War I: a training ground for the contracting and mobilization effort to come. But it was not. The sporadic participation of thirteen distinct colonies in supplying their own and the mother country's fighting men provided only the slimmest of experience for the national effort required in the struggle for independence.

Indeed, it would be the lack of a strong central procuring authority that, more than any other factor, rendered the American government ineffective in meeting its military's needs in the Revolutionary War. Government procurement in America got off to a rather ignominious start with that war. The Continental Congress stumbled from crisis to crisis on a trial-and-error basis, attempting to create a buying structure that could get the job done without bleeding the nation's anemic economy dry. The wag who in this century suggested that Congress does two things well—nothing and overreacting—could have been speaking of this earliest period in our history.

Procurement failures seriously hampered the war effort. Fortunately, they were not the prevailing factor. As Geoffrey Perret has observed: Had supplies determined the outcome of the war, the British would have won.[1]

## The French and Indian War

Inadequate though it was as preparation for the effort to supply the Revolution, the French and Indian War did establish many characters who would later figure in key roles. And in a history of government procurement in America, it does serve to introduce several themes that will emerge again and again as the ensuing drama unfolds.

### *The Past as Prologue*

For the first time, American businessmen participated in supplying the troops. Although merchants in Britain often received the contracts for feeding the British troops, they relied on their colonial agents for the actual purchases and deliveries. And, since the colonies were themselves tasked with fielding and provisioning troops, they also turned to local merchants. Rhode Island, for example, appointed a New York merchant to supply food and clothing to its troops preparing to attack Crown Point, in return for a commission of five percent.

The war thus provided valuable training for merchants who would later serve prominently in the Revolution as politicians, government officials, or contractors, or in more than one of these roles. For example, Roger Sherman, later a member of the Continental Congress, served as commissary (the government official tasked with providing provisions) for Connecticut in Albany in 1759. Francis Lewis, a Continental Congress delegate from

New York, had been a clothing contractor to the British at Oswego in 1756. Jonathan Trumbull, future governor of Connecticut, and a partner were contractors in 1756 to provision the Connecticut troops sent to Lake George and were selected by the Connecticut legislature in 1761 to supply Connecticut troops with "refreshments and clothing."

The war also served to introduce many Americans to the eighteenth century British system of providing for a field army's needs, a system which centered around the quartermaster general. This officer served essentially as a chief of staff but also had the duties of transporting the troops and their supplies and finding forage. He had a major general of ordnance but relied on civilian contractors to supply all needed items and do whatever had to be done.

## *The Campaign of 1755–56*

Contracting, like warfare, was a world apart from our modern practices. The Campaign of 1755–56 to drive the French out of the Niagara area aptly illustrates the practices of the colonial period.[2]

William Shirley, the second in command in British North America, led the expedition and awarded contracts to supply the moving army. Those contracts were nothing like the arrangements we know today, however. Amazingly broad by today's standards, they were more like carte blanche delegations of authority. Rather than supplying specified items in accordance with detailed government specifications, these contractors were to supply virtually anything and everything the army needed, including items and services which the contractors themselves thought necessary. Besides providing the expedition with provisions, bateaux, workmen, maps, and naval stores, the contractors would even supply fifty thousand pieces of black wampum and other presents for treaty-making with the Indians. The payment plan befitted such a freewheeling arrangement. The contractors received a commission of 5 percent on all money they spent for the army—a practice that was then customary but for decades now has been illegal, since it gives the contractor no incentive to control costs and every reason not to.

## *Favoritism's Early Beginnings*

Probably the aspect of such colonial arrangements that is most shocking by today's standards, however, was not the contract itself, but the method of

contracting. Shirley awarded the contract for supplying and servicing the Niagara expedition to Peter Van Burgh Livingston and Lewis Morris, Jr. Livingston was a prominent New York merchant with excellent business connections in Europe and America, but that alone did not get him the award. His partner was William Alexander, Shirley's newly appointed secretary for the Niagara expedition. Morris also had a man on the "inside." His partner was John Erving, Jr., Shirley's son-in-law.

Shirley's actions would be considered grossly improper today but were commonplace then. In England and the colonies, favoritism and nepotism were everyday aspects of government contracting. When Benjamin Franklin asked Lord Loudoun for reimbursement for the expense of aiding General Braddock, his lordship, assuming that Franklin had already profited handsomely, answered, "O, sir, you must not think of persuading us that you are no gainer, we understand better those affairs, and know that every one concerned in supplying the army finds means, in doing so, to fill his own pockets."[3]

Despite the natural tendency to let their costs, and thereby their profits, increase, the contractors for the Niagara campaign apparently still felt compelled to protect the interests of the government. Presumably, they drove hard bargains with subcontractors and suppliers, at least with those who were not friends and relations. Alexander especially showed that the contractors did not spend money recklessly to swell their commissions.

## Price and Quality Concerns

As operations began at New York, Alexander arrived in Albany on May 17, 1755. He ordered large quantities of food in the local market to save on freight but immediately faced a perennial problem. Since the demand for food had soared, merchants tried to get rich by hiking their prices and even reneging on their previous quotes. Alexander decided to buy no more food unless at the original quotation. He threatened to sue any dealers who reneged on orders they had accepted. To keep local merchants from inflating the price by playing off one agent against another, Alexander appointed a sole buyer in Albany, whom he warned not to buy bread except at the reasonable, local price.

Food, although expensive, was at least available. Procuring ordnance such as cannon, and especially cannon balls and shot, was much more difficult

considering both the fledgling state of American munitions and the manpower shortages common in wartime. Alexander ordered shot of various sizes from what he believed was the only American furnace in blast at the time. When that furnace blew out, he urged the contractor to work day and night. He also proposed a now-typical means of addressing the labor shortage: exempting the ironworkers from military service, a common solution for American manufacturers.

To his credit, Alexander did not strive only for the lowest price and the fastest delivery. He wanted quality. He urged his buyers to buy nothing but the best and to have it packed with all possible care. Every barrel, he wrote, should be full, well pinned or nailed, and packed for the toughest handling and worst weather imaginable. When packed meat had to wait for shipment, Alexander ordered his agents to have it stored in cellars whenever possible. Other provisions were to be kept in warehouses or barns, or under canvas when no buildings were available.

### *What Was Expected of Contractors*

The breadth of Alexander's efforts shows the depth of responsibility placed on these contractors and the ingenuity required of them. They were not merely contractors but fully operating staff officers. To supply the army with the best maps available, Alexander not only hired the best cartographers to make surveys but he added copious notes on the topography along the line of march. To get a quadrant for the navy on Lake Ontario, he coaxed Mr. Livingston to get his father to part with his. To have the water courses passable and to ensure their readiness for bateaux traffic, he ordered the clearing of trees, brush, and other obstructions, especially on the upper reaches of the Mohawk. To save the bateaux from unnecessary wear, Alexander ordered that unused boats be filled with water to prevent warping.

Contractors also had to respond to emergencies. When provisions were exhausted unexpectedly at one site, contractors rounded up several nearby herds of cattle and narrowly averted a serious crisis. Contractors, however, could not work miracles. On the Niagara expedition, a mutiny developed when no food or rum arrived for the troops. When the mutineers confronted Alexander and demanded to know why they were on half rations, Alexander, exasperated by the insults of the mob, offered little consolation. As he could not make bread, he told them, they might try eating stones.

### Funding Problems

Coming up with the needed supplies was not the only trouble facing contractors. More crucial than that was a chronic shortage of funds. Army red tape made payments to contractors exasperatingly slow (another problem with which we remain familiar). Yet, since the army's needs were constant, contractors were expected to advance large sums of money to meet the incessant demands of their suppliers and thereby keep the goods flowing. At one point, Alexander managed to persuade the army paymaster to waive regulations and send Livingston an emergency issue of 2,000 pounds. All this was paid out in a few days to bateauxmen, wagoners, carpenters, and other workmen who grumbled or quit the job when their wages were not promptly forthcoming.

After the war, the Niagara contractors were eventually paid, but only after a long delay that stemmed in part from the expedition's failure. As with any military failure, everyone connected with the fiasco faced scrutiny and criticism, especially those who were believed to have profited despite the disaster. Alexander and his partners had to rebut charges, leveled by their competitors, that their supplies had cost too much and that they had used the army bateaux to carry their own merchandise.

The soldiers and merchants returned to civilian endeavors. Twelve years later, however, they would again become engaged in fighting—against their former allies.

## The Revolutionary War

### Mobilization

Once the "shot heard 'round the world' " sounded at Lexington on a spring day in 1775, the Continental Congress faced the awesome challenge of mobilizing troops to fight a war of rebellion and the formidable task of supplying them.

In the early days of the war, the individual colonies had not only to mobilize their own troop quotas but also, under a policy known as "specific supplies," to supply them. As in the French and Indian War, they looked to merchants, farmers, and craftsmen—and even imposed on their individual volunteers the requirement that they supply their own muskets, blankets, and clothing.

Those colonies which zealously tried to fulfill these obligations found it difficult to keep up their troop quotas as the war ground on and difficult to procure all the necessary materiel for the troops they did manage to raise.

To begin with, many items were in short supply. British policy had discouraged any extensive manufacturing in the American colonies through legislation such as the "Iron Act" of 1750, which strictly curbed the production and processing of iron. Just before the hostilities broke out, all the colonies had began trying to collect military stores, and some increase in manufacturing facilities had occurred even before Lexington and Concord. There had been no concerted long-range planning for a mobilization, however. Indeed, the concept of industrial mobilization would not be implemented until World War I.

### *Shortages of Supplies and Labor*

Compounding the situation was the fact that too many people were competing for too few goods. Since the states often had to supply their own troops, competition developed between the Continental Congress and the states and among the states; in both domestic and overseas procurements, "federal" and state agents bid against each other. Nor was the competition limited to Congress and the states. American generals, allies, and even enemies also sought to tap the same limited pool.

High-ranking American officers often gave up depending upon staff officers and sent out their own men or hired merchants to alleviate their food and equipment shortages. As General Anthony Wayne observed, "We shall be like Mahomet and the Mountain—if the Clothing won't Come to us—we will go to the clothing."[4]

After a sea battle with the British in August 1778, French commander Comte d'Estaing sailed to Boston to repair and refit his ships. In Boston, he requested three months of reserve supplies for his men. Unable to secure the provisions, the intendant of the French fleet hired James Price, a merchant, who proceeded to disrupt the Continental Army's supply operations in Massachusetts and New York by paying 25 percent more for flour and beef than the market price.[5]

Tories had the same effect, especially along the New York-New Jersey border, when they deliberately bought supplies for the British at excessively

high prices to depreciate Continental currency. Nor did the British have to go through their American comrades to get supplies. While Washington's troops were starving at Valley Forge, the British were well supplied by farmers of the counties surrounding Philadelphia, who were quite willing to trade for British gold.

Furthermore, in the Revolutionary War, as in every major war, domestic production was hampered not only by a shortage of materials but by the loss of artisans and laborers to the militia. Proprietors of ironworks and furnaces petitioned their respective state legislatures to exempt their work forces from militia duty. In 1777, Congress recommended that the states exempt from militia duty all persons employed in manufacturing military stores of any kind and in casting shot, and the Continental Congress asked the Executive Council of Pennsylvania to discharge from the militia eleven workmen needed to produce cannon for the Continental Army. The need for workmen was great enough to cause the Pennsylvania Committee of Safety to authorize ironmasters to use prisoners of war as laborers in casting cannon or shot for the Continental Army.

Congress repeated its recommendation the following year. It had to. Other than exemption from military service, the shops did not offer sufficient inducement to attract men from other pursuits. The states often agreed to exempt from military service men who worked in essential war industries, but when soldiers were badly needed, the exemptions evaporated. As a result, by 1778 the Sudbury Furnace, which had been converted to casting cannon, had come almost to a standstill, and a Philadelphia foundry turning out brass cannon had to cease operations altogether.

## *Cash Flow Problems*

Shortages of material and labor worsened because lack of hard currency made procurement virtually impossible. As early as September 21, 1775, Washington, writing to the Continental Congress, referred to the difficulties: "The Commissary-General assures me he has strained his credit for the subsistence of the army to the utmost. The Quartermaster-General is in precisely the same situation, and the greater part of the troops are in a state not far from mutiny, upon the deduction from their stated allowance."[6]

By 1778, rapid depreciation of the currency exacerbated the problem. As in Germany in the 1920s, paper profits from supply contracts were proving

illusory. In at least one case, a contract had to be revised to provide a larger payment per ton for cannon being produced for the Continental Army.

### Theft and Fraud

In this economy, supplies were too precious to be misappropriated. But thievery (or, as a later century would describe it, "supply diversion") often created havoc. To institute greater control, Congress in February 1777 required that all arms and accouterments belonging to the United States and all those manufactured or acquired in the future were to be stamped and marked "U: States." Whenever such marked arms were found in the hands of men not in the Continental service, the states were to collect them. Finally, the Continental forces suffered gravely at the hands of suppliers who engaged in fraudulent practices. Wayne Carp, in his treatise on Revolutionary supply, has catalogued the problems. Axes were delivered without heads. Beef arrived spoiled, flour sour and unwholesome. Soldiers could tear leather pack saddles with "thumb and small finger." Blankets were only one-fourth their proper size. Shoes were too small or fell apart in a day or two because they were poorly made of cheap materials. Casks of meat contained stones and tree roots, and barrels of flour had "the Center Scooped out and the sides standing." Even gunpowder was debased and unusable. "The people at home," observed one Continental officer in 1778, "are destroying the Army by their conduct much faster than Howe and all his army can possibly do by fighting us."[7]

### Impressment and Privateering

Difficult as it was to obtain decent materiel, or any materiel at all, it could be even more arduous to get materiel to the troops during the fluid periods of the war, as the men marched through what was still largely wilderness terrain, skirting what few roads there were to elude the enemy. Given all that impeded supply efforts, commandeering, or impressment was authorized and sometimes had to be used. Soldiers merely took the needed supplies from the willing or unwilling possessor and paid in the going, often worthless, scrip. Early in the war, military authorities rarely resorted to impressment, so it was subject to few abuses or complaints. In the bitter winter of 1777–78, however, the breakdown of transport and consequent food shortage, "gross confusion" in the governmental departments responsible for supply, and Congress' neglect in attending to these logistical problems forced the army

to rely temporarily upon impressment as its primary means of feeding and clothing the soldiers at Valley Forge.

The army also devised other, more ingenious means of supply. General William Smallwood established a shoe factory, used his own troops to run it, and kept his men amply supplied. Light-Horse Harry Lee kept his men supplied by capturing British supply wagons. Worn clothing was sent home to wives for mending, and families supplied soldiers with warm clothing, paper, and candles. Taking from the enemy was, of course, a strategic objective. In December 1775, for example, Washington took some of the captured British cannon and gunpowder to outfit a schooner as a privateer. By fall he had eleven privateers at sea. The colonies created mini-navies of their own, which paid for themselves many times over during that first year in the muskets, bullets, and flints and food and clothing they captured.

Ingenious, resourceful, harsh, and even desperate as they were, all these methods were like bandages on a gaping wound. Throughout the war, the Continental Congress would struggle to devise a procurement structure that could hold the war together.

## The Continental Congress and its Committee System

### *Limited Authority of Congress*

The Continental Congress was formed in 1774 through illegal elections in twelve of the thirteen colonies. With the Declaration of Independence it evolved, of necessity, into the federal government of a nation at war. The states' mutual mistrust and divisiveness continually impeded its efforts; in 1776, John Adams pronounced that the great problem facing its members was to get thirteen clocks to strike at once. It would take until 1781 to develop and then get all the states to ratify the Articles of Confederation, Congress' plan for an American union. And even after the articles' adoption, the list of the powers denied Congress would be far longer than the list of powers granted it. Congress lacked the power to pass legislation binding on all the states. Nor could it tax the states or their citizens, or regulate foreign or interstate commerce.

Nevertheless, as the sole central authority of a nation whose existence depended on the success of its army, the Congress sought hard, and long for a sound and efficient way to equip that army to fight. Again and again, it

made disjointed, knee-jerk reactions to the latest problems rather than put forward well-thought-out, long-range solutions. Like a dying man swallowing any possible cure, Congress' desperation led it to try various methods. At times, Congress itself bought supplies. At other times, it contracted with private merchants to buy them. Sometimes it authorized state governments to exchange nonessential commodities for importations of arms.

### *The Committee System*

Often, especially in the early days of the war, Congress did not act as a whole but as individual committees.[8] Since there were as yet no executive departments, Congress performed many functions carried out today by the Departments of Defense, State, and Commerce. To fill the void of an overall supervisory agency, it created temporary committees as specific needs arose and assigned a single war problem to each: the shortage of salt went to a salt committee, meat to a meat committee, and so on. These committees bought supplies directly in the open market, asked state legislatures for help, and contracted with individuals to furnish supplies to the army. Besides these temporary committees, there were permanent ones.

Shortly after the war began, the Second Continental Congress created two committees of particular importance to supply for the troops: the Secret Committee for Trade (simply called the Secret Committee) and the Committee of Secret Correspondence. These committees dealt with foreign procurement and aid. Congress realized that to support the Continental Army, it would have to import ordnance and ordnance stores. While the two committees shared members—the "patriot financier" Robert Morris, for example, served on both—they were nonetheless distinct. Like some of the other standing committees, such as the Board of Treasury, they developed into separate departments.

The nine-member Secret Committee was created in September 1775 and authorized to import five hundred tons of gunpowder. If that amount could not be obtained, the committee was to make up any deficiency with saltpeter and sulphur. The Secret Committee was also empowered to procure forty brass 6-pounder fieldpieces, twenty thousand musket locks, and ten thousand stands of good arms. Since Congress so desperately needed munitions, it waived its nonexportation agreements and authorized the Secret Committee to export to the non-British West Indies, on behalf of the

Continental Congress, as much produce—except cattle, sheep, hogs, and poultry—as needed to pay for the arms, ammunition, sulphur, and saltpeter imported.

The Secret Committee would also contract with American merchants to import gunpowder and contract abroad for clothing, blankets, and medical supplies. It was especially active in buying medical supplies because most such supplies had to be imported. Medicines, surgical instruments, lint, and bandages were among the first military supplies that the Continental Congress authorized the committee to buy abroad, in January 1776.

In November 1775 Congress established the Committee of Secret Correspondence, which dealt primarily with diplomatic relations. This Committee was soon deeply involved in obtaining foreign aid for the colonies. On March 3, 1776, it sent Silas Deane to France "in the character of a merchant" to obtain a supply of clothing and arms for twenty-five thousand men, as well as ammunition and one hundred brass fieldpieces. On April 17, 1777, it became the Committee for Foreign Affairs.

Besides these two committees, other standing committees also engaged in procurement activities. For example, in January 1776 the Continental Congress appointed a committee to estimate artillery requirements, find out what size cannon could be cast in the colonies, and devise ways of procuring them to supplement foreign procurement. A month later, Congress instructed a committee on ways and means of procuring cannon (the Cannon Committee) to purchase or contract for the making of 250 12-pounders, sixty 9-pounders, and sixty-two 4-pounders. Congress also directed the Cannon Committee to acquire muskets and promote the manufacture of firearms in America—the first attempt to establish a native arms industry.

Another standing committee, the Saltpeter Committee, initiated a program of domestic gunpowder production. It published in the newspapers various techniques of manufacturing saltpeter and called on state authorities to persuade families to make saltpeter at home. To encourage home production, Congress recommended that the states offer a bounty of half a dollar for each pound of gunpowder produced. It capped this domestic program by requesting that state officials also erect public powder mills.

Yet another committee, the Medical Committee, was busy buying medicines and medical supplies domestically, both from state officials and from

Philadelphia's largest pharmaceutical firm. And another separate committee, the Clothing Committee, sought garments for the troops.

Acting as a body or through its various committees, Congress used civilian suppliers who were neither members of Congress nor military personnel. Called "commissaries" or "Continental commissaries" (but not members of Congress' official Commissary Department—more of which will follow), these agents acted under direct congressional authority to buy every sort of supplies for the troops.[9]

Despite opposition to the creation of an executive branch, the Continental Congress gradually moved in that direction. Washington had for some time been urging the necessity of a war department. Congress took its first step toward creating a war department when it established a Board of War and Ordnance on June 12, 1776. The Board came to assume many of the duties of the various congressional committees. It contracted for clothing, medicines, and military stores and also secured shoes and stockings from state authorities. It also took over all contracts made by the Cannon Committee.

## The Army's Contracting System

### *The Commissary and Quartermaster Generals*

Congress did act early to establish an official procurement structure. On June 16, 1775, emulating the European system, Congress authorized the appointment of a commissary general of stores and provisions who would buy food and other provisions and a quartermaster general who would handle transportation and other supplies for the Continental Army. (Congress would later set up other supply agencies such as the Clothier, Hospital, and Ordnance Departments.) Congress did not adopt the European system in full, however. Under that system the commissary and quartermaster general contracted with merchants to supply the army, as had been done in the French and Indian War. The commissary general and quartermaster general would then supervise the contractors and act as liaisons between them and the commanding general. Under the American version, in contrast, the quartermaster general and commissary general would themselves assume the traditional role of the contractor. They would not only buy but also store, transport, and distribute the goods. Six long

years of battle would grind by until a procurement system centered around contractors would be put in place.

On July 10, 1775, General Washington wrote to Congress urging the appointment of a Commissary General:

> I esteem it, therefore, my duty to represent the inconvenience which must unavoidedly ensue from dependence on a number of persons for supplies, and submit it to the consideration of Congress whether the public service will not be best promoted by appointing a Commissary-General for the purposes. We have a striking existence of the preference of such a model in the Establishment of Connecticut, as their troops are extremely well provided under the direction of Mr. Trumbull, and he has different times assisted others with various articles. Should my sentiment happily coincide of your honors on the subject, I beg leave to recommend Mr. Trumbull as a very proper person for this department.[10]

Nine days later, the Continental Congress appointed Joseph Trumbull as commissary general of the Continental Army, with the rank and title of colonel. Trumbull was the son of Jonathan Trumbull, the governor of Connecticut and the merchant who had helped supply Connecticut troops during the French and Indian War.

Less than a month later, on August 14, 1775, Washington himself appointed Major Thomas Mifflin, a 31-year-old Philadelphia merchant then serving as one of his aides-de-camp, to be his quartermaster general. Both Mifflin and Trumbull were made responsible to Congress rather than directly to General Washington, but Congress was silent on how their departments should be organized and how they should function. It did stipulate, however, that Mifflin would be paid on the then-standard commission basis, while Trumbull would receive a set salary.

### *The Role of Merchants and Agents*

The role of merchants in eighteenth century American business, the reliance upon merchants in supplying the Revolution, and the advantages and drawbacks of that reliance all deserve explanation.

Thomas Mifflin and Joseph Trumbull were both noted merchants. Other senior officers in the Quartermaster, Commissary, Clothier, and Hospital Departments were merchants as well. Indeed, except for Timothy Pickering, a future quartermaster general, the heads of departments and virtually all

minor officers in the procurement services were engaged in trade. Some, such as Dr. William Shippen, head of the Hospital Department, specialized in the products involved in their official duties.[11]

This profusion of merchants was natural and intentional. The Continental Army and Congress relied upon the knowledge and experience of the colonial merchants to handle the details of supply. Indeed, Congress sought out merchants to serve as supply chiefs, and merchants often eagerly sought positions as purchasing agents—some earning themselves the name of "two penny luck" as they purportedly scrambled into government employment to make their fortune. The Revolution thus had its equivalent of our twentieth century "dollar-a-year men"—executives from industry who have joined the government for the duration of a war to aid in the contracting and logistics process.

Only a merchant had the knowledge, the trade connections, and the credit needed to handle procurement. Working in partnership or alone, the merchant acted as shipper, banker, wholesaler, retailer, warehouseman, and insurer. Some merchant firms were sole proprietorships. Others were partnerships in which several persons joined their capital, goods, talents, and connections in a single project and split the expenses and profits. The firm of Otis and Andrews, which provided clothing for the Continental troops, and that of Willing and Morris, which filled powder and other supply contracts, were well known partnerships during the Revolution.[12]

One unique feature of business in the eighteenth century was the jack-of-all-trades role of the agent, sometimes called the commission merchant or broker. By 1775, all important merchants acted as agents for one another and some merchants began to function primarily in this agent role. Agents bought and sold goods on commission for clients at home or abroad. They arranged shipment, handled insurance, and honored bills of exchange drawn upon them by trusted customers. In short, they did everything they could to promote their clients' interests. Acting in their own names, they used their personal credit to get supplies, thus incurring debts for which they were personally liable.

For their services, agents earned a commission, which was a percentage of the gross value of the goods they handled—a now-prohibited compensation arrangement that was standard business practice in that day. The practice did appeal to the merchants' greed, but it was not as disadvantageous to the

client as might appear. Like the merchant contractor William Alexander in the French and Indian War, most merchants were intent on protecting their most valuable asset, their reputation for honesty and for scrupulous attention to their clients' interest.

### *Conflicts of Interest*

In view of today's conflict of interest laws, the practice of commingling private and public business seems shockingly duplicitous. Under the rules of eighteenth century business, however, which set no clear line of demarcation, the practice was not so scandalous. Rather than separate their public and private affairs into airtight compartments, merchants merged their roles to serve their country while pursuing their own commercial interests. They felt no obligation to give up their own affairs. They viewed themselves as commission agents and the government as their principal. At times they advanced their own money to buy army supplies; at other times they had government funds to buy new supplies, to repay themselves for those already bought, or to use for their own purposes as long as they stood ready to use their own funds if the public's needs warranted.

Despite this theoretical nicety, the commingling of funds and such unbounded, unaudited discretion fostered acts far beyond propriety and legality even by the standards of the day. Agents of the government often used public funds for private ventures, replacing them if and when the investments succeeded. Robert Morris, for example, diverted $80,000 to his own use in 1776—enough capital at that time, E. James Ferguson notes, to provide the basis for making a mercantile fortune. Congress had granted this money to buy and send goods to France in payment for supplies bought there. The goods were never exported, but Morris did not return the money. Long after the war ended, he still owed the government large sums for which he had not accounted.[13]

Procurement officials used government vessels and wagons to carry their own goods, seized public property as security for debts incurred by them on behalf of the government, and had other activities which obviously put self-interest above the Revolutionary cause. Once, a Continental officer reimbursed himself by confiscating and selling a prize cargo brought in by a government vessel. Silas Deane once gave to private individuals the public's share in a ship which public money had largely bought and equipped. Another time, when he and his partner, John Ross, faced a heavy loss on a

vessel they had bought and were outfitting, Deane bought the vessel for the United States and thereby shifted the costs to the government.

All in all, however, problems arose not so much from the commission method of payment as from the practice of awarding contracts to friends and relatives and to firms in which the official had a direct financial interest. As during the French and Indian War, nepotism and favoritism were commonplace.

Thomas Mifflin, the first quartermaster general, awarded government contracts to his cousin Jonathan Mifflin and to his partner, William Barret. He used his inside information to advise them in advance of the kinds of fabrics the government would be seeking on clothing contracts, though he told them he wanted no part of their profits. He did the same for Matthew Irwin, another relative and Philadelphia merchant. Although he urged these men to be discreet, speculation was stirred. When Washington reproached him, the quartermaster general protested that his only profits came from the five percent commission allowed him on the goods he bought.

Mifflin's response was typical. The merchants who supplied the government did not see themselves as unethical. Robert Morris, probably the most influential of them, wrote to his partner, Silas Deane, that while some persons would think "private gain is more our pursuit than Public Good. . . . I shall continue to discharge my duty faithfully to the Public and pursue my Private Fortune by all such honorable and fair means as the times will admit of, and I dare say you will do the same." Deane wrote: "Though an honest merchant will never deviate from the path of honor and justice to promote his interest, yet it can never be expected of him to quit the [path] which interest marks out for him."[14]

Further, not all supply personnel wanted commissions. Many were motivated by patriotism alone and rejected commissions in favor of salaries throughout the war. Such actions were exemplary in the face of the widespread belief that every procurement officer was getting rich; in reality, procurement officers suffered hard, complicated, and unpleasant work, especially as supplies became scarce and Continental money plummeted in value. After two years as quartermaster general, Timothy Pickering wrote: "I have found the office, as I expected, full of anxiety, of toil, of difficulty and vexation; and in all respects more arduous beyond comparison, than any other office with which I have ever been acquainted."[15] His predecessor, Nathanael

Greene, groused, "Business in the civil departments of any army, is like making dictionaries; if any errors are committed, there is the severest criticism and blame; but the merit of the performance passes off with little notice and no honor." After the war, Greene elaborated, "A charge against a quartermaster-general is most like the cry of a mad dog in England. Every one joins in the cry, and lends their assistance to pelt him to death."[16]

The public, however, treated such complaints and announced sacrifices as crocodile tears, believing that procurement officers made too much money ever to resign.

## The Commissary Department

### *Commissary Responsibilities*

From the summer of 1775 until the summer of 1781—almost the entire duration of the war—the commissariat system fed the Continental Army. Commissaries, normally merchants either in or out of uniform, scoured the countryside to buy the necessary supplies. During those six years, four men—Joseph Trumbull, William Buchanan, Jeremiah Wadsworth, and Ephraim Blaine—successively directed Commissary Department affairs, with varying degrees of success.

Trumbull's system for buying and issuing subsistence worked so well that for the first year-and-a-half of his tenure the Continental Army was generally well supplied with subsistence. Indeed, it is amazing that Trumbull accomplished as much as he did since he faced many difficulties, not the least of which was Congress.

Since Congress had not dictated the department's organization and function, Trumbull could write on a clean slate in shaping it. He centralized the supply arrangements that the various commissaries had used in 1775 to provision the troops of the New England colonies at Cambridge. Washington helped by directing these commissaries to account for all provisions stored in their magazines and then close their accounts. Trumbull retained the services of some of these commissaries as he organized departments to provide support for the three troop divisions-northern, middle, and southern-established by Washington in 1775. Backing up these field units were departmental units that procured and delivered supplies needed by the entire Continental Army.[17]

Congress had not outlined the extent of the commissary general's authority. Trumbull reasonably assumed he was responsible for feeding the Continental Army wherever it encamped. When the main army moved to New York, however, his control over commissary matters dissipated. Without considering that confusion would inevitably result from the overlapping jurisdictions, Congress authorized several independent agents to buy food for the troops. In December 1775, for example, it paid Carpenter Wharton to supply rations to the battalions being raised in Pennsylvania. When the Pennsylvania troops moved to New York, Wharton continued to supply them at the direction of Congress.[18] Meanwhile, however, Congress had advanced $35,000 to the New York Convention to contract to supply the troops defending that area. Thus, when Washington arrived in New York in April 1776, he learned that the New York Convention had contracted with one Abraham Livingston, who was claiming the right to provision all the troops there except those who had arrived from Cambridge. Washington's concerns over this diffusion of the commissary general's authority were alleviated when Livingston voluntarily relinquished his contract in May. But that did not end the problems. At the end of June, Congress intended to appoint Carpenter Wharton as commissary for provisioning a camp to be established in New Jersey. Washington warned that conflicts and competition for subsistence supplies would inevitably result. He insisted that only one man should direct the Commissary Department, and that man should be Trumbull (who, on the assumption that he had the authority, was already arranging for the camp's subsistence). Congress changed its arrangements with Wharton, stipulating that he should furnish rations to the troops marching from Pennsylvania to New Jersey only if Trumbull did not direct otherwise.

## *Regional Conflicts*

A controversy over commissary affairs in the northern department further illustrates Congress' confusion. This controversy was longer and more serious since it exacerbated the jealousy that existed between New Englanders and New Yorkers. Even before Congress appointed Joseph Trumbull as commissary general, it had recommended to his father, Governor Jonathan Trumbull of Connecticut, that he appoint commissaries at Albany to receive and forward provisions to the forces on Lake Champlain. So, the governor, on June 8, 1775, appointed Elisha Phelps as commissary for these forces. Phelps stationed himself at Albany to receive and forward supplies.[19]

In July 1775, Congress named Major General Philip Schuyler, a New Yorker, to command the northern department. Unhappy with the supply situation, Schuyler asked Congress to appoint a commissary and, in accordance with contemporary practice, suggested his nephew, Walter Livingston, another New Yorker, for the post. On July 17, approximately a month after Congress created the Commissary Department but two days before it appointed Joseph Trumbull to head it, Congress designated Livingston as commissary of stores and provisions in the northern department. Thus, when Schuyler became commanding general of the northern department, not only were Connecticut troops brought under his command but a New Yorker replaced the Connecticut commissary, Elisha Phelps.

Congress had actually limited Walter Livingston's appointment to "the present campaign," meaning that of 1775, but he continued to provision the troops in the northern department in 1776. He did not consider himself under Trumbull and disputed Trumbull's authority. Schuyler supported Livingston in the ensuing controversy, which only increased the confusion in the commissariat in the northern department. In July 1776, Congress finally intervened to settle the dispute by announcing that Joseph Trumbull had full power to supply the armies both in New York and in the north, to employ and appoint such persons under him as he saw fit and even to dismiss any deputy commissary.

Trumbull never did control commissary supply in the southern department, though early in the war the southern states helped supply food for the troops in the middle department. On April 27, 1776, Congress appointed William Aylett as deputy commissary general for the troops in Virginia. Operating independently of Trumbull, he communicated with the Board of War and the President of the Continental Congress and received his instructions from Congress. Fortunately, military operations in the southern department were limited before 1779, and troops that did campaign there were supplied by the individual states.

## *Contracting Alternatives*

Trumbull also had to contend with the idea that his entire method of operation could be replaced, due to Congress' apparent reluctance to commit itself to the commissary system.

A congressman wrote to Trumbull in December 1775 that some members of Congress thought the Continental Army could be supplied by contract at much less expense and with equally good provisions. In August 1776 General Schuyler wrote the President of Congress, echoing the complaint that the cost of provisioning the troops in the northern department was far too high. Denying that he sought to impugn the integrity of any commissary, and describing himself as "far from being a friend to contracts, on account of the chicane that usually attends them," he asserted that a properly administered contract appeared to him to be superior to the commissary arrangement. "Every man acquainted with publick business," he stated, "must allow that it cannot be carried on, for a variety of reasons, with that economy which prevails in private affairs."[20]

A congressional committee appointed to suggest ways to feed the northern department submitted its recommendations in September 1776. On the basis of this report, Congress appointed yet another committee, this one to contract for rations to feed the Northern Army, as General Schuyler recommended. Each part of the ration was to be assigned a value, and the contractor was to pay for any part he did not supply. In passing this resolution, Congress again tampered with Trumbull's authority to provision the Continental Army, an authority that only two months before it had assured him he had. Trumbull, seeking allies, sought the opinion of Eldridge Gerry, a member of the Continental Congress, on supplying the Northern Army by contract. Gerry agreed that it was "absurd to supply one Army with and the other without a Contract."[21] Fortunately for Trumbull, Congress changed its mind before the end of December. Acting on the advice of a committee returning from Fort Ticonderoga, Congress decided that the commissary general could better supply the Northern Army than contractors could.

Congress did approve deputy commissary general Aylett's proposal to contract for rationing the troops in Virginia. It also sanctioned other contracts for feeding troops, but such contracts usually supplied small units separated from the main army or being recruited. Until Robert Morris became Superintendent of Finance in 1781 and adopted the contract method, it was primarily the commissaries who provisioned the Continental Army.

## The Winter of 1776–77

Despite the handicaps he faced, Trumbull supplied the troops during the Boston campaign so well that Washington in the summer of 1776 wrote, "Few Armies, if any, have been better and more plentifully supplied than the Troops under Mr. Trumbull's care."[22] Trumbull deserved this credit, but it was still early in the game. War enthusiasm was still high; Washington's army remained in the midst of a largely sympathetic people; Continental money still had value; and provisions were obtainable. The real test of provisioning the troops was yet to come. Washington's evaluation of the performance of the Commissary Department when the troops were camped at Morristown in the winter of 1776–77 differed greatly.

In December 1776, Trumbull went to Hartford, Connecticut, to supervise the buying and packing of salt provisions for the coming year's campaign and to prepare his books for inspection by the Congress' auditors. He appointed Carpenter Wharton to act as his sole deputy with Washington's army during his absence. Washington agreed to this arrangement but with reluctance, stating that he thought provisioning the troops during operations in New Jersey would require "an officer of much sagacity and diligence."[23]

Washington's fears were justified. Wharton failed miserably. At the very time that Washington wanted to capitalize on the Christmas Day victory at Trenton, lack of food prevented the main army from moving. Washington had to wait two days before crossing the Delaware, and then had to let the troops "victual themselves where they could."

Both the President of Congress and Washington criticized Wharton's procurement methods. They told Trumbull that Wharton had allegedly announced publicly that he wanted to buy large quantities of rum, pork, and beef and could pay the highest price for each. Roger Sherman wrote Trumbull and observed, "I don't know on what terms you employ people but sure I am it will not do to employ them to purchase on Commissions unless you limit the prices: For the greater prices they give the more will be their profits, which is such a temptation as an honest man would not wish to be led into."[24]

## *Reorganization and Regulation*

The problems with Wharton were only the tip of the iceberg. Commissaries in the middle department were accused of jacking up prices by auction-type bidding to swell their commissions. In March 1777 a congressional committee investigating their conduct substantiated many of the charges. The commissaries had squandered public funds by fraudulently raising prices to reap higher commissions. Further, some were incompetent as well as crooked.

Trumbull responded to these crises by dismissing Wharton and instituting corrections in the middle department, but Congress acted as well. A committee began drafting a regulation for the Commissary Department and asked Trumbull to submit his ideas based on his experience. Trumbull, who had applied to Congress for regulations twelve months earlier, presented a draft of his proposals two days later and urged immediate action. He apparently liked the current idea of dividing his office into two separate departments, but he adamantly opposed the idea of continuing to pay a fixed salary to the commissary general. He had never cared for that arrangement and again proposed that he be paid on a commission basis—1/2 percent of all monies passing through his hands. He wrote Jeremiah Wadsworth that he intended to have his own terms or nothing, though he did not know whether Congress would even ask him to remain.

By this time, Trumbull had been away from the army for months. Washington finally informed Trumbull that the main army would have to disperse for lack of food if he did not come to Morristown and buy adequate supplies.

On June 10, 1777, Congress adopted a detailed regulation—the text fills fifteen pages of its printed Journal—that established separate departments of purchases and issues, each headed by a commissary general. Trumbull continued as commissary general of purchases and Charles Stewart began as commissary general for issues. Congress assigned four deputies to ease Trumbull's burden. It also raised Trumbull's salary but kept it a salary rather than a commission. Congress also put the purchasing commissaries on a fixed salary, further discrediting the commission method.

Congress also ordered the commissary general of purchases to issue his deputies and assistants a book of ten-column pages into which they would

enter the following information for every purchase: date of purchase, seller's name; place purchased; species and quantity of provisions; number, color, and natural or artificial marks of livestock, price paid, total amount of purchase, and weight. By such detailed recordkeeping, Congress sought primarily to prevent embezzlement of public property and outright fraud, but it also desired to systemize purchase administration.

Congress legislated two additional measures to check corruption in the commissary departments. To prevent the deliberate raising of prices, the commissary general of purchases had to assign purchasing agents clearly defined areas of operation, thus preventing them from bidding against one another. Furthermore, his deputies were to keep themselves and their assistants apprised of the market so that they would not pay more than the going prices. Congress intended to enforce these regulations by suspending, without pay, deputies guilty of fraud, misconduct, or neglect. Four months later, at the behest of Thomas Jefferson, Congress mandated that assistant deputy commissaries had to give bond for $5,000 to the president of Congress for the faithful performance of their duties.

### *Demoralization and Further Reorganization*

Resignations abounded. This left the department demoralized and unprepared for its work. On occasion Trumbull himself had to stand at the scales to check the weight of deliveries. On July 19, 1977, he submitted his resignation. Two weeks later he notified Congress that he would not consider himself obliged to perform the duties of his office past August 20.

Washington warned Congress that the lack of commissaries would severely hurt the army. His alarm was prescient. The reduced and demoralized Commissary Department performed abysmally in supplying his troops during their 1777–78 winter encampment at Valley Forge. Again, both congressional inattention and congressional overreaction played major roles in the disaster:

After six months—far too late to help the troops at Valley Forge—Congress realized that the purchasing system set up by the 1777 regulation could not supply the Continental Army. It appointed a committee in January 1778 to revise the system. Congress was ready to remove William Buchanan, Trumbull's successor, and rescind the regulation. Buchanan acted first, however, resigning on March 20, 1778. Many wanted to reappoint Joseph

Trumbull, but when that was not possible, the committee endorsed Jeremiah Wadsworth for the office.

On April 14, 1778, Congress revised the Commissary Department regulation. It incorporated most of the suggestions from Trumbull that it had rejected the summer before. In so doing, it at last allowed the commissary general to run his own department. He could now give the commissary general of purchases full authority to appoint and remove any officer in his department and to restrict the assistant purchasing commissaries to specific districts in which they would make their purchases. To make the posts attractive to competent men, Congress allowed a commission of 2 percent to assistant purchasing commissaries on all money they disbursed. And finally it granted a commission to the commissary general of purchases: 1/2 percent on all sums paid by him to his deputies for public service. The same percentage of commission was allowed on the money the deputies paid to their respective assistant purchasing commissaries.

After Trumbull's successors proved less adept than he at procuring, Congress went through various machinations to improve upon the system. The result was a complicated, confused, and expensive system of supply organized under three separate chiefs: a clothier general, a quartermaster general, and a commissary general. Under these officers were a wagonmaster general, a commissary general for forage, a commissary general for issue, a commissary of hides, and commissary general of purchases.

## The Quartermaster Department

### *Initial Organization*

With the Quartermaster Department also, Congress sought to establish a system that would perform efficiently and without corruption. But, as with the Commissary Department, these objectives were not to be realized. Congress, by omission and commission, compounded the department's own operational and leadership problems.

Like Commissary General Trumbull, Thomas Mifflin, the first quartermaster general, also had a clean slate on which to organize his department; Congress had not set up a regulatory framework for his department. But Mifflin had barely organized his department when he resigned in May 1776

to accept a promotion. Steven Moylan, another of Washington's aides de camp and a businessman who had been involved in the shipping business in Philadelphia since 1768, replaced Mifflin.[25]

Moylan had been quartermaster general for barely three months when a congressional committee arrived on September 24 to inspect the state of the army in New York. After three days of investigation, the committee persuaded Moylan to resign so that Mifflin could be reappointed. Moylan could not really be blamed for the sorry state of affairs since he was in charge so briefly. Regardless, Congress wanted him out. So Mifflin again became quartermaster general.

During the winter of 1776–1777, Mifflin drew up a new plan for the organization of the department based in part on the experiences of the campaigns of 1775 and 1776. Washington approved the plan, which created separate forage and wagon departments within the department, and submitted it to Congress. In May 1777, Congress approved the plan. It also provided detailed regulations for the department—at the same time as it contemplated the detailed regulations it was to place on Trumbull's Commissary Department.

In a sharp departure from its previous practice, Congress issued detailed directives governing Quartermaster Department administrative procedures. It instituted a system of accountability that emphasized documentation and recordkeeping. As with the Commissary Department, the aim was not to control day-to-day management but to prevent fraud. The quartermaster general was to submit monthly reports called returns, culminating in a combined general return, to the Board of War, the commander in chief, and the commander of each military department—all this in an age without copy machines or even carbon paper. Any subordinate failing to submit a monthly return was to be dismissed from the service. To ensure uniform returns, the quartermaster general was to devise a standard form. When goods changed hands, receipts were to be issued specifying the item, quantity, and quality, some supplies, such as forage, were not to be issued except upon written order of a commanding officer.[26]

The effort involved in putting such an involved system into place, coupled with other duties, forced Mifflin to be away from his main duty of supplying the army. Washington had to act as his own quartermaster general, as he often had during the campaign of 1777. Mifflin continued as quartermaster

general, although he wanted a line command, until October 8, 1777, when he resigned for reasons of health. Not wanting to accept the resignation, Congress delayed naming a replacement. The delay annoyed Washington, who complained on December 23 that since July he had received no help from a supply chief. The lack of an active quartermaster general and the failure of Congress to take appropriate action contributed greatly to the distress of the troops at Valley Forge in the winter of 1777–1778, compounding the difficulties due to the failed performance of the demoralized Commissary Department.

As in the case of the Commissary Department, in trying to combat fraud by regulation, Congress had defeated efficiency. A congressional committee Washington invited to inspect the army at Valley Forge soon concluded that the new regulations would not work, as it was not possible for Congress to persuade the staff departments of its idea of efficiency.

### *Centralization of Authority*

The solution the committee envisaged was simple yet radical. Congress must abandon the decentralized, highly regulated system into which it had organized both departments and place its trust in individuals by concentrating power and authority in them. Success would have to depend on the men running the system: "characters of known and approved abilities" rather than "paper systems."[27]

The character of known and approved abilities to whom Congress turned in March 1778 for the quartermaster general role was Nathanael Greene.[28] Greene came from a Rhode Island mercantile family. Already a major general, he was reluctant to become quartermaster general since he considered this position a step down in his career. Protesting that no quartermaster general had gone down in history, he accepted the job only upon the urgings of Washington. (He did, however, seize the opportunity to rehabilitate his commercial affairs, which he had neglected as a combat officer.[29])

Discarding the Mifflin plan previously adopted by Congress, the committee proposed the appointment of a quartermaster general and two assistant quartermasters general. As a condition of accepting the appointment, Greene insisted that Congress name as his chief assistants his two business partners, Charles Pettit, a lawyer and accountant, and John Cox, an eminent

Philadelphia merchant with whom Greene operated an iron foundry and had other ventures. Already, Greene and Pettit had formed a general partnership, which was to last for Greene's term of office. Both Cox and Pettit were related to Joseph Reed, one of the members of the congressional committee.

His partnership with Cox and Pettit was not Greene's only source of revenue. He engaged in privateering ventures with Samuel A. Otis of Boston, who contracted with both the Quartermaster and the Clothier Departments. He also owned an interest in the Batsto Furnace, which supplied the army with ammunition. Finally, he was a partner in the firm of Barnabas Deane and Company, which included Jeremiah Wadsworth, then the commissary general.

### *Commissions and Business Interests*

Under Congress' plan, Greene would perform the military duties of the quartermaster general and direct all purchases and issues. Cox would make all purchases and examine all stores, and Pettit would keep all accounts and all cash. Congress intended to compensate these three men with a 1 percent commission on the money spent by the department, which they could divide among themselves. They subsequently agreed that each man would receive one-third of 1 percent.

Congress realized that commissions played to greed and should be avoided but believed that an exception was needed. It could not pay these men an adequate salary without arousing demands for a pay raise from every other officer. Further, its own committee had concluded that the only way to avoid a recurrence of the scandals was to obtain the services of men of property, morals, and character, as it believed it had done. With preparations still to be made for the approaching 1778 campaign, Congress quickly adopted the proposal and appointed the nominees.

Like his predecessor, Thomas Mifflin, who had thrown government business to his brother and his associates in Philadelphia, Nathanael Greene took care of family interests when he became quartermaster general. However, his family members appear never to have had any extensive business with the Continental Army and, so far as Greene's biographer could determine, they received the market price for goods they sold to the Quartermaster Department. Also, unlike some others in public life, Greene appears never to have used public funds for private purposes.

Greene offered his brother Jacob the post of purchasing agent for the Quartermaster Department in Rhode Island. At that time Jacob Greene and Company, consisting of Jacob and Nathanael Greene and their cousin Griffin Green, operated the family-owned Coventry Ironworks and engaged in trade, financed privateers, and sold supplies to the Continental Army. Griffin once asked Nathanael to give him public wagons to haul goods through Connecticut, New York, and New Jersey. Such wagons would enable Jacob to evade state restrictions on the movement of goods and avoid state taxation, as the stamp of the United States exempted goods from state regulation. Griffin tried to argue that former Quartermaster General Thomas Mifflin had made money in this way. It is uncertain whether Nathanael Greene accepted this proposition, but the rumor circulated and damaged his reputation.[30]

Greene found the commissions he earned as quartermaster general equal to his "utmost wishes," and for two years he supplied Jacob Greene and Company with large sums to be invested in privateering and shipping. According to a "List of Vessels that belong to Jacob Greene & Co.," the company owned varying shares in 20 vessels, ranging in size from 14 to 150 tons.[31]

## *Scandals and a Quest for Accountability*

In June 1778, Congress reeled from a series of scandals concerning the expenditures in the Quartermaster Department during the preceding year, when the army had been badly supplied. Congress directed General Washington to investigate the conduct of former Quartermaster General Mifflin and his subordinates. A committee of Congress, reporting on the matter nearly a year later, brought up further information: while the army was in extreme want, public wagons had been hauling private goods to New York and New England—just as Jacob Greene had argued. The main culprit was said to be a deputy quartermaster general who was still in office. Mifflin was not directly incriminated, but on the strength of this and other evidence he was court-martialed though not convicted.[32]

The scandals intensified the congressional quest for accountability, especially regarding Quartermaster General Greene and Commissary General Jeremiah Wadsworth. Their departmental expenditures had reached staggering amounts. In the two campaigns before he resigned at the end of 1779, Wadsworth had disbursed $79 million; Greene had paid out about the

same amount over a similar period. Those huge sums did not include an enormous issue of certificates for which the government was bound. What most frustrated Congress was that such cascades of money did not produce commensurate results.

Congress kept asking for an account of expenditures and an itemization of the certificates issued, but neither Wadsworth nor Greene could get the information from their deputies. Both considered Congress' requests unreasonable, claiming that the paperwork required by the Board of Treasury was impractical under war conditions and in view of the way their departments functioned.[33] Writing in July 1779, Greene told the Board of War and Ordnance that logistics was not a science; provisioning the army—whether it be food or camp equipment—was "a business in its own nature, not reducible to certain modes, [that] must vary with time and circumstances."[34] He averred that his department could not be run like the "plain business of a common storekeeper." Neither he nor Wadsworth would accept responsibility for the crimes of their subordinates, many of whom they had not appointed. They said they simply had no means to control them. Their argument had merit, and Congress might have acquiesced if money had not been flowing through their departments at a rate which in late 1779 and early 1780 approached $200 million a year.

Since Congress suspected that the payment of commissions to purchasing agents had contributed to these high costs, even the commissions paid to the commissary and quartermaster generals came under review in January 1779. Greene, who was in Philadelphia, proposed to Congress that the quartermaster general and his two assistant quartermasters general each be paid a salary of 3,000 pounds sterling and expenses instead of commissions. This amount apparently had been approved by the President of Congress in discussions with Greene, who agreed to serve for this proposed salary or continue under the existing contract—or quit the department entirely. The commissary general took the same position.

Greene surmised that some members of Congress thought he was "making a fortune too rapidly." He viewed such criticism as the work of a conspiracy against him led by Thomas Mifflin, who was himself still involved in charges of misbehavior. In a mid-April letter to James Duane, head of the Board of Treasury, he characterized the criticism as "flattering to my fortune but not less humiliating to my military pride." He had always preferred service in the line, he said, and only the persuasions of Washington and the

congressional committee had led him to serve as quartermaster general. Profit, he noted, had not dictated that course, for he had offered to serve a year as quartermaster general without pay other than what he received as a major general. When the committee had refused that offer, he had proposed serving on the same terms granted to Cox and Pettit. Moreover, he had persuaded Cox to accept a smaller commission than Cox had wanted. Greene had not sought the appointment nor did he wish to continue holding it, he wrote Duane, and if his past conduct was not satisfactory, he wanted "to quit a business wherein I cannot please."[35]

Congress considered ways to correct the problems without repeating the disasters of 1777. One suggestion was to prohibit quartermaster and commissary officers from having a personal interest in vehicles or vessels hired to transport supplies. Every barrel of flour, beef, or pork should be marked with the full name of the deputy who purchased it. All deputies should make detailed monthly reports to the state governors. Officers appointed to act as Continental purchasers by the state governors—under authority granted by Congress—should swear to reveal any known or suspected frauds and abuses.

### *Investigation*

Before implementing these suggestions, Congress in 1780 sent an investigative committee to the main army camp to discharge unneeded personnel, stop excessive rations, abolish posts, and revamp procedures. Congress discussed the feasibility of not allowing officers to resign until they presented their accounts. The higher officers in the departments, who felt they were being pilloried, bitterly resented these proposals. They talked of mass resignation, and a few did leave the service. Wadsworth took the first opportunity to resign and thus escaped serious trouble. Greene often expressed his wish to do the same, saying that fifty times his present pay would not induce him to serve another campaign. Yet he stayed on.

Greene's difficulties proliferated because he could not give Congress a statement of expenditures, which rose to unbelievable heights during the campaign of 1780. Though he was known to be in private trade, Congress was not questioning his integrity but demanding that he submit accounts. Greene plainly resented criticism, continuing to take the haughty posture of a high military officer who had put aside his true career to accept an unwanted post. His pretensions further soured his relations with Congress.[36]

The disrepute into which the quartermaster role had fallen is reflected in a law passed by the New Jersey legislature in the summer of 1779. Aimed at raising one million pounds, the law taxed all citizens for their real and personal estates in New Jersey, but singled out the assistant quartermaster general and the deputy quartermasters general in the state. It levied on such officers a specific tax of not more than 10,000 pounds or less than 1,000 pounds. Many resigned soon afterwards.

### Attempts at Reform

On June 15, 1780, Congress again reformed the Quartermaster Department. It sharply reduced the number of personnel and allowed the quartermaster general only one assistant quartermaster general, appointed by Congress. The plan authorized the quartermaster general to appoint an officer for the main army and one for each separate army, these were designated deputy quartermasters rather than deputy quartermasters general. The plan left the organization understaffed and in low morale.

Congress still intended to continue Greene as quartermaster general and directed him to implement the regulation. Greene did not receive a copy of the plan until July 26. When he saw it, he resigned in the middle of the campaign. He announced that he would issue no more orders and gave Congress ten days to name his successor. Congress accepted Greene's resignation immediately on August 5—much to his chagrin—and debated only whether to dismiss him from the army. But General Washington, among others, defended Greene and warned that disciplinary action against Greene would demoralize the officer corps.[37]

Congress named Timothy Pickering, who had helped draft the regulatory plan of June 15, as Greene's successor. Pickering accepted the appointment but did not welcome it. Writing to the President of Congress, he expressed fears that the public might be more likely to attribute any shortcomings in the department to negligence and mismanagement than to "the singular circumstances of our affairs," and voiced his hope that Congress would justly evaluate his efforts.[38]

### Rampant Profiteering

Pickering's reluctance and foreboding were genuine and valid. Between 1778 and 1780 the American economy had undergone a war boom that

brought financial gains to farmers, merchants, and some laborers. With a few exceptions—civil servants, artisans, and those on fixed incomes—the country appeared more prosperous in 1779 than before the war had begun. But by 1780, the states' finances were in miserable shape. Rapid depreciation of the currency and a steep rise in prices seriously threatened whatever good fortune Americans had experienced. Not surprisingly, when causes of the decline were sought, profiteering was singled out as a prime factor.

During all of America's wars the large profits made by war contractors have concerned, indeed infuriated, the government and the public. As early as August 16, 1777, General Washington complained to the President of the Continental Congress:

> The matter I allude to is the exorbitant price exacted by merchants and vendors of goods for every necessary they dispose of. I am sensible the trouble and risk in importing give the adventurers a right to a generous price, and that such, from the motives of policy, should be paid; but yet I cannot conceive that they, in direct violation of every principle of generosity, of reason and of justice, should be allowed, if it is possible to restrain 'em, to avail themselves of the difficulties of the times, and to amass fortunes upon the public ruin.[39]

Profiteering was rampant. Congress complained in 1777 that in every state there were profiteers "instigated by the lust of avarice who are endeavouring to enrich themselves at the expense of the public." One observer wrote, "The war has thrown property to channels where before it never was and that increased little streams to overflowing rivers, and what is worse, in some respect by a method that has drained resources of some as much as it is replenished others. Rich and numerous prices and the putting of 600 percent or 700 percent on goods bought in peacetimes, are the grand engines."[40] Profiteering was not confined to newcomers. Old mercantile establishments—Otis & Andrews of Boston, for example—were obtaining profits of 50 percent to 200 percent on army clothing, while Washington's ragged troops struggled through the winter at Valley Forge.

Most staff officers tried to limit price increases even though they received their compensation under the commission system. They explicitly instructed agents in the field to buy forage and provisions as cheaply as possible and admonished them not to raise prices. They also took care to prevent price increases by avoiding publicity. Deputy Commissary General Ephraim

Blaine admonished his assistant to exercise "every prudent means to reduce as much as possible the price of every Article wanted for the Army."[41]

Nevertheless, the immutable laws of supply and demand made such efforts a losing battle. If the purchasing agents failed to meet a farmer's demands, he refused to sell—and the army got no supplies. Faced with a choice between impressing the goods—a time-consuming, inefficient, and difficult process—or meeting the farmers' prices, the officials usually capitulated. Staff officers reluctantly advised their deputies "to give the current price for Grain and Corn, for forage, let them be what they may, rather than the Army should suffer."[42]

### *Price Controls*

Unable to hold down the cost of supplies in the field, staff officers sought legislation to control prices. Such measures were opposed by merchants such as Nathanael Greene, who denounced them as "founded in public covetousness, a desire to have the property of the few at a less value than the demand will warrant to the owner." Even Washington, who damned the profiteers as "murderers of our cause," was against price controls on grounds that they were "inconsistent with the very nature of things."[43] Yet both the merchants and Washington were forced to acquiesce.

In September 1778, while in Boston on business, Greene reported to Washington the increasing demand for forage and the "growing extravagance of the people." Hay was 60 to 80 dollars a ton and rising; corn, 10 dollars a bushel; oats, 4 dollars. Carting cost 9 shillings a ton per mile, and the "people [were] much dissatisfied with the price."[44] He had alerted the governments of Rhode Island, Connecticut, and Massachusetts of the need for legislation to fix reasonable prices, but he did not know whether the appeal would work. Unless the situation changed, he told Washington, "there are no funds in the universe that will equal the expense." Deputy Quartermaster General Chase at Boston also reported rising prices and added that state wagonmasters "were bidding upon Continental wagonmasters."[45]

Washington believed the scarcity of forage was artificially created by persons monopolizing the supply to raise prices and thereby profit from the Continental Army's distress. In September 1778 he sent a circular to the governors of Rhode Island, Connecticut, New York, and New Jersey and to

the president of the Massachusetts Council, calling upon them to limit prices and to compel sale if necessary. He confided to Greene, however, his fear that "depreciation of our money is the Root of the evil, and that, until it can be remedied, all our endeavors will be in vain."

Meanwhile, "the growing extravagance of the people" forced Greene to strongly recommend to Rhode Island's governor "the immediate interposition of legislative authority to fix some limits to the price of articles taken for the use of the army." Although the governor doubted the efficacy of limiting prices, he thought a partial regulation was needed to ensure the army its supplies. Other highly placed officials, including Assistant Quartermaster General Charles Pettit, also favored state intervention to halt the rise of prices. So desperate was the army's need for food in October 1778 that even Jeremiah Wadsworth, who had accepted the position of commissary general on the condition that Connecticut's price-regulating act be suspended, favored a congressional resolution recommending price controls to the states.

Requests for state price regulation came often during the Revolution. The Continental Congress itself had included the idea of price regulation in the articles of association it had adopted in 1774. As the Continental Congress did not have power to legislate, it recommended that the state legislatures enact such legislation, and some of them did pass laws fixing the prices of labor and commodities. In 1776, the New England states agreed upon a series of price and wage controls, ordering prosecution of offenders, with one-half the amount of the fines imposed on a profiteer to go to the informer as a bounty. Actions taken to regulate prices often proved ineffectual, however. For example, the demand for salt in 1776 was so great that unscrupulous profiteers soon hoarded it and sold only at exorbitant prices. So many complaints were made against them that Congress encouraged the states to fix the price. Salt continued to be scarcer and dearer at Philadelphia than in those states where no price regulation had been attempted. As a result, Congress late in the year recommended that Pennsylvania remove all restraints on the sale of salt.

By 1779, most officials were questioning the use of price controls. It was clear that the controls in Connecticut and other states had not kept prices down; they had merely made supplies unavailable. When in June 1779, Congress recommended suspension of all price-fixing legislation, it removed a major obstacle to the government's procurement program.

## Reprise of the Contract System

### *Appointment of Robert Morris*

By late 1780, Congress had abandoned all pretense of supplying the army, pushing that responsibility fully back onto the thirteen states via the system of specific supplies. With the treasury empty, credit gone, and the union a mere "rope of sand," Congress recognized that an entirely new course must be taken.

Congress determined that a superintendent of finance was needed. Robert Morris, merchant and former member of Congress, was unanimously elected to this office on February 20.[46] He accepted on May 14, 1781, but did not take the oath until June 27, 1781. The selection of Morris to the post is ironic in view of the widespread public indignation at profiteering then current.

Morris epitomized the role of the colonial merchant in the Revolution, and his public integrity had indeed been called into question. After he became a member of Congress in 1775, Morris helped raise supplies for Congress and the government of Pennsylvania. On December 13, 1775, soon after Congress opened American ports to foreign trade, he succeeded Thomas Willing, his business partner, as a member of the Secret Committee of Trade, the main agency engaged in buying foreign goods, either overseas or from the merchants who imported them. Morris became the Secret Committee's chairman. Using his wide mercantile contacts and operating through agents in Europe and the West Indies, Morris obtained considerable supplies from Europe, which moved through the islands, destined for the use of the Continental Army and Navy.

Morris dominated the committee, as well as the Committee of Secret Correspondence, and became the virtual manager of foreign procurement. He was connected with most of the other members of the Secret Committee of Trade in commercial enterprises, and his firm, Willing and Morris, conducted much of the committee's business under its own name, with only the bookkeeping entries separating the company's affairs from those of the government. Not surprisingly, a large share of the committee's funds went to contracts with Morris and his associates. From 1775 to 1777, the committee expended over $2 million—at a time when Continental paper money was nearly equal in value to specie, or coin. Payments of $483,000, nearly a

fourth of all disbursements, went directly to the firm of Willing and Morris. Morris' predominance in foreign procurement was such that when news arrived that France would aid America, only Morris had to be told since he served on all the essential committees and would be able to organize appropriate action. "I well know," wrote his associate John Langdon, "that almost the whole of the business must pass thro' your hands."[47]

The Secret Committee of Trade was superceded in 1777 by the Commerce Committee, which disbursed a total of $1,300,000 in a period when the real value of currency had begun to depreciate badly. As noted earlier, Morris had already received $80,000 directly, and he probably shared in other large disbursements. As head of the committee, he was in the enviable position of negotiating contracts with himself or his associates.

Inevitably, Morris' public and private activities became intertwined, and in 1779 Congress charged him with using public funds for his personal advantage. The congressional committee that investigated the charge failed to substantiate it, but Morris' reputation suffered. Between 1778 and early 1781, Morris avoided public service, preferring to devote his time to the pursuit of wealth. By February 1781, when Morris was called upon to assume the office of superintendent of finance, he had become the most prominent and influential merchant in America.

### *Implementation of the Contract System*

When he accepted the new office, Morris specified that he took no responsibility for supplying the troops. Nevertheless, the failures of the specific supply system and the commissaries forced him into the role of provisioner.

Not surprisingly, Morris had a distinct opinion on the matter. He believed that in all warring countries "experience has sooner or later pointed out contracts with private men of substance and talents equal to the undertaking as the cheapest, most certain, and, consequently, the best method of obtaining those articles, which are necessary for the subsistence, covering, clothing, and moving of an Army."[48] Implementation of a contract system was Morris' single most important innovation in supplying the army, but he was only following traditional practice. Morris criticized Congress' failure to adopt the European contract system from the very beginning of the war. "The experience of Other Countries could not satisfy America," he noted

with exasperation. "We must have it of our own acquiring, we have, at length bought it, but the purchase ha[s] nearly been our ruin."[49]

But Morris did not prefer a contract system simply because it was conventional. He was convinced that such a system would also be the cheapest. Sealed, competitive bids would keep the price per ration down to a minimum while allowing him to cut personnel costs, shut down expensive military posts, and keep from paying for wastage and spoilage. It would be the most efficient as well. If the contractors did not provide a sufficient number of good rations, they would deprive themselves of a portion of the profits. Likewise, if they supplied bad rations, "the Contractors will suffer the loss of it when condemned, so that they are bound in Interest to take care that the Beef put up be of a good quality."[50]

In addition, the contract system would save the cost of transport since the contractors would deliver the provisions. By cutting functions formerly performed by the supply departments, the contract system would without question affect overall savings. Morris conceded, however, that the success of the system would depend on the character of the contractors. They would have to be men of integrity and fidelity who would not betray or defraud the government.

Congress had, in fact, been considering a contract system for some time. Washington, by now probably willing to try anything to avoid another Valley Forge, endorsed such a plan of supply by contract, asserting that "a vast saving" would undoubtedly result. Washington suggested several specific clauses for inclusion in the contract, such as the requirement for a local contractor agent and a government inspector to minimize disputes and loss of receipts.

Morris became involved in army supply matters on June 25, 1781, when the Pennsylvania Assembly placed funds at his disposal and empowered him to buy the state's quota of specific supplies. Morris accepted his post as agent of Pennsylvania with a hearty dislike of the state supply system. He believed that "taxing in specifics [was] expensive to the people, cumbersome to the Government and generally inadequate to the Object."[51]

### *Soliciting Competitive Proposals*

To augment state supplies, Morris introduced his system of contracts for feeding the army as soon as he was sworn in as superintendent of finance. He advertised an announcement dated June 30, 1781, in the July 2 Pennsylvania Packet newspaper. The notice said that sealed proposals "for supplying by contract" the food for the troops and others in Philadelphia, from the contract's execution until January 1, 1782, must be received in the Finance Office "from the date hereof until Saturday the Seventh of July next."[52] The proposals were to contain the lowest prices and longest payment terms at which the parties would contract. A similar notice was placed in the same paper for the provision of the town of Lancaster. Morris asked the Board of War and Ordnance to draft the form of a contract, but the board realized that Congress had not yet authorized anyone to contract. It sought clarification from Congress which, on July 6, 1781, validated Morris' action before taking office and, on July 10, vested him with the power to make contracts for all supplies needed by the Continental Army as well as for its transportation.

On July 7, 1781, six proposals for the Philadelphia contract were received. The firm of Wager and Serrell offered "Terms the most reasonable as to Price and equally conveneint [sic] as to Time," so Morris negotiated with them. On July 9 and 10, Morris again wrote to the Board of War requesting the contract draft. He wrote Wager and Serrell that their offer "entitled them to be first treated with." By July 12, the board had drafted a contract, and Morris met with Wager and Serrell. They objected to the form of the contract and "refused to issue." He met with them again on July 13, after the board had drafted a second contract, but still they refused. By this time, Morris was advertising for other contracts, with a statement that proposers could see the contract draft in his office.

On July 16, Morris agreed to a contract with Henry Dering for supplying Lancaster. Dering's terms were "the most beneficial to the public."[53] Morris next concluded the Philadelphia contract with Serrell (Wager having declined to contract). The contracts were sent to the Board of War and were signed on July 18 and 19, respectively. Dering apparently completed his contract successfully—no mention to the contrary exists in Morris' papers—but Serrell was subsequently replaced.

These first two contracts set the precedent for Morris' contracting operations for the rest of the war. Advertisements inviting sealed proposals would be accepted until a specific date, then opened; the best proposal would then be identified, and negotiations would be held with the selected proposer to agree to a satisfactory contract. In emergencies, direct purchase without prior advertising would be authorized. Two qualifications were put in place. First, "men of substance and talents," caliber and experience, must be chosen as contractors; some degree of what in today's government parlance is termed *responsibility* was required. There is no record that anyone's bid was rejected for failure to meet this criterion; apparently, only successful and well known merchants submitted bids. Second, the lowest price would not necessarily prevail, as the advertisement also required the merchant to list the longest terms of payment acceptable. This criterion was critically important in view of the government's shortage of money, if a merchant would wait longer for payment, that would offset his higher price.

Despite his endorsement of competitive bidding, Superintendent of Finance Morris exhibited some of the eighteenth century tendency toward favoritism. To encourage William Duer to bid on a contract to supply West Point and the posts above it, Morris gave him an order to deposit a quantity of beef and flour at West Point. If Duer won the contract, some of the provisions would already be there; if he lost, Morris would arrange for them to be bought by the contractor. Duer did not win that contract, but later, when the low bidders gave up their contract for the posts north of Poughkeepsie, he secured it. During the rest of the war, Duer continued to receive contracts from Morris to supply troops in the New York-New Jersey area. All the contracts were in the name of Daniel Parker and Company, the ownership of which was split evenly among Duer, Parker, and John Holker, the French consul who was already involved in French-American contracts.

### *Failures of the Contract System*

As Morris assumed his duties, the main army had for two years been compelled to lie idle in the Highlands of the Hudson because of insufficient supplies and inadequate strength. In September 1781, however, the French West-Indies fleet led by Admiral de Grasse defeated the British fleet off Yorktown in the Chesapeake Bay. Landing at Yorktown, Lafayette's American troops blocked a British retreat by land. Nine thousand Americans led by Washington, joined by seven thousand French under Rochambeau, seized Yorktown in what would be the last major engagement of the war.

Buoyed by French and Dutch loans and aid, Morris had been able to provision the Continental army on its southward march to Yorktown. Without his financial connections, attention to detail, and superb administrative talents—and issue of over one million dollars of personal credit—the outcome of the battle, and possibly even the war itself, might have been different.

An end to the war was not formally proclaimed until April 1783. Until that time, the army was maintained and had to be supplied; that it did not have to engage in battles was fortunate. Morris' contracting system was successful initially, the troops were supplied more economically than under the earlier system. But familiar criticisms soon developed: contractors sold tainted provisions at inflated prices; the dispute resolution process was too long; and, despite a contract clause requiring it, contractors did not maintain adequate reserves.

Still flush with foreign loans, Morris intended in December 1781 to extend to the entire army the system of contracts he had used to supply Pennsylvania's and New York's military posts. Contracts were awarded to several men including Tench Francis, who would later serve as Purveyor of Public Supplies in the young Republic, and Comfort Sands, whom Morris valued for "his Character as an honest man and a good Whig stood high."[54]

Morris' confidence was misplaced. Disputes between Sands and the army arose as early as March 1782, and by May the complaints were legion, if not new: spoiled flour, rotten meat, bad rum, and adulterated whiskey. Soldiers even had to walk three miles from camp to receive their food at a spot chosen to suit the contractor's convenience.

On May 25, Washington exploded at Sands' continued neglect of the army: "Why Sir are the Troops without Provisions? Why are the deposits which have so often, and so long ago been required by General Heath, and pressed by myself, neglected? Why do you so pertinaciously adhere to all those parts of the Contracts as are promotive of your own Interest and convenience . . . and at the same time disregard the most essential claims of the public; thereby hazarding the dissolution of the Army and risking the loss of the most important Post in America?" Washington then answered his own questions. Sands' "thirst of Gain" caused him to cut comers, avoid necessary expenses, and interpret every dispute in his own favor, Washington said. A "practitioner of dirty tricks," he was always ready to take advantage of those

parts of the contract that enhanced his convenience or emolument. Wrote Washington: "Mr. Sands, Sir, if I have not formed a very Erroneous opinion of him is determined to make all the money he can by the Contracts. Herein I do not blame him, provided he does it honestly and with a reciprocal fulfillment of the agreement. Of a want of the first I do not accuse him but his thirst of Gain leads him in my opinion into a mistaken principle of Action."[55]

The fact that the supply contracts involved numerous parties did not help matters. The requirement to supply meat, for example, was subcontracted by one of the awardees. Learning from experience, Morris had inserted a clause allowing him to appoint an inspector to settle all disputes arising under the contract. This was especially pleasing to Washington. In September 1782, one Ezekiel Cornell accepted this post of inspector of contracts.

Inspectors or arbitrators could not solve some problems, however. When the army complained that their issues of food and rum were less than that required, the contractors retorted that payment was not made on time. But the contractors had contributed to this problem. Principal contractors, such as the beef suppliers, privately agreed with one another to make joint demands upon Morris, submitting their bills together in a demand for one huge lump sum payment. There appears to have been a good deal of pooling of risks and profits, which defeated the competitive process upon which the contracting system was based.

Furthermore, merchants had bought shares in the contracts much as investors buy shares today. For example, early in 1782 John Holker, the French consul who already had a one-third interest in William Duer's northern posts contract, obtained an interest in the four shares that Duer had bought of Walter Livingston's 13/24 interest in the Comfort Sands supplies contract. (Early in the War, Livingston had been commissary for the New York troops.)

The failure of the contract system added to Washington's anger and the army's distress. Morris had been overly optimistic in trusting to economic self-interest to solve the army's supply problems. In the hands of grasping merchants, a contract, even with arbitration clauses written into it, was a frail reed to lean upon; the agreement's stipulations could be shoddily complied with or simply ignored.

An even more serious problem arose during the summer of 1782 when Morris could not pay on the Comfort Sands contract. Morris faced huge public and personal debts. When financial setbacks deprived him of the revenue he had counted on, he had to offer the contractors long-term "Morris notes"—notes on which he was personally liable in accordance with the commission agent custom. Claiming that the delay in payment prevented them from keeping the army well supplied, and perhaps looking for a way out of their contract, the contractors alleged that they had immediate debts due and refused to accept the Morris notes, which were not redeemable until January and February 1783. They demanded full indemnification and prompt settlement of their accounts, one-half in specie and three times that amount in notes, and threatened to stop supplying as of October 1, 1782, unless Morris promised to indemnify them from all damages they had sustained because of late payment. Morris refused to make such a promise, seizing the opportunity to make it appear that the contract was cancelled by the default of the contractors.

The contract did indeed lapse, with unfortunate consequences. The government later had to pay $40,000 to the contractors as compensation for abrogation of the contract. Morris avoided having to impress the needed supplies by contracting with the firm of Wadsworth and Carter, which extended him three months' credit but at one-third more per ration than Comfort Sands and Company had charged. The extra expense did not please Morris, who admitted it was a bad bargain. But, he said, characterizing a predicament that has confronted officials throughout the history of government contracts, "In a situation where only bad things can be done, to adopt the least pernicious is all which can be expected."[56]

Morris left his position of superintendent of finance in November 1788. He later served as a member of the Pennsylvania General Assembly, a delegate to the Annapolis convention in 1786, a member of the constitutional convention in 1787, and a Senator from Pennsylvania from 1789 through 1795. His financial downfall came when his extensive land speculations collapsed; his prestige was demolished when a small creditor had him confined from February 1798 to August 1801 in the Philadelphia debtor's prison. Broken in body and spirit, he died in 1806 in Philadelphia.

*Chapter 2*

# The Young Republic

## Demobilization

After the war, as after all American wars until the Korean War, the army quickly demobilized.[1] A small army did not need an extensive field organization to supply its reduced needs. Therefore, in keeping with the accepted theory that the army needed the Commissary General and the Quartermaster General only during war, the Confederation Congress included them among those discharged in 1783. For the few remaining troops, Congress made the secretary of war responsible for transporting, storing, and distributing supplies, and the Board of Treasury responsible for buying all military stores, including food and clothing. The actual buying would be done through a system of contract agents. Congress divided the country into three military departments, with a military agent in each. These agents, with their assistants, would move supplies and troops within the department. Since the president also appointed the assistant agents, the three military agents had no way to enforce accountability by their subordinates. This system soon led to large property losses.

## Peacetime Army Contracting

Congress waited until January 1785 to replace Robert Morris with a three-man Board of Treasury, but the board did not begin operating until April 21, with William Duer as its clerk.[2] Since Morris' contracting procedure was the model for the leaders of the Republic, these three commissioners followed his lead, advertising and awarding contracts to the lowest bidder. These early contracts were for feeding the troops at frontier outposts, but later contracts were to provide the troops with their new suits of clothing on an annual basis.

In 1785, the commissioners awarded to James O'Hara their first contract for feeding the troops at the frontier posts of Fort Pitt, Fort McIntosh, and Fort Harmar. O'Hara had to provide the standard ration: one pound of beef or three-quarters of a pound of pork, one pound of bread or flour, and one gill

of rum. For every one hundred rations, the contractor also provided one quart of salt, two quarts of vinegar, two pounds of soap, and one pound of candles. The soldiers supplemented this ration with the produce of post gardens and the abundant game provided by hunters.

Soldiers criticized O'Hara for his performance, as they had criticized his predecessors during the Revolution. Colonel Josiah Harmar, commanding the frontier troops, observed that it was fortunate that fish were so plentiful at Fort McIntosh that summer, since the contractor failed to supply beef. Despite such gripes, a congressional committee found O'Hara "performed tolerably well," and speculated that the problems stemmed from the hardships of the frontier.[3]

The next year, Turnbull, Marmie & Co. of Philadelphia won the contract by underbidding O'Hara, but the government did not get a bargain. The company defaulted but argued that its default stemmed from its being paid in the depreciated currency of Pennsylvania. The troops ate better during the next three years after O'Hara won the contract in 1787, and Elliot and Williams of Baltimore held it during the following two years.

The Treasury Board advertised and awarded the contract for the troops' annual suits of clothing in 1785 to the lowest bidder, the firm of Thomas Lawrence and Jacob Morris of New York. The contract provided for inspection of the clothing and for arbitration if the parties disagreed over the rejection of any clothing. The contract was soon abandoned, due to financial problems of the new government. The government had so few dollars that it could not pay on time or in proper currency, both of which were critical for advertised contracts. So the Treasury Board negotiated a contract with Turnbull, Marmie & Co. at a higher price than the Lawrence and Morris contract, but with other, more favorable terms. Not surprisingly, Lawrence and Morris protested, but Congress agreed that the government's precarious financial situation justified the action.

Despite its problems, Congress liked this method of supplying the troops. Contractors furnished camp kettles, axes, canteens, tents, and other equipment on "principles highly economical and beneficial to the public" and eliminated the need for a quartermaster general with "his train of attendants."[4] As pay, the contractors received 5 percent of their expenses when they settled their accounts every six months at the Treasury.

## Mail Contracting

Throughout America's history, the transportation industry has been aided by federal mail-carrying contracts awarded to fledgling transportation industries, including stagecoaches, steamboats, railroads, and airplanes. This practice began even before the Republic.[5]

On June 30, 1785, the Continental Congress passed a resolution, introduced by William Houston of Georgia, "That the postmaster general make enquiry, and report the best terms upon which contracts may be entered into, for the transportation of the several Mails, in the stage carriages on the different roads, where such stage carriages are or may be established."[6]

Congress reasonably believed that stages would carry the mail cheaper than a system of postriders. The government had to sustain such riders in full but commercial passenger and express business already sustained most stagecoaches. They soon learned, however, that they would not get a free ride. When Postmaster General Ebeneezer Hazard sent Congress the bids, he noted: "Considering that the Proprietors of the Stages will be put to no additional Expense, or at most a very trifling one, their Demands appear to me to be exorbitant, although, in some Instances, they will carry the Mails for less than it now costs."[7] Hazard did not realize that the stage proprietors would lose the money they had received as private carriers of the mail, and that they had inflated their bids to compensate for the loss.

Although the bids were not as low as Hazard had hoped, they satisfied Congress. On September 7, 1785, it adopted Houston's motion, "That the postmaster general be, and he is hereby authorized and instructed, under the direction of the board of treasury to enter into contracts under good and sufficient security, for the conveyance of the different mails by the stage carriages, from Portsmouth, in the State of New Hampshire, to the town of Savannah, in the State of Georgia and from the city of New York, to the city of Albany in the State of New York, according to the accustomed route."[8]

Hazard complied and on January 1, 1786, the mail first went officially by stage over the "main post road" from Portsmouth, New Hampshire, to Petersburg, Virginia, and on the "crossroad" from New York City to Albany, three times a week in summer and twice a week in winter.

At once, the infant staging business gained a semiofficial status and a much needed financial boost. Congress later acknowledged that its intention "in having the mails transported by stage carriages, was not only to render their conveyance more certain and secure, but by encouraging the establishment of stages to make the intercourse between the different parts of the Union less difficult and expensive than formerly."[9]

The stages were not a panacea. They were slower than riders and less accommodating in their arrival and departure times. Stage owners often neglected the mail because it was only a secondary interest. Congress' mandate assured them that stages would have the mail contracts without competition, so some demanded exorbitant prices for their mediocre services. Hazard tried to change that.

Before he relet the contracts for 1788, Hazard complained to Congress that requiring him to contract with the stagecoaches limited his negotiating authority. "At present he [the Postmaster General] is obliged to contract with the Proprietors of the Stages, if it is practicable, without attending to any other Circumstance:—it was so last Year, and the Proprietors made their Advantage of it; . . . have Information upon which Dependence can be placed, that the Demands are now to be made still more increased."[10] Congress bowed to his common sense and authorized him to contract by stagecoaches or riders as he deemed most beneficial "provided that preference is given to the transportation by stages to encourage this useful institution when it can be done without material injury to the public."[11] So, in 1788, with his discretion, Hazard put the mails on the main route between Boston and Philadelphia and Philadelphia and Baltimore back on horseback.

Immediately, the losing stagecoach proprietors tried to embarrass the Post Office. Since the Post Office Ordinance of 1782 only gave the government a monopoly for the carrying of letters "for hire, reward, or other profit or advantage," they offered to carry letters for free. Cumming, Ward & Co. announced in their advertisements that "Letters, Newspapers, etc. left at the New York, Albany, and Philadelphia stage office . . . will be safely conveyed gratis." Gabriel P. Van Home, who had lost his contract between Philadelphia and Baltimore to horseback service, announced that the carriage of the mail in his stages was "rendered impracticable" because of the "unjust exactions by the administrators" of the Post Office Department, but that he would "forward all letters, packets of letters, and news-papers

free of all charge . . . except the commission of a penny-post" and provide "a convenience Mail with sealed Bags."[12]

Others shared the stage owners' discontent. Since mail stages had plenty of room, they had carried newspapers free between the cities as a service for the printers. When the mail returned to horseback in 1788, the riders refused to burden themselves and their mounts with newspapers unless paid extra. Newspaper editors immediately protested, especially since the public was intensely interested in the state conventions to ratify the Federal Constitution then being held. The editor of the *Philadelphia Independent Gazetteer*, in an article signed "Centinel" on January 8, 1788, asserted that the Post Office was discriminating against the "free and independent newspapers" (meaning the anti-federalist journals) and asked, "What is the meaning of the new arrangement at the Post-Office which abridges the circulation of newspapers at this momentous crisis, when our every concern is dependent upon a proper decision of the subject in discussion?"[13]

Hazard defended his decision in various newspaper articles and branded this accusation an "Anti-federal manoeuvre," but the protest included more than those opposing the Constitution. George Washington, waiting impatiently at Mount Vernon for word from the Poughkeepsie Convention in New York wrote to John Jay:

> It is extremely to be lamented, that a new arrangement in the post-office, unfavorable to the circulation of intelligence, should have taken place at the instant when the momentous question of a general government was to come before the people. . . . I know it is said, that the irregularity or defect has happened accidentally, in consequence of the contract for transporting the mail on horseback, instead of having it carried in the stages; but I must confess I could never account, upon any satisfactory principles, for the inveterate enmity with which the postmaster-general is asserted to be actuated against that valuable institution.[14]

After Washington became president, he appointed Samuel Osgood as Postmaster General. When Osgood assumed his duties, the postal system consisted of 75 post offices, 1875 miles of post roads and 18 contracts for carrying the mail. In 1790, the Postmaster General paid $14,793.75 to contractors to carry mail to the South, and $6,003.15 to carry it to the East, all from New York, then the capital of the United States.

They were not handling it well, however. The system had some contractors who could not perform, while others were very lackadaisical about arrival

and departure times, paying no regard to the schedules of connecting lines. Osgood and his successors instituted longer term contracts, the exclusive privilege for mail carriers to drive stages on post roads, and a fixed rate of compensation per mile, as the British did, to correct such problems.

The first statute embodying Robert Morris' contracting procedure was the Act of February 20, 1792, establishing the Office of Postmaster General. Section 6 of the act dealt with mail delivery contracts and required the postmaster general to give "public notice" in one or more newspapers published in the capital of the United States and in one or more newspapers published in the state or states where the contract was to be performed, for at least six weeks prior to contract execution. The notice had to describe the contract requirement for delivering the mail and the penalties for non-performance. For the next four decades, Congress focused on Post Office procurement more than any other procurement.

The Act of May 3, 1802, authorized conversion from horseback to coach or stage transportation of mail on certain routes, but only if the new contract price would not exceed by more than one-third the price of the existing contract for mail transport on horseback. Congress was still interested in supporting the stagecoach industry, but wanted to put a cap on how much it would spend.

## The Constitutional System

### *Departments of War and Treasury*

In 1789, the constitutional government was formed. On August 7, Congress created the Department of War under its first secretary of war, Henry Knox, a former bookseller, who had been overseeing military affairs under the Confederation. The secretary of war had the responsibility of providing "warlike stores" and also the responsibility for Indian affairs. The Treasury Department was created, under the stewardship of Alexander Hamilton, but the department did not expressly inherit the responsibility of the Board of Treasury to supply the troops. Nevertheless, the Treasury persisted in its earlier practice. From 1789 to 1792, both it and the War Department contracted for troops' food and clothing.

Hamilton emphasized that in its contracts the government had to act as any upright individual. He wrote to the Senate on January 20,1795:

> When a government enters into a contract with an individual, it deposes, as to the matter of the contract, its constitutional authority, and exchanges the character of legislator for that of a moral agent with the same rights and obligations as an individual. Its promises may be justly considered as excepted out of its powers to legislate, unless in aid of them. It is in theory impossible to reconcile the idea of a promise which obliges, with the power to make a law which can vary the effect of it.[15]

Hamilton almost immediately began advancing money to contractors because contractors often could not perform without advance payment and, considering the snail's pace of late eighteenth century communications, could not wait for payment to be sanctioned after a Treasury audit. Congress severely criticized Hamilton for this practice, which provided for only a post-audit control over expenditures. This was clearly not what Congress had envisaged when it created the Treasury Department with no provision for advances of funds. Congress intended a pre-audit system in which the accounts of the departments would be examined and settled by the Treasury Department auditor and comptroller before payment. In 1792 Congress relented and created a disbursing officer who would reside near troop headquarters as paymaster, making disbursements for pay, subsistence, and forage.

### *Purveyor of Public Supplies*

Although Hamilton wanted to control contracting, it soon overloaded the Treasury. The procurement responsibility had been delegated to Tench Coxe, the commissioner of revenue. When procurement became so time-consuming that it interfered with his other duties, Coxe asked Hamilton to relieve him of the contracting responsibility. Hamilton agreed, but did not want the contracting authority to leave the Treasury Department; he believed that only his department had the requisite knowledge, contacts, and experience (from the days of Robert Morris) to contract most orderly and economically. He convinced Congress to create a Purveyor of Public Supplies who, supervised by the Secretary of the Treasury, would buy "an articles of supply requisite for the service of the United States." Tench Francis, the first purveyor of public supplies, had been a contractor with whom Morris had dealt during the Revolution. More recently, he had been a Treasury employee responsible for procuring War Department supplies.

Congress established an elaborate system of checks and balances.[16] The purveyor and his agents would buy the materials; then, at the direction of the

Comptroller of the Treasury Department, they would be deposited in the magazines or arsenals under the superintendent of military stores, Samuel Hodgdon, at Philadelphia. The comptroller told Hodgdon which forms to use in keeping his accounts. The "Storekeeper," as he was known, would issue a receipt for the quantity and quality of the materials so the comptroller could later settle the buying agent's accounts at the Treasury. If he could not deposit the goods, the Purveyor furnished the Superintendent with proof of purchase and identified the persons responsible for them.

Some of the items could not be stored—boats, for example.[17] The first vessels bought by the new Republic were not for the navy, which was still eight years away from creation, but for the forerunner of the Coast Guard, the U.S. Revenue Marine. On March 4, 1790, Congress permitted the use of revenue cutters, but gave neither authority nor funds to build them. So, on April 23, 1790, Hamilton asked for money to build and maintain ten cutters, at an amazingly low estimate of $1000 each to build and $18,560 to maintain. Hamilton perhaps intentionally estimated low in order to induce an economically-minded Congress to develop the new service. Commissioner of Revenue Tench Coxe contracted for ten cutters in the revenue station or as close to it as possible. The choice of builder and design, in fact the whole contract, was initially left to the local revenue collector.

The Cape Henry Lighthouse, an octagonal sandstone tower lighted in 1792 at the Virginia entrance to the Chesapeake Bay, was the first public work built by the United States. From 1789 to 1842, the supply, construction, and inspection of the country's lighthouses were performed mainly by contract. The contractors, with a network of subcontracts, virtually administered the lighthouse organization and exercised wide discretion in performing their duties.[18]

### *The Contracting System's First Test*

This contracting structure had its first wartime test in the 1790 and 1791 expeditions to quell uprisings in which Indians were raiding Pennsylvania and Kentucky.[19] Major General Arthur St. Clair, the governor of the Northwest Territory, dispatched Colonel Josiah Harmar, a thirty-one-year-old Revolutionary War veteran, with a force of militia to attack the Miami Indians north of the Ohio River.

The firm of Elliot and Williams still held the contract for provisioning the troops on the frontier, as it had since the Treasury Board accepted its first bid in 1788. Robert Elliot assured St. Clair and Harmar that rations could be provided, though corn might have to be substituted for flour. The contractors agreed to supply 180,000 rations of flour and 200,000 rations of meat before October 1, 1790. Since contractors were then performing quartermaster duties as well as furnishing rations, they also agreed to provide 868 artillery and packhorses, equipped with packsaddles, bags, and ropes, plus 1 horsemaster general, 18 horsemasters, and 130 packhorse drivers to supervise the transportation of supplies. Two months later, despite the short notice given them, the contractors reported that they had fulfilled their agreement.

Nevertheless, Harmar's expedition failed dismally, and retreated with heavy losses in men and equipment. The defeat resulted not from any default of the contractors but because the militia was totally untrained for such a task. It should have been obvious, however, that continued reliance on this method of supply would, at best, be highly expensive.

Harmar's failure ensured another expedition the next year, this one led by St. Clair himself. Congress intended to punish the Indians quickly and decisively, but this expedition also ended in failure. Equipment and rations, still provided by a civilian contractor, did not arrive at all, or were late or of poor quality. The expedition leadership was equally shoddy.

William Duer, who as long ago as the Revolutionary War had supplied the army and later served as secretary to the Board of Treasury, procured and transported the food for the troops.[20] Duer had assumed a Treasury contract for provisioning the troops from the original awardee. So, even before Congress authorized the St. Clair expedition, Duer's agents were busy supplying the western posts. The secretary of war also contracted with Duer, on April 26, 1791, to feed the recruits until their arrival at Fort Pitt (present-day Pittsburgh). Feeding St. Clair's expedition in 1791, however, was only a small part of Duer's business enterprises. It was other ventures, including promoting a large manufacturing company and engaging vigorously in stock speculations, that prohibited Duer from giving his undivided attention to supplying the army. The army suffered as a result.

Duer had contracted to do two tasks of Herculean proportions: first, to provision the western posts and the troops en route from the East; second, to

accumulate enough flour and cattle, not only to support the expedition, but also to deposit six months' supply of flour and salted meat at the posts to be built and garrisoned in the Indian country. He had to deposit most of the provisions at Fort Washington because the plan originally called for the troops to proceed there immediately without being detained at Fort Pitt.. After that, he had to ship provisions from post to post as the troops advanced into the Indian country and built the posts.

Between March 22 and July 20, 1791, Duer received $70,000 in advances on the contract with the secretary of the treasury, and a little more than $5,400 on the one with the secretary of war.[21] Since Duer received such liberal advances, Knox anticipated no supply problems, but shortages developed as soon as the first recruits assembled at the rendezvous points, largely because Duer did not send the money to his agents. Furthermore, by June 1791, Major General Richard Butler, second in command of the expedition, reported a beef shortage in the Fort Pitt area. This stunned Knox, since Duer had assured him of an adequate supply. Knox had to advance money to the contractor's agents on Duer's account, as well as send his own representative with enough money to correct the problem. Knox recognized that the problems were not all of Duer's making. The troops stayed at Fort Pitt longer than expected because the War Department ordered Butler to protect the settlements on the upper Ohio. Meanwhile, Duer was accumulating flour at Fort Washington, and his agent was buying cattle in Kentucky.

More problems soon developed, and the troops were put on half rations of flour. Again, Duer had valid excuses, some of them pertaining to St. Clair himself. After this development, however, the War Department itself directed all preparations. It appointed Samuel Hodgon, the superintendent of military stores, as the quartermaster for the expedition. Unfortunately, he received little more than the title. His staff was totally inadequate for the demands put upon it, moreover, he had no military rank and no authority over St. Clair's military personnel.[22]

The supply problems, although serious, were but one factor in the defeat St. Clair was about to suffer.[23] On the morning of November 4, Indians administered one of America's most humiliating military defeats to a force untrained, low in morale as a result of inadequate supplies, and led by a general who was suffering from rheumatism, asthma, and colic. St. Clair narrowly escaped, but his second in command, Major General Butler, was

killed. In all, 637 men were killed and 263 were wounded—two-thirds of the entire force. The debacle surpasses even the Little Big Horn as the greatest victory the Indians ever achieved over the army.

### *Congressional Investigation and Reorganization*

Congress promptly appointed a seven-man committee to determine the causes and responsibility for the defeat. Consistent with the future importance that congressional investigations would play in the history of government contracts, the first congressional investigation focused on contracting. Oddly enough, considering the judgment of history, the committee cleared St. Clair of all blame. On May 8, 1792, it reported that "the failure of the late expedition can, in no respect, be imputed to his conduct." The committee attributed the disaster to faulty mobilization planning, for which the Congress itself and the secretary of war were primarily blamed. The committee criticized the delay in passing the act that provided for the mobilization of St. Clair's expeditionary force, "the gross and various mismanagements and neglects in the Quartermaster's and contractor's departments," and the lack of "discipline and experience in the troops."[24]

As a consequence of the investigation, Congress prohibited the collection of advances from both the Treasury and War Departments. In 1792, it stripped the secretary of war of his procurement authority and gave the Treasury Department full control over contracts for military and naval supplies and goods for the Indians. The secretary of war, under this procedure, sent supply estimates and samples or patterns of the desired articles to the Treasury for procurement action.

Congress raised a new force under Major General "Mad Anthony" Wayne and provided him with a quartermaster and deputy quartermaster. President Washington appointed James O'Hara as quartermaster general. He had, in the 1780s, been a contractor supplying the forts. He prepared well, perhaps overestimating his needs. The expedition set out on October 7, 1793, supplied by Elliot and Williams.

Wayne followed the trail that St. Clair had traveled, leading 2,000 regulars and 1,500 volunteers, most of them mounted riflemen. Before the year closed, he had buried the human remains of St. Clair's force and built Fort Recovery twenty-three miles from Fort Greenville on the site of St. Clair's

defeat.[25] The supply operation had gone well, but Elliot & Williams then tried desperately to accumulate supplies and complete preparations for the campaign of 1794. They fell behind and were still late in their deliveries in April. Indians had caused much of the problem by stealing horses. Instead of a ninety days' supply or 270,000 rations on hand, the contractors had only nineteen days' supply of flour and nine days' supply of beef on April 22. Wayne demanded that they fulfill the contract and threatened to buy horses, wagons, and oxen directly and charge the contractors. The shortcomings of the contractors convinced Wayne of "the absolute necessity of some effectual & certain mode of supplying the army than that of private Contract." Avaricious individuals, he insisted, would always exalt their own interest over the public's. They would never buy enough food or adequate transportation but would instead supply the troops from hand to mouth, "whilst the principal part of the money advanced by the treasury may profitably be otherwise employed."

Despite all his complaints, Wayne had enough supplies in August 1794 to defeat the Indians at the Battle of Fallen Timbers, effectively ending the Indian threat. The end of the hostilities, however, did not end the difficulty of contracting and transporting provisions 200 miles through the wilderness. Indians killed Robert Elliot, the contractor, near Fort Hamilton on October 6, 1794. That and other problems forced the army on half-allowance of flour, which was normally moldy, and poor beef. The lack of salt proved disastrous for the cavalry and packhorses, which died at the rate of four or five per day in October.

Contractors continued to supply the forts with varying success. Washington himself was clearly displeased with the performance and wrote to the secretary of war criticizing remissness on the part of the contractors at Pittsburgh:

> This ought not to be suffered in the smallest degree; for one neglect or omission is too apt to beget another, to the discontentment of the troops and injury of the Service; whereas a rigid exaction in every case checks a departure on their part from the contract in any; and no indulgence is ever allowed by them to the public.[26]

## *The Start of Naval Contracting and the Quasi War*

In 1794, the United States dispute with the Barbary Pirates reached the point of active hostilities.[27] Despite the expense of the Indian War, Congress

authorized Henry Knox, the secretary of war, to build six frigates, three with thirty-eight guns and three with forty-four guns. As a concession to antimilitary sentiments, the program was to end in the event of a treaty with Algiers before completion.

Knox selected Joshua Humphreys, a Philadelphia shipbuilder, to design and superintend the construction of the frigates, to be named *Constitution, President, United States, Chesapeake, Constellation,* and *Congress.* Humphreys designed a bigger, more heavily armed ship than anyone expected—the largest, most powerful frigate afloat. Building six such frigates was simply beyond the country's resources. The three 38-gun frigates had to be dropped to finish the 44s, which were the *United States,* the *Constitution,* and the *President.*

The three 44-gun frigates were sister ships theoretically. Humphreys built the *United States* at Philadelphia and launched it on May 10, 1797. The *Constitution,* later called *Old Ironsides,* was built in Boston and launched on October 21, 1797. The *President* was laid at New York City, but by then the Algiers crisis had been resolved. The *United States,* which Stephen Decatur would later command, and the *Constitution* continued to completion, but the *President's* construction stopped until the Quasi War with France in 1798.

This undeclared war is hardly heard of today, but it had two profound effects on government contracting. First, it forced a drastic change in the entire framework of government contracting; second, it triggered a train of events which led to the introduction of mass production in this country.

By the spring of 1798, American-French relations had deteriorated. France's actions had inflamed the country, especially the "XYZ" affair, in which three French diplomats, nicknamed X, Y, and Z, had demanded a bribe from American diplomats in Paris.[28] President Adams requested an expanded defense program, Congress passed the recommended naval increases and created a new and separate Navy Department. It also expanded the army and voted the U.S. Marine Corps into existence, making it part of the army or navy, according to whether the marines served on land or on ship.

Congress authorized the completion of the *President,* but grumbled about the cost overruns. Congressman Albert Gallatin complained that in 1794 Congress had been told that $688,000 would suffice to build six frigates, while in 1796 they were informed that estimate was mistaken—but that with

$80,000 more, three ships would be finished. In January 1797, an additional $172,000 was requested, in July of the same year, $200,000 more, and in 1798 another $150,000. The official explanation for the delay was the difficulty in procuring lumber, but changes in construction also cost considerable time. Nevertheless, when they were finished, the *Constitution*, *President*, and *United States* were the most magnificent ships afloat.

The fear of war caused a restructuring of the office of the purveyor of public supplies, Hamilton's centralized czar of procurement. The purveyor, Tench Francis, had already been criticized for inefficiency and favoritism; the threat of war with France in 1798 may merely have hastened the changes. Congress decreed that supplies for the War and Navy Departments were to be bought at the direction of the department secretaries. The purveyor of public supplies continued to execute all contracts except those for subsistence, which were handled directly by the department secretaries. The purveyor rendered his records to the accountants of the receiving departments, but the Treasury Department still scrutinized his accounts.

Hamilton lost no time in criticizing the War Department in its new role.[29] He complained to Secretary of War McHenry that supply was "ridiculously bad. Besides the extreme delay, which attends every operation, articles go forward in the most incomplete manner." McHenry only gave the purveyor one additional assistant, so Hamilton again complained to McHenry that supply proceeded "heavily and without order or punctuality . . . ill adapted to economy . . . and the contentment of the army . . . disjointed and piecemeal."

Fortunately, relations with France smoothed so that real war never developed. The other major development of the Quasi War—the contracts with Eli Whitney—will be discussed in the next chapter.

## Contracting Becomes More Formalized

Although different officials might do the contracting, the procedure of soliciting bids by public advertisements and awarding contracts to the lowest bidder had become routine. More contractors now sought business than in 1781 because the Northwest Ordinance of 1787 expanded settlements beyond the mountains, and more posts in the new states and territories required supply contracts.[30]

The obligations of the contractor remained unchanged. Besides delivering and issuing to the troops the authorized ration at the contract price, he had to have on hand enough rations to feed the troops at all times, including at least six months' worth of food at the more distant posts, such as Michilimackinac or Detroit, and usually three months' worth at all other posts. If the troops moved from a post, the government paid to transport the rations needed. There was a risk, however, that the War Department might transfer troops without notice to the contractor, who would be left with unwanted rations on his hands. In today's parlance, these would be requirements contracts; the contractor had to fill the government's needs, and the government gave good-faith estimates, but no guarantees, of those needs. Contractors were required to furnish quarters as well as fuel and straw, and to provide the means of transportation when the recruits moved. For these additional quartermaster services, the contractor received his costs plus a commission of 2.5 percent.

As in the past, if a contractor failed to deliver, the commanding officer could buy other supplies and charge the contractor.[31] Quality problems persisted; the bread was often stale, the flour moldy, the port rusty, and the beef spoiled. As long as the contractor system prevailed, the soldiers continued to be poorly fed. Contracts that required rations to be furnished at from thirteen to nineteen cents per ration had exceedingly narrow profit margins. To increase their gains, the more greedy contractors might omit such small articles of the ration as candles and soap.

Sometime in 1799, Tench Francis introduced an innovation in Morris' procedure of advertising and awarding contracts to the lowest bidder.[32] Contractors often delivered late on their uniform contracts because of the difficulty of obtaining sufficient cloth. To eliminate such delays, Francis began to buy cloth for the government instead of simply contracting for finished clothing.

After the superintendent of military stores received the cloth, the purveyor contracted with master tailors in the Philadelphia area to make, in three sizes, coats, vests, overalls, or complete suits of infantry or artillery clothing. He furnished each tailor with an order for the superintendent to provide him with the yardage of materials and trimmings needed to complete his contract, the first use of government-furnished materials. Similarly, linen and thread were furnished as needed to make shirts. The master tailors then delivered the finished garments to the superintendent, who inspected them to ensure

they conformed to patterns set as the standard for acceptance. If they passed inspection, the purveyor paid the tailors.

### Replacement of Quartermaster General with Civilian Agents

After the Quasi War ended in 1802, Congress again reduced the size of the army and eliminated the Office of Quartermaster General.[33] The secretary of war ordered the quartermaster general to discharge, as soon after April 1, 1802, as possible, any personnel in his department who did not belong to the army. The quartermaster general's own services were terminated on the last day of that month. Congress again replaced the Office of Quartermaster General with a system of civilian military agents who were assigned to the three departments—Middle, Southern, and Northern—that covered the country, just as George Washington had organized the Continental Army.

The supply system before the War of 1812 was centralized. All supplies for the peacetime regular army other than rations were sent to the depot at Philadelphia and were issued from there. Personal animosities between the purveyor and the superintendent, however, compromised the system's effectiveness. William Irvine had become superintendent on March 13, 1801. Callendar Irvine succeeded his father on October 24, 1804, and served until the summer of 1812, when he became commissary general of purchases. He filled that office for twenty-nine years until his death on October 9, 1841. Callendar Irvine throughout his career championed the belief that, rather than rely on contractors, the government should produce and buy directly what it needed.

In 1805, Tench Coxe became the purveyor of public supplies. Coxe was Tench Francis' nephew but proved to be much more effective than his uncle. After establishing specific rules and standards governing purchases, he urged his agents to secure the best terms possible, cautioned contractors to meet the contract specifications, and strengthened the use of government inspectors.

### Congressional Attempts at Reform

Meanwhile Congress tried to reform itself. Since the Revolution, congressmen had secured contracts for friends and firms with whom they were associated. In 1808, Congress passed an "Official Not To Benefit" statute, forbidding its members from contracting indirectly or directly with

the government, and required that such a prohibition be included in all contracts. It can still be seen today. It also required the postmaster general and the War, Navy, and Treasury secretaries to issue annual detailed reports on contracts.

Congress then exerted more control over the financial and procedural aspects of contracts, with the first government-wide procurement statute. The Act of March 3, 1809, provided that, except for army paymasters, navy pursers, military agents, the purveyor of public supplies, and other officers already authorized by law, no other permanent agents would be appointed either to make contracts, purchase supplies, or disburse money in any manner for the army or navy, except those that the president subsequently appointed with the advice and consent of the Senate. Congress ensured the safekeeping of the public money by requiring those disbursing agents to be bonded and submit monthly reports of their accounts to the comptroller of the Treasury, who would audit and settle their accounts. The statute shows two things: first, these early contracting officers were also disbursing officers and therefore exercised virtually total control over the procurement process at their local outposts and forts, second, Congress deemed these officers to be important enough that future appointments would be the result of joint executive-legislative action.

No earlier procurement statute, except for the 1792 Post Office law, had specified how a procurement should be accomplished and who the responsible official was. Earlier procurement officials were bound only by the tradition of Robert Morris' policies and handled each irregularity without the confines of precedent. The Act of March 3, 1809, changed all that. The law applied to the Treasury, War, and Navy Departments, and required that all purchases and contracts be made by open purchase or by advertising for proposals.

The act itself seemed to equate open purchasing (simply going out and buying an item) with formal advertising as options available to the contracting officer. The attorney general ruled in 1829, however, that "it is obvious that Congress intended by the Act of 1809 . . . to give the United States the benefit of competition" and that the open purchase provisions were to be exceptions to advertised procurements and limited to public exigencies which necessitated immediate contract performance. This requirement for competition would remain constant throughout the history of government contracting, to be discarded only when the nation went to war.

An earlier draft of the bill required the president to approve all purchases. The secretary of the navy had successfully objected to such a provision, pointing out the absurdity of pestering the chief executive with the minutiae of everyday procurement. While such an objection was compellingly logical, the secretary's action indicated very early how the military would resist any outside monitoring of its procurement practices.

### *New Rules for Mail Contracts*

Meanwhile, Congress had not neglected postal contracts. In 1799, the government first imposed requirements on the employment practices of the contractor. Congress decreed that only "free white" persons could serve as post-riders or carriage drivers, under penalty of $50 for each violation, one half to the United States and the other to the party suing for the penalty. This was also the first instance in government contracting of a bounty for someone alerting the government to a violation. Similar techniques to reduce fraud would be adopted during the Civil War and strengthened in the 1980s. This first application, unfortunately, was not for so lofty a purpose.

Since 1792, the postal laws required public advertising, normally in printed pamphlets, before awarding mail transportation contracts. For example, on May 26 ,1808, the Postmaster General advertised for bids on 28 routes, requiring bids to be filed before August 1. The advertisement contained some of the terms of the contract: the need to use sulkies or riding horses on certain routes when the roads were impassable; the allowance of fifteen minutes for mail handling at intermediate post offices; the length of the contracts; and the penalty for delays. Other paragraphs authorized the postmaster general to expedite scheduled deliveries and to terminate the contract when the contractor lost three trips. The advertisement also required bidders to bid on an annual basis and to state whether they intended to carry mail in the body of a stage carriage. Two years later, on April 30, 1810, Congress required that such mail delivery contract advertisements run for at least eight weeks, and specify routes and pick-up and delivery times. A concluded contract had to be filed with the Treasury Department within ninety days and could not last longer than four years. All these rules were later applied government-wide with some modifications.

Many such requirements would become impractical as the nation soon expanded and the mail routes went through new territories with no roads and no protection from Indians.

*Chapter 3*

# Start of the Arms Industry

Jacques Gansler, one of the country's most incisive analysts of the industrial base, has noted that in all America's wars, the country could mobilize its manpower much faster than it could equip and arm them.[1] This was as painfully obvious in the Korean War as it was in the Revolutionary War.

Even before the Revolution, several colonies had established sources of guns and munitions. In 1774, Massachusetts had established a public arms factory. The next year, Virginia established a plant at Rappahannock Forge. Yet the rush of orders overwhelmed both public and private plants.

That need sowed the seeds of an American arms industry.[2] The activities of the Cannon Committee showed that Congress realized the need for a reliable source of armaments. Colonel Henry Knox, Washington's Chief of Artillery, had recommended that Congress set up one or more main laboratories, away from the fighting, where craftsmen could make ordnance stores and carriages for cannon, ammunition wagons, tumbrels, and harnesses. He also suggested that a foundry be built nearby for casting brass cannon, mortars, and howitzers. Although Knox went to Hartford to contract for the necessary buildings, materials, and craftsmen to establish the magazine and laboratory, he concluded that Springfield, Massachusetts, was a better site than any other in New England for a laboratory and foundry. So, in 1778, Congress authorized its first facility in Springfield to provide and store gun powder for the Continental Army. The works erected became the predecessor of the national armory established there in 1794. That one decision helped to determine who would win the American Civil War.

After the Revolutionary War, Hamilton had urged as early as 1783 "the public manufacture of arms, powder, etc." because he recognized that a domestic arms industry was vital to independence. A decade later, Secretary of War Knox reported to Congress that, although arms could be bought more cheaply in Europe, the bargain price mattered little "compared with the solid advantages which would result from extending and perfecting the means upon which our safety may ultimately depend."[3] To free the new republic

from dependence upon foreign arms makers, Congress in 1794 empowered the president to establish two national armories to manufacture and stockpile weapons. The first was established at Springfield and the second at Harpers Ferry, Virginia, which began operations in 1796. The government's arsenal system eventually expanded so that by 1846, there were thirty-seven military arsenals.[4] Nevertheless, the government still bought most of its armaments abroad, and many years elapsed before domestic industry could supply all the government's needs.

On March 27, 1794, when Congress authorized the construction of six frigates, it also authorized contracts for several hundred cannon.[5] Casting so many cannon poured money into the infant arms industry. The first of several contracts went, on June 28, 1794, to Samuel Hughes of Cecil Furnace. He had to produce one hundred 24-pounders for fortifications and ninety 24-pounders for the frigates. The government agreed to pay extra if the guns could be bored from solid metal. Thirteen years later, he complained that he still had not been paid the extra expense. Hughes, however, was chronically late. By April 1798, he had delivered only ten 24-pounders for fortifications and thirty-six 24-pounders for frigates; moreover, he could not fill a contract to produce 6- and 9-pounders for the frigates being built for the dey (governor) of Algiers. Despite the backlog, Cecil Furnace continued to receive contracts because so few competitors could do the job at all. The contractual disputes were not finally settled until August 1810.

After the original contract of 1794 went to Hughes, another contract went to Hope Furnace in Rhode Island for sixty 24-pounders for the frigates. Hope Furnace far surpassed Cecil Furnace in performing its contract. By April 1798, it had delivered all but one of the cannon. Another contractor was Paul Revere who supplied six bronze howitzers for the frigate *Constitution.*

Undoubtedly, the key figure in American cannon manufacture at the time was Henry Foxall. His guns and cannon set the standards that other suppliers had to meet. He supplied much of the cannon and shot that the young republic needed. To enhance America's ability to make cannon, Secretary of War Dearborn asked Foxall to build a heavy ordnance foundry at his own expense on public land in Washington. Foxall refused. If the government orders ceased for any reason, he would not be able to keep the foundry operating and would lose money. He urged that the government build its own foundry, which would serve as a yardstick to determine fair cost and

facilitate standardization of artillery. Foxall's recommendation was never adopted.

The same Quasi War with France that sparked the navy construction program caused a revolution in the arms industry and started the American system of mass production.[6]

## Eli Whitney's Contract

In 1798, the Senate Naval Committee drafted a bill authorizing $100,000 to establish a foundry to cast cannon for the army and navy. The bill passed the Senate at the end of March, and the House Naval Committee recommended its passage. The Federalists supported the proposed foundry, arguing that it would keep prices low, but the Republicans opposed it, asserting that if the government intended to make its own guns or munitions, the private foundries would go bankrupt. The bill passed on May 4, 1798, as part of the mobilization caused by the Quasi War. By then, it had ballooned into a major arms appropriation of $800,000 for cannon, small arms, ammunition, and military stores. With some of that $800,000, the administration decided to buy 50,000 muskets. That got the attention of the inventor of the cotton gin, Eli Whitney, who happened to be down on his luck.

Whitney's cotton gin business had suffered because communication with the southern ports and the West Indies was difficult due to the hostilities with the French. On May 1, 1798, he wrote one of the most important letters in American history to Oliver Wolcott, secretary of the treasury:

Hon. Oliver Wolcott, Secretary of the Treasury.

Sir: By the debate in Congress, I observe that they are about making some appropriations for procuring arms, etc., for the United States. Should an actual war take place or the communication between the United States and West India Islands continue to be as hazardous and precarious as it now is, my business of making the Patent machines for cleaning cotton must, in the meantime, be postponed. I have a number of workmen and apprentices whom I have instructed in working in wood and metals, and whom I wish to keep employed. These circumstances induced me to address you and ask the privilege of having an opportunity of contracting for the supply of some of the articles which the United States may want. I should like to undertake to manufacture ten to fifteen thousand stands of arms.

I am persuaded that machinery moved by water, adapted to this business, would greatly diminish the labor and facilitate the manufacture of this article. Machines for

forging, rolling, floating, boring, grinding, polishing, etc., may be made use of to advantage.

Cartridges, or cartouch box, is an article which I can manufacture. I have a machine for boring wood of my own invention, which is admirably adapted for this purpose.

The making of swords, hangers, pistols, etc., I could perform.

There is a good fall of water in the vicinity of this town (New Haven) which I can procure, and could have works erected in a short time. It would not answer, however, to go to the expense of erecting works for this purpose unless I could contract to make a considerable number.

The contracting for the above articles will not, I suppose, belong to the department of the Treasury; but if you will take the trouble to mention me to the Secretary of War, I should consider it as a particular favor.

I shall be able to procure sufficient bonds for the fulfillment of a contract of the kind above mentioned, and will come forward to Philadelphia, immediately, in case there is an opportunity for me to make proposals.

With the highest respect, I am, sir, your obedient servant,

Eli Whitney [7]

Wolcott replied, "Knowing your skill in mechanick, I had before spoken of you to the Secretary of War as a person whose services might be possibly rendered highly useful. I do not hesitate to advise you to come to Philadelphia as soon as possible."[8]

Whitney had submitted a draft of the proposed contract, which Wolcott referred to the purveyor of public supplies. Francis advised Wolcott, "I have no hesitation in declaring that the Secretary would be right in closing with Mr. Whitney provided he was satisfied he can accomplish so great an undertaking in so short a time. I have my doubts about this matter and suspect that Mr. Whitney cannot perform as to time."[9] The purveyor's fear was well grounded.

Since Whitney had absolutely no experience as an arms maker and had neither tooled his factory nor recruited trained workers, he was undertaking an incredible task. Whitney, however, had to be impetuous. Numerous cotton-gin patent lawsuits and a business on the verge of collapse made him desperate for the credit that would accompany a large government contract. Particularly enticing was the promise of an immediate $10,000 advance.

Better yet, the contract also stated that further advances would be made "at the discretion of the Secretary of the Treasury in proportion to the progress made in executing the contract." Whitney's motives were obvious. "Bankruptcy and ruin were constantly staring me in the face," he wrote a friend. "Loaded with a Debt of 3 or 4000 Dollars, without resources, and without any business that would ever furnish me a support, I knew not which way to turn. . . . By this contract I obtained some thousands of Dollars in advance which saved me from ruin."[10]

He did not, however, enter the contract totally blind. He knew of the French success in manufacturing arms. A Monsieur Blanc had experimented with designing and making small arms at several French government installations. By the mid-1780s, he had tooled the Vincennes arsenal with novel die-forging, jig-filing, and hollow-milling techniques which produced "the greatest economy and the most exact precision."[11] Thomas Jefferson, while ambassador to Versailles, had visited Blanc in 1785 to see how the lock components of Blanc's muskets could be randomly interchanged without any fitting or filing. Jefferson wrote home about how impressive the demonstration was, and tried to persuade Blanc to emigrate to the United States. Jefferson continued to monitor his activities, and shipped six of Blanc's muskets to Philadelphia in 1789. Whitney evidently learned of Blanc's work and tried to emulate it in filling his musket contracts with the War Department.

Whitney's contract was signed on June 14, 1798. Under its terms, Whitney had to deliver 4,000 stands by September 30, 1799, and 6,000 more by September 30, 1800, so that the whole contract had to be fulfilled within little more than two years. To ensure that, Whitney put up $30,000 worth of bonds. The contract price was $13.40 per musket, and ten of the most responsible citizens of New Haven gave security to the Bank of New Haven for a loan of $10,000 to begin the work. Whitney received some government help, since Hamilton's practice of helping contractors to finance their contracts had continued. He got $5,000 on signing the contract, $5,000 on proving that the first $5,000 was expended, and $5,000 more when he delivered the first 1,000 stands of arms. The Treasury secretary could advance more, depending on progress. The contract illustrated the government's healthy finances, far different than its circumstances during the Revolution.

## Other Contracts

Whitney's was not the only contract awarded that year, just the biggest.[12] Besides Whitney, twenty-six other prospective arms makers, nineteen of whom were New Englanders, contracted with the Treasury Department during the spring and summer of 1798 to deliver a total of 40,200 muskets. The other contracts were let by the advertised bid system on preprinted forms. Whitney's was handwritten mainly because his draft contract was largely adopted. Fortunately, none of these contractors had to prove their ability as gunmakers, since very few of them had any experience in making arms. Besides paying $13.40 per musket, the Treasury agreed to help production by paying advances. One of the largest advances, $12,725, went to Thomas Bicknell, a Pennsylvania gunsmith who contracted in July 1798 for 2,000 muskets. Provided with so few restrictions and such handsome inducements, enterprising novices flocked to the government. Most of them failed and were financially ruined or found the business so unprofitable that they relinquished their contracts after furnishing very few arms. Secretary Wolcott rushed to select and award these contracts because the government desperately sought new domestic sources of supply.

The first paragraph of the contracts demanded delivery of: "stands of Arms, or Muskets, with Bayonets and Ramrods complete and fit for service—One third of the whole number to be delivered within eight months—One other third within fourteen months, and the remaining third within eighteen months from the date of these presents."

The second paragraph of the contract provided that the arms

> shall be made after the Charleville model. The Barrels shall be proved and the Muskets inspected agreeably to the rules now practiced and required by the United States; the Locks shall be duly hardened; the Ramrods and Bayonets shall be properly tempered; and the Mountings, Stocks, and every other particular shall be finished in a workmanlike manner, in all parts precisely, or as near as possible, conforming to two patterns, which have been marked, and sealed by the contracting parties to this Instrument; one of which patterns, the party of the second part hereby acknowledges, to have received.[13]

The barrels had to conform to the following specifications announced by the War Department on July 5, 1798:

In order that the proof of the barrels of our muskets may be uniform in the different places where arms are manufactured for the United States the following is to be considered as the proof by powder which all musket barrels will be subjected to and stand, to entitle them to be received: Viz

The musket barrel having been straightened and received its last boring and its last polishing on the grind stone being of the proper length and dimensions and having no defects to render it unserviceable, it is to be transferred to the workmen to be breeched and have its touch-hole formed.

Thus prepared and finished, the barrels are to be put on the proof-rack and fixed and confined so as not be rebound. They are immediately fired twice: The first time with a charge of powder equal in weight to the eighteenth part of a pound avoirdupois, and the second with a charge one-fifth less, or the twenty-second part of a pound weight. In both instances, a ball of the caliber of the piece is to be put in.

It is required that all barrels in future shall stand this proof, and that none be received which do not: Good muskets being essential to the preservation of the lives of the soldiery and the success of the arms of the United States.

The powder with which this proof is to be made will be first proved with a five and half-inch Mortar, one ounce whereof must propel a twenty-four pound ball eighty yards.[14]

## Delinquencies and Extensions

Any expectation by the government that all these muskets would be delivered on time was soon dispelled. By June 10, 1801, nearly nine months after all deliveries should have been completed, only three of the twenty-seven contractors had fulfilled their contracts. Of 40,200 muskets contracted for in 1798, only 14,244 (or 35 percent) had been delivered. Some contractors, like Robert McCormick, a Philadelphian who received an advance of $4,000 for 3,000 muskets, failed to deliver any and defaulted. Others, like the Frederick, Maryland, firm of White, Crabb, Metzger & Barnhizle, had delivered only 548 of 1,000 stands of arms when the government finally canceled its contract late in December 1801.[15]

The most famous delinquent was Eli Whitney. At the end of the first year of the contract, he had delivered not four thousand muskets but only five hundred. Eleven years elapsed before he completed the whole ten thousand. The contract was not closed until January 1809.

The government nearly terminated Whitney's contract for default several times. Treasury Secretary Wolcott, who had such faith in Whitney's mechanical genius, had left office. Congress by then had shifted "the business of the Contracts for fabricating small arms" to the War Department and away from the Treasury, whose new secretary, Albert Gallatin, opposed large army appropriations. Gallatin was the congressman who had grumbled so loudly about the delays and cost overruns on the navy's frigates.

Whitney saved himself from contract termination with a dramatic demonstration.[16] In early January 1801, at the invitation of Captain Decius Wadsworth (later the first chief of ordnance), Whitney brought to Washington ten sets of the components of musket locks. He dumped them in piles upon a table and then selecting parts at random he assembled ten complete firing mechanisms in the presence of John Adams, Thomas Jefferson, cabinet members, congressmen, and other dignitaries. He showed how the lock mechanism of one musket could be exchanged with those from several others. He dispelled the initial disbelief on the part of his audience that jigs and machine tools could make components so identical that filing and special fitting in assembly were needless.

Whitney's dramatic performance bought him some more time but not an indefinite extension. Six months later, Whitney and the other delinquents received the following letter:

> War Department 15 June 1801
>
> Gentlemen, The business of the Contracts for fabricating small arms for the use of the United States entered into the Treasury Department having been transferred to this Department and it appearing that the time stipulated for the delivery of the muskets to be fabricated under your contract has some time since expired, you are hereby notified that if the number contracted for shall not be ready for delivery on or before the 31st of August next no part of them will be received after that time unless very particular circumstances should exist to justify an indulgence of a further period of three months or until the 30th of November next, which in all events will be the latest date at which arms will be received.
>
> If you conceive such circumstances to exist in your case, you will be pleased immediately to state them for my consideration.
>
> I am very Respectfully Your Obt. Servt. Henry Dearborn[17]

Canceling the contract would have bankrupted Whitney and ended any chance for resurrecting the cotton-gin business. So Whitney wrote numerous letters detailing plans, explaining difficulties, and pleading for patience. He traveled often to Washington to plead his case in person. Based on Whitney's proof that unforeseeable delays had occurred, and persuaded by Whitney's glowing rhetoric concerning the benefits to be derived from his system, the government granted one extension after another. Further advances accompanied each extension, so that only $2,450 remained on the $134,000 contract when Whitney made his final delivery on January 23, 1809. To many officials this seemed a small price for arms with interchangeable parts. Whitney's generous subsidies enabled him to build a factory, liquidate outstanding debts, and pursue lawsuits in the south over his cotton gin.

When Whitney finally completed the contract, after nearly eleven years, the other contractors on the original list had long since given up the business as a losing proposition.

Whitney, with his pioneering system of manufacturing arms, contributed more than any other individual, not only to the arms manufacturing business, but to manufacturing in general. His methods created the mass production system that has contributed so much to the industrial development of the country. He took manufacturing out of the hands of a few artisans whose crafts were often closed to outsiders, and opened it to unskilled workmen who with templates, patterns, and jigs could make any individual gun part just as well as master craftsmen. Before him, it took a skilled gunsmith a week to produce one musket, its bayonet, and ramrod.

He also put the latest technology in the hands of the foot soldier. Before, the nobility raising armies had kept the best weapons for themselves and armed their troops with the cheapest weapons that arms makers could hand-produce quickly. Now the lowest privates could have weapons as good as the regimental commander. From then on, factory workers became as important to victory as the finest shock troops.

## Other Industrial Pioneers and a Quasi-Public Arms System

In the course of Whitney's pioneering work, he developed many machines and devices that became standard equipment for all armories. Contributions were made by other early contractors as well.[18]

Asa Waters, of Sutton, Massachusetts, introduced various manufacturing improvements, including a process for welding barrels by motive power instead of hand power, doing the work faster, cheaper and better. His business actively operated during the War of 1812, turning out scythes, sawmills, and other civilian tools.

On August 31, 1816, Waters took a contract for 5,000 muskets at $14.00 each, with delivery in five years.[19] On October 16, 1818, he contracted to provide 10,000 arms at the rate of 2,000 stands per year. This contract is of particular interest because the price of $14.00 included the right of the United States to use in any of its armories the method of welding barrels covered by the Waters patent and also extended this right to any other contractors making arms for the government. On October 16, 1823, the Ordnance Office extended this contract to December 31, 1824, and at the same time gave Waters a contract for an additional 10,000 muskets at $12.25 each, to be delivered at the rate of 2,000 per year for five years commencing January 1, 1825.

While these developments concerning cannon and small arms procurement were occurring, the country gained the ability to produce the powder needed to make the arms work.

In 1802, the first great American powder factory, DuPont de Nemours, Pere et Fils; et Cie (later renamed E. I. DuPont de Nemours and Company), opened in Delaware. The new company prospered from the beginning, and its mills turned out 600,000 pounds of powder in four years.

Thomas Jefferson wrote to Irenee DuPont: "It is with great pleasure I inform you that it is concluded to be for the public interest to apply to your establishment for whatever can be had from that for the use either of the naval or military department. The present is for your private information; you will know it officially by application from those departments whenever their wants may call for them. Accept my friendly salutations and assurances

of esteem and respect."[20] DuPont filled these and other orders so well that Jefferson's Secretary of War, Henry Dearborn, soon ordered 120,000 pounds of powder. Jefferson again wrote to DuPont praising its quality, which he himself had tested on a recent hunting trip.

DuPont received a flood of orders during the undeclared war against Tripoli and the other North African city-states, in which U.S. warships fired some 22,000 pounds of DuPont powder.[21] Sales tripled from $10,000 in 1804 to $33,000 in 1805. On July 4, 1805, Secretary Dearborn announced that DuPont would do all the government's powder work. When the War of 1812 erupted, the army immediately ordered 200,000 pounds of black powder. DuPont sold virtually all the powder the country required, including several hundred barrels of powder rushed to Washington when the British attacked the city.[22]

While Whitney was performing his marathon contract and other entrepreneurs like DuPont were starting, Congress in 1808 provided for an annual payment of $200,000 to arm the militia. Beginning with these funds, the government evolved a policy of providing orders to the most promising gun makers on a long-term basis. The government regarded these private armories as permanent and recognized them as a part of the public supply of arms. Their contracts were continually renewed until late in the 1840s, when the whole system was abolished.[23]

These companies were predominantly in the northeast, especially New England, demonstrating the influence of the Springfield arsenal. They included Eli Whitney of Whitneyville, Connecticut, Lemuel Pomeroy of Pittsfield, Massachusetts, and Asa Waters of Sutton, Massachusetts, all of whom specialized in muskets; Henry Deringer of Philadelphia, who made rifles; Simeon North of Middletown, Connecticut, who specialized in pistols; and Nathan Starr, also of Middletown, who made swords.

Nathan Starr had the distinction of being the first official sword maker for the U.S. government. In 1798, Starr received a contract for two thousand cavalry swords; his contract work also included cutlasses, pikes, bayonets, ramrods and, later on, rifles and muskets. On March 14, 1812, Starr contracted for five thousand horseman's swords at a price of $6.00 each, and new contracts were continually given until the last one, on August 21, 1826, for two thousand navy cutlasses at $3.00 per cutlass.

By 1819, Secretary of War John Calhoun accepted as government policy the principle of renewing contracts if performance was satisfactory, provided the price was as low as any other bids. As Colonel George Bomford, the principal contracting officer for the Ordnance Department, put it:

> Without such inducements, contracts upon reasonable terms could not have been obtained, because the United States was the only customer the contractors could have. . . . In 1798, when the first attempt was made there were but few persons in the country acquainted with the business; and but one of these (Eli Whitney of Connecticut) who embarked in it succeeded, all the rest were either ruined by the attempt or found the business so unprofitable and hazardous as to induce them to relinquish it. In 1808, after the passage of the law making a permanent appropriation, a renewed attempt was made, and many of the contractors who were then engaged in the business have also failed. The steady support and patronage given by the Government since that time to the contractors whose skill, perseverance and capital saved them from early failure has resulted in the firm establishment of several manufactories of arms, and preserved to the country establishments of great importance to its security and defence.[24]

The long-term contracting system did assure a steady supply, and the private firms benefited the national armories by sharing ideas and methods. But the system also had its drawbacks. Ordnance officers generally considered the guns produced by private manufacturers inferior to those made in national armories. Moreover, privately manufactured weapons cost more on average than those produced in the armories, and the government had to pay for inspection. Contracts had to be renewed for the industry to remain viable, and this meant a continuous drain on government resources.

Contract renewal presented disadvantages to the manufacturer as well, for he was at the mercy of government policy. The threat of complete nationalization of military weapons manufacture hung over him, and when a contract expired, if another was not available immediately, he had the expense of retaining his workers until the next order came.

As to the merits of public versus private manufacture of military weapons, much was said on both sides. Initially, opinion favored exclusive dependence on national armories; after the Mexican War, sentiment shifted to support for procurement of all arms by contract. In the 1850s, the Ordnance Department and Secretary of War Jefferson Davis defeated an attempt to curtail government manufacture of arms and turn the entire business over to private industry. Davis thought both were needed for the best possible system of arms production. He argued that government

manufacture as well as government design guaranteed constant improvement in models and enabled the Ordnance Department to check not only the quality of contractors' products but also their prices. According to Davis, national armories were readily available and less expensive, and the established standard for price comparison with private contractors. On the other hand, private manufacturers seemed more likely to experiment with new materials and new methods to lower production costs.[25]

The arsenal system did amply supply the country with small arms during the War of 1812. That, however, was the only bright spot in the procurement picture at that time.

*Chapter 4*

# The War of 1812

## Supply System Problems

As the United States marched toward another war with England, the government supply system limped far behind. No adequate planning for procurement occurred before or during the war.

The superintendent of military stores at Philadelphia, Callendar Irvine, played a key role in the supply system, and had grave concerns about our production capacity.[1] Irvine had studied the capacity of American manufacturers to produce adequate amounts of military supplies, particularly uniform materials. He had concluded that domestic suppliers could not produce enough pants, coats, and shirts even for the peacetime army, let alone an expanded army. Unwilling to accept so gloomy an estimate, Secretary of War William Eustis, in 1811, had directed Tench Coxe, Purveyor of Public Supplies, to try to outfit the army, using only U.S. manufacturers. After a hurried survey, Coxe assured Eustis that they could produce enough woolen, cotton, and linen textiles to clothe the army, but that prices might be exorbitant. Coxe, however, had based his estimates on the needs of the peacetime army of 5,000 men, so his planning, faulty even for that small force, became ludicrous for the growing army of several hundred thousand.

Ignoring Irvine's warnings, the textile manufacturers agreed with Coxe and patriotically boasted that they would furnish all the cloth the army needed. America's newspapers joined the chorus and declared in the spring of 1812 that adequate plans had been made to supply the army with clothing of "American manufacture." Not to be outdone, the legislature of Massachusetts (the state whose governor refused to provide any militia to fight in the war) proudly asserted that Massachusetts alone could supply the central government with all necessary clothing for any emergency.[2]

When Congress expanded the army in January 1812, Secretary Eustis told Coxe to buy 20,000 uniforms in addition to those needed for the existing

army. Coxe somehow managed to complete these preparations in the five months it normally took to get the annual clothing supply ready for a smaller army, employing some 5,000 tailors and seamstresses to make garments. In February, Congress added another 25,000 men to the army, and Secretary Eustis ordered Coxe to start buying clothing for that number by soliciting bids through newspaper advertisements. Eustis directed him to distribute the purchases and the manufacture of the clothing throughout Pennsylvania, New York, Connecticut, and Massachusetts, to speed preparations and have the finished clothing delivered to or near where the recruits would need it.

As with Trumbull during the Revolution, it is surprising that Coxe accomplished as much as he did, since his organization was wholly inadequate to the demands made upon it. With only three clerks, he had to procure not only clothing but all other army supplies except subsistence. As the supplies poured into the Philadelphia Arsenal, Coxe complained that there was only one cart to haul them to and from the Arsenal, only two packing presses, and only a few hands to pack clothing for shipment to the recruits.[3] Despite his efforts, Coxe's days as Purveyor were numbered. As early as 1809, the War Department had concluded that this system of military agents would not work and began urging Congress to reestablish the military framework of the Revolution. Although Coxe continued to faithfully perform his duties, the War of 1812 mandated a change.

In March 1812, barely three months before the war began, Congress, for the first time since the Revolution, revamped the army's supply system, placing it under the exclusive control of the Secretary of War.[4] The Office of Purveyor of Public Supplies was abolished and replaced by an Office of Commissary General of Purchases; the president was authorized to appoint a commissary general and as many deputy commissaries as needed. A Quartermaster Department was established to aid the secretary of war in buying, inspecting, and distributing military equipment. On May 14, 1812, Congress created an Ordnance Department responsible for inspection and testing of all ordnance, cannon balls, shells, and shot; the construction of gun carriages and ammunition wagons; and the preparation and inspection of the "public powder."

The laws that created the three new departments, however, did not clarify their relationship or adequately define their duties. As a result, their activities frequently overlapped, causing the same problems that had plagued the army for two decades. The secretary tried to revive the old system of the

commissary buying the supplies, the quartermaster receiving and issuing them, and the Ordnance Department having responsibility for weapons. Yet neither the quartermaster nor commissary was responsible for subsistence, which was still procured from contractors. Not until the fighting ended did Congress remedy the many ambiguities and shortcomings of the system.

President Madison appointed William Jones, a Philadelphia merchant, as commissary general of purchases on April 4, 1812. Jones refused the appointment because of the salary offered—$3,000 a year—and the restrictions imposed on any connections with trade. Instead, he became the Secretary of the Navy. Congress amended the law to eliminate some of the objectionable restrictions, and Callendar Irvine became commissary general of purchases on August 8, 1812. He had been superintendent of military stores.[5]

Irvine immediately showed a preference for government production over procurement by contract. Coxe had obtained clothing by furnishing government-owned materials to master tailors who contracted to produce complete uniforms, using both their own workers and subcontractors. Irvine argued that poor quality clothing resulted because the contractors pocketed much of the money while paying slave wages to their workers, who were "pinched almost to death." These wages, Irvine charged, were scarcely enough "to give them salt for their mush."[6] Irvine accused the inspector of collusion with the contractors, allowing defective garments to go to the troops; he asked the secretary of war to remove the inspector, and to approve his plan to eliminate the master tailors. Instead, he would employ two or three men to issue cut-out garments directly to those who made them and to pay those makers fairly. With the secretary's approval, he immediately put this system into effect.

Irvine appointed new inspectors and drafted regulations to govern the operations of the Philadelphia clothing establishment. Deputy commissaries in other areas had replaced the former purchasing agents of the purveyor's office and procured considerable quantities of cloth and clothing. So Irvine did with the clothing business what he later tried to do with the arms industry: have the government produce its own goods rather than relying on contractors.

The War Department had worried, before the war, about the adequacy of small arms and cannon manufacture.[7] The government and the semiofficial

armories of Whitney, Starr, and others satisfied the needs for small arms, but the War Department's belief that civilian foundries could produce sufficient artillery ordnance was too optimistic and based on an inadequate survey. There was no ordnance staff officer or department until the act of May 14, 1812, on the eve of the war. Henry Foxall's recommendation to Secretary of War Dearborn in 1807 to build a national cannon foundry had not been adopted. The War Department had recognized quite early the value of educational orders: contracts with promising manufacturers to educate them in the making of essential items and to help them prepare their factories and work forces for an emergency. Before 1812, some contracts had been let with this principle in mind, but they had no effect on procurement during the war, when the nation relied on sources like the Hope and Cecil Furnaces and barely survived.

The powder situation was better, since contractors such as DuPont could fill the huge powder needs of the government, but the superintendent of military stores had to furnish the saltpeter and sulphur.[8] In the fall of 1811, the government ordered 50,000 pounds of DuPont powder. In 1812, with hostilities actually begun, Washington increased the order to 200,000 pounds and in 1813, to 500,000 pounds, forcing DuPont to double capacity. With additional orders from the Navy, DuPont sold more than a million pounds of powder to the government during the war.

Although Washington supplied its own saltpeter and sulphur, and gave special exemption to DuPont's workers from military duty, DuPont still charged the highest price up to that time for powder: 58 cents per pound. In the first year of war alone, DuPont had gross sales of $148,598. Buoyed by its profits from government contracts, DuPont soon shipped powder nationwide. Even John Jacob Astor's trappers and hunters in the West blasted 25,000 pounds of powder every year.[9]

Eli Whitney capitalized on this war as he had on the Quasi War. On June 29, 1812, eleven days after the war began, Whitney wrote Secretary of War Eustis seeking a second musket contract, which he signed on July 18, 1812. Whitney agreed to deliver 15,000 stands of arms for $13 per stand, complete with ramrods and bayonets. Former Treasury Secretary Oliver Wolcott, then an investment broker in New York City, acted for Whitney in many capacities, including negotiating contracts with the governor of New York. Wolcott and Whitney both signed a $30,000 bond for performance of the new contract, which required deliveries to start on or before May 1, 1813, at

not more than 3,000 and not less than 1,500 a year, and to finish by December 31, 1820. This contract brought Whitney into one of the earliest battles over whether the government should contract for its needs or produce supplies using its own employees.

General John Armstrong succeeded Eustis as secretary of war in January 1813. He wrote Whitney in March that a copy of the contract and bid would be forwarded to Callendar Irvine, commissary general of purchases, "with whom you will in the future correspond."[10]

Irvine soon complained that, under the contracts Coxe made with 19 small arms manufacturers (Whitney was not among them) in 1809 and 1810 for 85,000 muskets, only about 30,000 muskets had been delivered, and rising costs made it doubtful that any more would be delivered at the $10.75 price. Irvine also attacked Coxe because some muskets contracted for in 1798 had defective "necks of the bayonet and ramrods." Actually, the 1798 contracts were not let by Coxe, and the questioned muskets were not inspected by his office. Coxe replied that the episode "will show that a contracting officer, like the Secy of War, may have his designs frustrated as well as a Purveyor. Patterns & Inspectors are of infinite consequence."[11]

In April 1813, Irvine criticized the small arms manufacturers on the 1809 and 1810 contracts, which he advised the secretary "were founded on imperfect Muskets as standards and at prices for which it is impossible to have made good muskets." One of the contractors, Joseph Henry of Bethlehem, Pennsylvania, complained about Irvine's tactics. Irvine forwarded Henry's letter to Armstrong with his own explanation:

> I have proposed to all contractors as they complain of having a hard bargain, that they may pay up the advance money or deliver as many arms as will be equal to the advance and the contracts shall be rendered void. Some have acceded. . . . Others have refused. . . . It is to me clear that some of these gentry did not in the beginning expect to comply with their engagements, nor do they now intend it. Their first consideration was to get possession of the public money, and their desire is to retain it as long as practicable. Many of them were unacquainted with the manufacturing of arms and expended the whole advance money in the erection of buildings and machinery . . .
>
> We cannot rely upon Contractors for a supply of arms. These private contracts are exceptionable in many ways & every respect. Better to increase the number of our public establishments & the number of hands at

> those already in operation & bring the whole under the superintendence of one judicious & independent man.[12]

There seems little doubt that Irvine wanted to be that "judicious & independent man." He notified the secretary at the end of June 1813:

> Mr. Eli Whitney . . . has not delivered a single musket, tho' he should have delivered on or before the 1st of May last, at least 500 muskets. When the engagements of these contractors are not complied with as to time, I recommend that the contracts shall be cancelled. I have written today to Mr. Whitney stating that I have a general authority of that kind & that I will most assuredly exercise it. The Govt. has been trifled with long enough, in all conscience, by these contractors.[13]

On October 26, 1813, Irvine wrote Whitney itemizing the shortcomings of Whitney's musket for New York State, which the 1812 contract called out as the model. In reply, Whitney reminded Irvine that Eustis could have chosen a different model:

> On the Model, workmanship and Dimensions (with one single exception) of those Muskets, my present contract with the United States is predicated. . . . From this standard I consider myself as having no right to deviate without the consent of the Government, & I humbly conceive that the Government have no right to require a deviation without my consent.

Irvine replied:

> I requested that a Musket . . . be forwarded to this office, that I might be satisfied with the sufficiency of those [being made] by you for the US or, if found defective, for the purpose of suggesting any alterations not attended with much expense. . . . I did not point out the exceptions to your musket with a view to consult your opinion, which would have been improper for two very obvious reasons. First you are not a practical Gun Smith, as I have been informed, and again, you are too deeply interested in the matter. Therefore your opinions and criticism . . . have little weight in my mind.
>
> I have neither the leisure or time to spare for an Epistolary controversy with you or any other man. Your contract with Govt was transmitted to me. . . . You have said that Govt has no right to ask or expect a deviation on your part from the letter of that contract. This being admitted to the fullest extent I have to reply to it. That Govt had a right to expect and will insist upon a compliance in every respect with the terms of your contract. . . . You have failed to execute your engagements. . . . It is therefore my duty to require of you to refund promptly, the money with interest, which has been advanced to you by the United States, which I now do.[14]

Whitney replied to this letter, especially the part about his not being a "Practical Gun Smith":

> I can, with my own hands, in the first place make my tools and then from the raw materials make a musket with as much precision, exactness, and finished workmanship as belongs to any Musket which I have ever seen—and I have seen and examined with attention the muskets made both in this Country and the principal Countries of Europe. I have had more practical experience in Musket making than any other man in America. . . . All my workmen without an exception, were. . . . and have always been almost wholly of my own instructing. . . . After having pursued the business for fifteen years. . . . my ignorance of the subject should be ascribed to a want of capacity rather than a want of experience![15]

Whitney also argued that: "nonfulfillment of a particular item of a contract does not vitiate the contract itself" and "I cannot comprehend how one party can have a right to revoke the contract, which does not equally appertain to the other party."

Irvine was not moved. He wrote Armstrong:

> Whitney's contract is vague on its terms, very advantageous to himself and the reverse to the Govt. . . . The best musket he [Eustis] could select, is exceedingly exceptionable. . . . He [Whitney] has not complied with his engagements as to time. . . . I have accordingly told him that I consider his contract at an end. He is in high dudgeon and we are at loggerheads; this I don't regard as a straw. He has imposed on the Govt. and people long enough. I have informed him we do not want any more apologies for arms, having plenty enough already.[16]

While the letters stopped for several months, Whitney, without further funding, kept making muskets. When Whitney asked the government to inspect the muskets, Irvine argued that the contract had been terminated.

The surety on Whitney's bond, Oliver Wolcott, petitioned Armstrong that Whitney had "now on hand nearly a thousand finished muskets and the principal parts of from two to three thousand more in great forwardness" and that terminating the contract "Will subject the Subscriber to great losses and a total derangement of his affairs."[17]

Whitney carried this letter to Washington, but arrived after the secretary of war had begun the process of suing Whitney for default. It took Whitney six weeks to prevent the filing of the suit. President Madison made the final decision after consulting with Secretary of State James Monroe, who

remembered Jefferson's commendations of Whitney. Armstrong reinstated the contract, paid Whitney the $5,000 progress payment, and directed Irvine to send an inspector to Whitney's plant in New Haven.

Rather than rely solely on Irvine, Armstrong sought an opinion of Whitney from Colonel Decius Wadsworth, the Chief of Ordnance, who had encouraged Whitney in 1801 to make his dramatic demonstration in Washington. Wadsworth replied: "I think his arms as good, if not superior, to those which have in general been made anywhere else in the United States." Since the first contracts were given out, he reminded the secretary, "more men have failed in the abortive efforts to manufacture arms, in proportion to the number engaged, than any other branch of manufacture attempted in this country. The business is not yet so firmly established as to endure the incision-knife and caustic in curing its defects. Tampering and trying experiments with it will be premature and hazardous until it takes firmer roots." After that, although Irvine continued to "recommend that Whitney's contract be rendered void," Armstrong ordered him to "let Whitney go on with his contract."[18]

Irvine's efforts exemplify one position on a controversial issue that still persists: whether to establish public ownership of industries deemed vital to the national welfare. His arguments would be vigorously repeated one hundred years later regarding the navy's expansion of the fleet.

The disputes with Whitney were not Irvine's only concerns. Despite the pre-war boasts of sufficient American manufacture, Irvine in 1814 told Congress that in 1813 he had to buy over 26 percent of the cloth for the army abroad.[19] In fact, much of the 74 percent bought in the United States probably had been manufactured abroad and smuggled in. This failure to achieve the pre-war claims was especially galling because many U.S. textile manufacturers, able to sell their cloth in a rising civilian market, refused to sell to the army. Such actions gave rise in the 20th century to the government's assumption of power to compel compliance or seize a manufacturer's plant.

As the war fronts expanded, Irvine decentralized his purchasing to nine military districts. He established depots in all of those districts, and supplies were eventually delivered to the nearest depot, rather than to the main depot at Philadelphia. This expedited supply by cutting down transportation distances, but accountability suffered. Military commanders simply drew what they wanted at the nearest depot without the hampering formality of

written requisitions. A junior officer could go into a public store and "turn it inside out." As a result, they "trafficked away the surplus."[20] Supply became not only unaccountable but chaotic. In one instance, three different officers of the same regiment had made requisitions for the clothing of that regiment on three different officers of the Commissary Department.

Further complicating the procurement process was the fact that hundreds of individuals, such as commanding officers or deputy quartermasters, could make emergency purchases of any supplies not furnished through regular channels.[21] Officers unfamiliar with army accounting procedures often did not keep accurate records. The purchase and issue of these emergency supplies would have completely confused any supply accounting, had not that accounting already been chaotic.

This total confusion, loose supervision, and the lack of any accountability led Irvine to urge corrections in the fall of 1812. Congress responded early in 1813 and imposed more accountability on supply officers. It abolished the Office of Superintendent of Military Stores, which had already been partially absorbed by the Office of the Commissary General of Purchases, and created instead a position of Superintendent General of Military Supplies. This was not to be a staff officer, but a civilian, who had to keep proper accounts of all stores and supplies bought for the army, the volunteers, and the militia. He prescribed forms for use by the commissary general of purchases, the quartermaster general, the commissary general of ordnance, the regimental quartermasters, the officers of the hospital and medical departments, and others to record all their transactions.[22]

Aside from these problems, the army in the field had to be fed and equipped. The problems of supply by civilian contract had been demonstrated in the Revolution and in the St. Clair expedition, yet the War Department had not changed the system. During the war, contractors were to supply rations to all troops stationed in or moving through specific districts.

## Fighting the War

War plans called for the invasion of Canada and capture of Montreal, with the principal attack being launched by way of Lake Champlain from a base at Albany. Supporting movements were to be directed from Sackett's Harbor, Niagara, and Detroit.[23] With an amazing lack of foresight, the army had no plans for feeding troops invading enemy territory.

Brigadier General William Hull commanded the army at Detroit.[24] Like St. Clair, he was an elderly hero of the Revolution whose martial spirit and ability had waned with the years. Hull' s chance for victory vanished when the declaration of war reached Canada before it reached him, ruining all hope of an American surprise attack. A contractor, Augustus Porter, was to supply rations for Hull's troops, as well as all other troops stationed along the Great Lakes as far west and north as Michilimackinac, which included Detroit. In mid-June, the secretary of war directed Porter to place 14,000 rations at Sandusky and 366,000 at Detroit, in addition to the usual deposits required under his contract. A lack of boats and the threat of seizure by the British Navy prevented Porter from supplying the troops. On July 2, just when Hull received word that war had been declared, Porter wrote his brother that it was vital to notify General Hull immediately "that provisions are on the Lake but cannot be got up, and advise him to take his own measures to obtain supplies."[25] Thus, the contract system broke down as soon as the war began.

Hull had to appoint a commissary to feed his troops, but it was all for naught. The British commander facing Detroit sent messages to Hull threatening a massacre and "a war extermination" if the Americans chose to fight. Considering the fate of hundreds of Americans who later fell into Indian hands in the course of this war, and in view of what had happened to St. Clair's expedition, these were not idle threats. Hull surrendered Detroit on August 16, 1812, giving up 3,000 men and a large quantity of stores.[26] Although Detroit's surrender could not be blamed on supply problems, disasters of such shocking proportions put all operations under a microscope. Much of the criticism focused on the secretary of war and his micro-management of procurement.

William Eustis concerned himself personally with the minutiae of procurement, and, as a result, seemed to lose sight of the big picture. In the heat of dissatisfaction after the surrender of Detroit, Senator William H. Crawford declared:

> A Secretary of War who, instead of forming general and comprehensive arrangements for the organization of his troops and for the successful prosecution of the campaign, consumes his time in reading advertisements of petty retailing merchants to find where he may purchase one hundred shoes or two hundred hats . . . cannot fail to bring disgrace upon himself, his immediate employers, and the nation.[27]

## Provisioning the Troops

The conduct of the war in 1812 and 1813 revealed glaring deficiencies in the administration of the War Department that would plague the American cause to the end. Lack of transportation was a major problem. Most important, the subsistence supply failed so completely that field commanders bought local food themselves.

After Hull's surrender, Brigadier General William Henry Harrison assumed command of the Northwestern Army.[28] Eustis, still directing the minutiae of procurement, instructed Ebenezer Denny, a contractor supplying the troops in the Pittsburgh area, to buy 1,098,000 rations in addition to those required under his contract, and to transport the flour, whiskey, and small parts of those rations, as well as salt for packing the beef which would have to be bought on the hoof and driven to the army.

General Harrison, convinced that less expensive provisions could be bought in Ohio than those transported from Pittsburgh, reduced that purchase order to 400,000 rations and directed Denny to deposit them at Wooster, Ohio. He then called upon contractor James White in Ohio to build ration storage points at Urbana and Wooster. White held the contract for that section of Ohio, which included many of the recruiting stations. But White had not signed his contract or posted the necessary bond. He subcontracted his contract for the northwestern part of the state at a price that White himself claimed would earn him $100,000. Harrison charged that having paid such an exorbitant price, the subcontractor could not furnish adequate supplies. He appointed John H. Piatt as deputy commissary with the Northwestern Army and directed him to transport 300,000 rations to Fort Defiance, deposit 200,000 rations of flour and 500,000 of beef at Urbana, and buy and store 500,000 rations at Wooster. He planned to feed an army of 10,000 men.

With so many purchasing agents in the field, competition inevitably occurred.[29] Denny could not get flour in Pennsylvania before November because the mills could not operate for lack of water. So he sent his agent to Chillicothe, Ohio, to buy flour, depriving Commissary Piatt of flour that he might have obtained there.

To direct quartermaster supply in the field, Harrison selected James Morrison as deputy quartermaster general. On September 18, the War Department commissioned him a lieutenant colonel of volunteers. Morrison

had long been a contractor provisioning the troops in the West. As with his Revolutionary War predecessors, he saw no conflict of interest between his office and his contracting, so he continued with business as usual. About a month after his appointment, he unsuccessfully bid to provision the troops in Ohio. Nevertheless, he pursued his quartermaster duties so energetically that General Harrison praised him warmly. Part of the praise stemmed from Morrison's willingness to follow the old commission merchant tradition of personal liability. While waiting for $400,000 to arrive from Eustis, Morrison borrowed on his own credit to meet demands made upon him. Harrison thought so highly of his deputy's services that he recommended his appointment as quartermaster general.[30]

Supply in the East was as disorganized as in the West.[31] Soon after the war began, the subsistence contractors had difficulties supplying Fort Niagara and the northern frontiers. Augustus Porter, the same person who had failed Hull, had the contract to supply Fort Niagara and its dependencies. He became so uneasy about providing beef that he asked his brother, the quartermaster general of New York, to contract for supplies even if he had to pay $3.50 per hundredweight. As in the West, however, the system of contract supply failed early in the war. After troops were faced with starvation and the army was close to evacuating Fort Niagara for lack of food, the commanding general ordered the deputy quartermaster to buy provisions. The irony of Revolutionary times reappeared when the British often found it easier to buy food in the northern part of the country than did the Americans. Northern New York and Vermont reportedly furnished two-thirds of the fresh beef consumed by the British armies.

## Breakdown of the System

If the British were satisfied with American contractors, the American commanders certainly were not. The system of having contractors assume responsibility for getting supplies to the troops failed resoundingly. The system had never before been tested in sustained battle conditions, and the war disproved Morris' abiding faith in it. With no centralized direction for subsistence supply, the inefficient, fraud-racked contract system constituted one of the gravest hindrances to military operations throughout the war.

By March 1813, the breakdown of the contract system for army subsistence had become so apparent that Congress authorized the President either to appoint temporary commissaries, or to authorize any quartermaster to buy

and issue any army subsistence in cases of contractor failure. Yet both Congress and the War Department continued to rely primarily on contractors. Fortunately, peace was reached before the test of a long war showed how shockingly poor the supply system was.

Brigadier General Winfield Scott undoubtedly spoke for many field commanders when he wrote:

> In time of war contractors may betray an army; they are not confidential and responsible agents appointed by the government. The principal only is known to the war office, and therefore may be supposed to be free from this objection; but his deputies and issuing agents are appointed without the concurrence or knowledge of the general or the government. The deputies or issuing agents are necessarily as well acquainted with the numerical strength of the army to which they are attached as the adjutant-general himself. For a bribe they may communicate this intelligence to the enemy, or fail to make issues at some critical moment, and thus defeat the best views and hopes of the commander in chief. The present mode of subsisting our armies puts the contractor above the general. If a contractor corresponds with the enemy, he can only be tried by the civil courts of the United States as in the case of other persons charged with treason (courts-martial having decided that contractors do not come within the meaning of the sixtieth article of the Rules and Articles of War); and if a contractor fails to make issues, he can only be punished by civil actions. I speak of cases arising within the limits of the United States. In the enemy's country I suppose a general who knows his duty would not fail to hang a contractor who should, by guilty neglect or corruption, bring any serious disaster upon the army.[32]

Brigadier General Edmund P. Gaines likewise vented his feelings about the system:

> I have uniformly given the best attention in my power ever since the commencement of the war to the supply of rations and the conduct of contractors, and if I were called before heaven to answer whether we have not lost more men by the badness of the provisions than by the fire of the enemy, I should give it as my opinion that we had, and if asked what causes have tended most to retard our military operations and repress that high spirit of enterprise for which the American soldiers are preeminently distinguished, and the indulgence of which would not fail to veteranize our troops by the annoyance and destruction of the enemy, I should say the irregularity in the supply and badness of the rations have been the principal causes.[33]

## Wartime Trends

The nation survived the War of 1812 but three trends during the war were harbingers of future developments. In 1813, Robert Fulton submitted to President James Madison plans for a steam warship. Secretary of the Navy Jones supported the idea, and Congress authorized the vessel in March 1814, placing Fulton in charge of construction. Although Fulton had to hurriedly finish it during the winter of 1814, to spare New York from Washington's fiery fate, it was spectacular. Fulton had made an ironclad with double-walled armor and a few gigantic guns, the most powerful ship afloat and decades ahead of its time. The new vessel, the *Demologous* (voice of the people), was launched at the end of October but renamed the *Fulton* after the designer's death in February 1813 and subsequently called *Fulton I*. At the time of its commissioning in June 1815, the *Fulton* was the first steam frigate in any navy in the world. The war of 1812 ended just as it entered service. It was lost in a fire at the Brooklyn Navy Yard in 1829. Fifty years later, the government contracted for the successor to *Fulton I*, the *Monitor*.

Before the end of the war, the War Department also contracted with Fulton to transport troops and munitions in steamboats on the Ohio and Mississippi Rivers,[34] advancing him $40,000 in January 1815. He died about a month later. Armstrong pursued his interest in steamboat transport, asking Colonel James Morrison to report on the time required for a steamboat trip from Pittsburgh to New Orleans, the number of troops such a boat could carry, and the general usefulness of boats in river transport. The secretary directed the deputy quartermaster at New Orleans to use steamboats whenever more economical than the usual modes of transportation. By that time, however, the war had ended.

The third trend involved the employment of women and children. This war, for the first time in United States history, saw women and children used to make munitions. Their employment resulted, not from a shortage of manpower, but because the labor of women and children was far less expensive than the labor of men. Nevertheless, the experience indicated that, in the event of war, contractors could expand the worker availability pool by including women and, if need be, children.[35]

The war gave the United States one of its enduring symbols. Samual Wilson was an army meat inspector and provisioner who provided meat to the army during the war. He would stamp the initials US on the barrels of meat,

meaning the United States, but because Wilson's nickname was Uncle Sam, it soon began to refer to the country in the same fashion.

With the War of 1812 behind it, the nation could concentrate on expansion for the next forty-six years, until the next war to threaten its national existence.

*Chapter 5*

# The Nation Expands: 1815–1861

"Manifest destiny" was the doctrine that ruled this period: the belief that America's destiny was to govern the entire American continent, stretching from coast to coast. Connecting the country was a system of roads, built primarily by the army and the Post Office, that presaged the great Federal Highway System of the 1950s. The army and the Post Office took different approaches. The army first built the roads and settlers followed; the Post Office awarded mail contracts to contractors who blazed trails for the mail routes, and settlements then grew up along those routes.

As the settlers moved West, the army went with them as protection against the Indians. This expansion forced a confrontation with Mexico, testing the ability of the new nation to mobilize and fight a distant war. The nation survived due more to the inadequacies of Mexico's supply system than the strengths of its own. The treaty that ended the war gave the United States all or portions of New Mexico, Colorado, Nevada, Utah, Arizona, and California, and set the stage for the next great surge of contracting activity. Not only did the army remain in the West after the war, but the discovery of gold in California caused a mass migration to that area. As the army encamped in new territories, supplies had to be transported to the posts. The new freight industry dominated the plains, but the freighters were not alone. The thousands who migrated to California demanded mail, so the Post Office obliged. Stagecoaches carrying the overland mail from Missouri to California were regular sights in the 1850s.

As westward expansion continued, it heightened the antagonism between the North and the South. Brawling over slavery, for example, by John Calhoun and then by Jefferson Davis, flared in the new states. Both served as secretaries of war during this period, provided great service to the nation, and profoundly affected the contracting process. Calhoun left to return to the Senate and served as Vice President under John Quincy Adams and Andrew Jackson. He is better remembered for his vehement state rights doctrine. Jefferson Davis left the office to become a U.S. Senator and then President of the Confederacy.

America's industrial revolution was in full swing as people capitalized on Eli Whitney's manufacturing process. The country's industrial prowess leaped forward when the Bessemer process was invented for turning iron into steel. Another giant step came with the standardization and uniformity of parts. Standardization techniques were first used in making firearms, but craftsmen trained in those techniques soon shifted to making machine tools for other items, from sewing machines to clocks to farm implements.

The government refined its procurement process during this period. For the first time, written guidance was provided in the regulations of the various departments, and Congress reinforced the preference for competitive bids. That process was later swept away by the Civil War.

## 1815 to 1845

### *Abolishment of the Civilian Contractor System*

After the War of 1812, the army's strength had fallen to about 8,200 men, when John C. Calhoun became secretary of war on December 8, 1817.[1] The new secretary almost immediately confronted an outbreak of Indian warfare on the border between Georgia and the Spanish province of Florida. He ordered General Andrew Jackson to quell the uprising.

For the army during this war, the supply system virtually did not exist. From the time Jackson left Nashville in late January 1818, until he first fought the Indians early in April, he had to devote all his energies to feeding his troops. When he arrived at Fort Hawkins in central Georgia on February 9, he discovered that the contractor had failed to supply him with rations. For more than a thousand men, he reported to Calhoun, there was not "a barrel of flour or a bushel of corn." He bought some local pigs, corn, and peanuts and raced desperately for the nearest fort, arriving at Fort Scott, Georgia, on March 9.

Jackson's experience in the First Seminole War confirmed what the War of 1812 had made painfully obvious: the civilian contractor system was unreliable.[2] In 1818, Calhoun summed up the patent weaknesses of the contract method of supplying food to troops in wartime in a letter to the House of Representatives:

> The defects of the mere contract system is [sic] so universally acknowledged by those who have experienced its operation in the late war, that it cannot be necessary to make many observations in relation to it. Nothing can appear more absurd than that the success of the most important military operations, on which the very fate of the country may depend, should ultimately rest on men who are subject to no military responsibility, and on whom there is no other hold than the penalty of a bond. When we add to this observation, that it is often the interest of a contractor to fail at the most critical juncture, when the means of supply become the most expensive, it seems strange that the system should have continued for a single campaign.[3]

On April 14, 1818, Congress abolished the contractor system and re-instituted a commissariat by creating a staff Subsistence Department, headed by a commissary general of subsistence. Calhoun himself, while a member of the House of Representatives, had sponsored resolutions for that purpose. Under the new system, contractors would deliver rations in bulk at depots where commissaries would handle the storage, distribution, and transport. Thus, the military had returned to the Revolutionary War system of quartermaster and commissary generals, although Morris' precepts of competitive bidding would still bind those officials.

### *The Johnson Contract*

Although Congress had ended the contract system, the system had one more catastrophe to inflict.[4]

By 1819, the army had begun to move west to protect trappers and settlers. Secretary of War Calhoun ordered an expedition to the Mandan Village, near the present site of Bismarck, North Dakota. The commissary general system would not begin operating until June 1, so Calhoun had to rely on the still existing contractor supply system. He ordered James Johnson of Kentucky, who held contracts for supplying the troops at various posts in the West, to deposit 420,000 rations at Belle Fontaine, about 20 miles west of St. Louis, by March 21, 1819. Later, the commissary general requisitioned 250,000 more rations for delivery before May 1.

James Johnson's brother, Richard, was chairman of the House Committee on Military Affairs. Richard solicited another transportation contract on behalf of his brother. Because of the importance of military control and responsibility in such an expedition, Quartermaster General Thomas Jesup opposed the contract but reluctantly agreed upon Calhoun's orders. Johnson

also received a third contract, to transport from Pittsburgh to St. Louis the clothing, ordnance, and medical stores for the expedition.

As was customary, Johnson received advances to enable him to perform. On the subsistence contract, for example, he received $35,000 for each quarter. Johnson's arrangements did not live up to expectations nor to the advances. Jesup protested that the contractor would need "something more than idle professions and ostentatious boastings" to succeed. Jesup would have terminated the transportation contract, since Johnson had defaulted on it, but such large advances had been paid that the contract continued. Johnson acknowledged the advances had been liberal "for ordinary years" but argued that 1819 was a year of panic brought on by the second Bank of the United States. His finances had deteriorated and he could not get loans, settle debts, or buy on credit. Johnson desperately needed more advances. He convinced Calhoun that if he did not get the money, the expedition was doomed.[5]

Calhoun granted another advance of $50,000 on the transportation contract and accepted two drafts (called "acceptances") drawn by Johnson to buy an additional steamboat. Jesup was amazed; he had advanced Johnson another $10,000, which, together with those Johnson had already received, made an amount totaling more than what the whole expedition should have cost for the year. Johnson's representation that the expedition would fail without that $50,000 advance was bogus. Jesup assured Calhoun that he had made arrangements that would ensure success despite Johnson.

The Johnson brothers' ingenuities were not yet exhausted. Early in July, Calhoun received a letter from President Monroe. The Johnson brothers had persuaded Monroe, to prevent failure of the expedition, to order Calhoun to advance the contractor $85,000 more on his subsistence and transportation contracts. Calhoun also had to advance Johnson an additional $57,500 upon receipt of title to Johnson's four steamboats. Johnson immediately drew against the advances Monroe had ordered.

Calhoun was stunned. The advances on the transportation contract had been large, and those on the subsistence contract were within some $28,500 of all that would be due the contractor when he made his last delivery. At that rate, the War Department's funds would be depleted before the year ended. Calhoun begged Johnson to make no further drafts or he would have to refuse payment.

At St. Louis, Jesup refused to grant any further advances and charged that Johnson had transported only four companies of men and about 350 tons of provisions and stores. Johnson insinuated that "this good man [Jesup] this gallant & faithful officer has permitted his mind to be poisoned & operated upon" by Johnson's enemies in St. Louis. Jesup responded that the government could not rely on the contractor's "fair promises." Some troops and stores had begun moving in mid-June in keelboats furnished by the Quartermaster Department, but Johnson's failure to comply with his contracts would prevent any troops reaching the Mandan Village in 1819.

Although the army prepared in the winter of 1819–1820 to reach the Mandan Village, congressional investigations aired charges of extravagance and stopped further appropriations for the expedition. The troops were halted at Council Bluffs. War Department entanglement with the Johnson brothers, however, was not yet over.

Late in 1819, Johnson presented a bill that included not only enormous charges for the use of his steamboats and keelboats but claims for delays caused by the government. Jesup rejected these claims. He responded to Johnson's boasts of patriotism that his patriotism was not in doubt, but that it should not affect the price of transportation. Under the terms of the contract, however, Jesup referred the claim to arbitrators. The arbitrators generously awarded the contractor 16-1/4 cents per pound for all supplies shipped, either on board steamboats or keelboats. In effect, this amount included everything the contractor shipped, plus everything the Quartermaster Department shipped; for, if a steamboat broke down, as one did, and the Quartermaster Department transported the cargo, the contractor still received the full price. A House committee investigating the contract and arbitration findings recommended that the award be set aside and that the Attorney General recover for the United States whatever might be due from James Johnson.[6]

In 1820, Congress tried to correct one aspect of the problem.[7] During hearings on Military Appropriations, Congress debated the practice of government officials contracting without proper fiscal authority. Congressman McCoy of Virginia condemned the practice of permitting the heads of departments to initiate contracts and pledge the government beyond the limits of available funds. Contracts "ought not to be made by officers of the government but under the authority of law." He also concluded, "Contracts should not be made in anticipation of appropriations because

circumstances might arise the following year that would prevent Congress from appropriating the necessary funds."[8]

Congressman Livermore agreed and argued that the 1820 appropriation bill should be worded "as that no part of the amount should be disbursed but in pursuance of contracts previously authorized by law." This recommendation passed, but as a remedy in dire emergencies, Section 6 of the 1820 statute made it possible for the Departments of War and Navy to contract for food and clothing in excess of, or without appropriations.[9] The statute would be used in less than forty years to authorize supplies vitally needed in Utah.

In its General Regulations of 1825, the army also tried to prevent a recurrence of the Johnson fiasco. It required that the contractor supply a bond, supported by two sureties, conditioned on the faithful performance of the contract. Also, no payment could be made until supplies had been delivered or services performed.

## The Arms Industry—Standardization

### *New Authority of the Ordnance Department*

While the Johnson Brothers were raiding the Treasury, events of far more importance were occurring with virtually no notice by Congress or the higher levels of the Executive Branch. Fortunately, historians have faithfully reconstructed the progress.

On February 8, 1815, exactly one week before the Senate ratified the Treaty of Ghent ending the War of 1812, President James Madison signed "An Act for the better regulation of the Ordnance Department," which gave the entire responsibility for negotiating and supervising arms contracts to the Ordnance Department.[10] Contrary to the act that had created this department in 1812, the new law carefully spelled out its duties and responsibilities and expanded its authority. Formerly, the department's primary mission had been to inspect cannon, prove gunpowder, and supervise the manufacture and storage of gun carriages, munitions, and other equipment at several federal arsenals. Ordnance officers could not make contracts, nor did they control the procurement and production of small arms.

Under the act of 1815, however, all this changed.[11] The chief of ordnance became responsible for contracting for arms and ammunition, for recruiting

and training "artificers" to be attached to regiments, corps, and garrisons, and for supervising the government armories and storage depots. The act also allowed the chief of ordnance "to draw up a system of regulations . . . for the uniformity of manufactures of all arms ordnance, ordnance stores, implements, and apparatus, and for the repairing and better preservation of the same."[12] For the next forty years, this charge guided ordnance policy, impelled important developments in military technology, and eventually transformed the American industrial system.

### *Steps Toward Standardization*

The Ordnance Department used its new power quickly.[13] In June 1815, Colonel Decius Wadsworth, the chief of ordnance, called a special meeting at New Haven, Connecticut, to discuss the problems of standardizing firearms and to formulate an appropriate strategy. Wadsworth's old friend Eli Whitney hosted the gathering, which included Superintendent Roswell Lee of the Springfield armory, Superintendent James Stubblefield of the Harpers Ferry armory, and former Springfield Superintendent Benjamin Prescott. After several days of deliberation, they agreed to try uniformity first in manufacturing muskets and then in all military small arms. If the experiment succeeded, they would extend the program to arms made by contractors.

Buying muskets from private companies had produced problems, as Callendar Irvine had predicted. Because factory owners and artisans often covered up defects and inferior work, they delivered thousands of faulty muskets annually to government agents, who accepted them on little more than good faith and perfunctory inspection. By 1810, over 10,000 defective contract muskets filled government arsenals. Colonel John Whiting recommended that the country dispose of these poor weapons by selling them to markets in Africa and South America.[14]

Since 1792, the Treasury Department, and, after June 1801, the War Department, had been unable to set acceptable standards for the manufacture and inspection of high-quality firearms and thus could not effectively administer the contract system. The government gave each contractor a pattern piece and some vague instructions as to what constituted an acceptable weapon. The contractor then had to devise his own manufacturing techniques and devices. Skilled artisans produced quality work, but others did not. Inspections without gauges and other accurate

testing devices depended solely on the skilled eyes of the inspector. Because such inspectors' abilities varied markedly, haphazard, and highly subjective inspections resulted. Often contractors persuaded inspectors to overlook defects through appeals to friendship or through bribes and other gratuities. On occasion, the secretary of war simply abandoned procedures and allowed contractors to inspect and receive their own muskets on behalf of the government. This occurred in December 1808, when Henry Dearborn extended the privilege to Eli Whitney—barely six months after Whitney had been reprimanded for a large delivery of muskets with seriously defective parts.[15]

The first significant advance in inspection procedures occurred at the Springfield armory around 1818, when master armorer Adonijah Foot and several workmen developed a method of gauging musket components both during and after the manufacturing process. By 1819, the still imperfect procedure was far more sophisticated than inspections at other armories. Within two years, Superintendent Lee announced to Colonel George Bomford of the Ordnance Department that "our Muskets are now substantially uniform." He quickly added, "I am sensible that considerable improvements are yet to be made to complete the system of uniformity throughout all the Establishments."[16]

Bomford did not wait. In the summer of 1821, he announced his intention to introduce Springfield's gauging standard, not just at Harpers Ferry, but among the private contractors as well. To ensure uniformity between the arms produced by the national armories and private contractors, the Ordnance Department devised regularized checks to measure the work. These improved quality controls encouraged the further introduction of mechanized techniques. For this reason, inspection methods often paralleled other key technological changes in the industry. This decision signaled the end of the purely subjective inspection procedures and the start of a new mechanical tradition. From then on, steel gauges gradually replaced personal subjectivity in evaluating ordnance.

Lee and Stubblefield, acting under Bomford's directive, had distributed six sets of "go-no go" gauges to various musket contractors. Each set consisted of ten different pieces which verified the lock mechanism, the bore and exterior of the barrel, the fall of the stock, the size of the bands, the diameter of the ramrod, and the length and width of the bayonet. To guard against defects either from faulty workmanship or wear in the working gauges,

Bomford required quarterly reinspection of some weapons produced at both public and private establishments. Different individuals performed this task although the master armorers at Springfield and Harpers Ferry were normally responsible. They inspected with a master set of gauges and wrote reports comparing and evaluating the work of the different armories. If any deficiencies existed, they immediately notified the chief of ordnance, who then directed corrective action.[17]

Meanwhile, Bomford established a special reference collection of military firearms at Washington for comparison and study. He also apprised private manufacturers that future arms contracts would depend on their current performance, especially whether they updated their operations and cooperated with the department in sharing new inventions and other relevant information. Heeding this injunction, major contractors like Marine T. Wickham, Brooke Evans, and Nathan Starr almost immediately adopted new machinery and other labor-saving techniques from the national armories.

On August 15, 1822, Whitney executed his third and last contract for muskets—3,000 muskets a year for five years starting in January 1824—but new craftsmen were already surpassing him.

Most prominent among them was John H. Hall of Maine, who in 1811 had patented a breechloading rifle.[18] On March 19, 1819, he signed a special contract with Wadsworth, requiring manufacture of 1,000 breechloading rifles. The document also stipulated that instead of being paid a piece rate or hourly wage, Hall would receive a salary of $60 a month plus a royalty of $1 for each weapon produced.

The contract of 1819 was unique because it gave Hall the option of making the arms either at his own shop in Portland or at one of the national armories. Since financial problems had forced Hall to dismiss most of his workmen during the summer of 1818, he chose the latter. So the contract specified that Hall would serve at Harpers Ferry and "perform the Duty of an Assistant Armourer in instructing and directing the Workmen, to be employed in fabricating the Firearms above Specified." In signing his contract, Hall became a private manufacturer at a public armory.[19]

The demand for Hall rifles mounted rapidly. Between 1827 and 1829, 96 congressmen asked for specimens to exhibit in their districts. While similar requests came from two foreign governments, private individuals, and the

Marine Corps, the largest orders by far came in from state governments. Under the provisions of the 1808 act on small arms, each state received a yearly quota and could stipulate its needs for military supplies. So, when six state governors demanded Hall rifles instead of muskets, the Ordnance Department faced an unexpected supply problem. At first, Bomford refused to honor these requests, primarily because he deemed it unwise to give such expensive weapons to inexperienced troops. As demands from the states mounted, however, the secretary of war overruled him. He had to fill these orders.

Although Hall believed he could easily supply both federal and state needs with adequate shop facilities, a legal technicality required that all arms made under national armory appropriations be "reserved solely for the use of U. States troops."[20] Since the War Department defrayed Hall's expenses from these funds, it meant that his rifles could not be issued to state militias. Congress had traditionally reserved all appropriations for arming and equipping the militia to private contractors. To furnish the states with Hall rifles, some contractors would have to start making them. Bomford recommended Simeon North of Middletown, Connecticut, based on North's widespread reputation as an innovative arms maker.

## The Mastery of Interchangeability

North was born in 1765, the same year as Whitney, and kept refining and innovating until his death in 1852 at 87. He had begun by making scythes, in an old mill next to his farm and developed into the country's leading pistol maker. His first government contract had been on March 9, 1799, for 500 pistols at $6.50 each. During the War of 1812, he had contracted on April 16, 1813, to supply the government with 20,000 pistols. The contract had required, at North's own recommendation, that "The component parts of the pistol are to correspond so exactly that any part of one pistol may be fitted to any other pistol of the 20,000."[21]

On December 10, 1823, he branched out and signed a contract to make Hall rifles. Hall worried about a contractor trying to make his rifles. "The amount of capital must be large & the risk great," he cautioned, "for if the contractor should fail of full and complete success, his arms must all be rejected and he will be ruined, as the introduction of the Rifles into the service in so defective a state as not to admit exchanging all their parts with each other, and with those made here would totally defeat the great object for which so

much expense has been incurred." Hall estimated that it would cost $16.68 to produce each rifle, adding "that a contractor ought in justice to himself, to get as much more in addition to this amount as will compensate for the deterioration of his property and the interest of his capital while getting his manufactory under way." While he did not oppose contracting with North, he doubted that any private contractor could meet the necessary standards for manufacturing his rifle with interchangeable parts.[22]

Although North's first rifle contract, a standard contract of the time, did not require the parts to be made interchangeable, North proved in 1826 that his rifles could be made with interchangeable parts. With the aid of over 63 inspection gauges and an impressive array of machinery, including many machines and special devices he introduced, he produced exceptionally fine weapons.

Apparently, North was the only private arms maker at the time who had sufficiently mastered the interchangeable parts system to make Hall rifles. In 1828 and 1829, North and three other gun makers, including Henry Deringer, long an accomplished rifle maker, contracted to make Hall rifles. Only North completed his contract, and he continued to make rifles for many more years. North added another dimension to precision manufacture when he successfully produced rifles whose parts exchanged with those made by Hall at Harper's Ferry.

His contract of December 15, 1828, for five thousand rifles at $17.50 apiece, contained an important clause reading—

> And it is further agreed, that the said rifles shall have that perfect uniformity of their respective component parts, that any one part, or all parts of either, or any one of the rifles, may be exchanged for its corresponding part or parts, in either or any other rifle, made or to be made under this agreement. And also, that the component parts may be exchanged in a similar manner, with the rifles made, or making, at the National Armory. The said exchanges to be made without impairing in the least the efficiency or perfection of the Arms, which are thus composed of exchanging parts.[23]

Hall and North proved what could be accomplished by adopting uniform practices at two distant factories. After that, Bomford concluded that uniformity could and should be used on a much broader scale. He forced the uniformity system on the contractors, and it became the basis of the American system of manufacture, characterized by special machinery,

precise gauges, and interchangeability of parts. Within twenty years, in the mid-1840s, the national armories and private contractors began to produce the Model 1841 percussion rifle and the Model 1842 percussion musket, the first fully interchangeable firearms ever mass produced.[24]

The rigorous inspection standards gave rise to a saying still in use today but with vastly different meaning. The saying was "close enough for government work." Originally the saying was a boast by contractors to would-be commercial customers, that their products were so well manufactured that the government would accept them even with its known high standards. Unfortunately, by the middle of the twentieth century because of the scandals that will be recounted in this book, the same saying now is used to denote a feeling by a contractor than even shoddy work will be accepted by the government.

## Diffusion of Knowledge and Techniques

To spread knowledge and share ideas, the Ordnance Department had the national armories open their shops to visitors, who could make drawings, borrow patterns, and obtain other needed information. At the same time, the department had an implicit understanding with all arms contractors that they had to share their inventions with the national armories on a royalty-free basis if they wished to continue receiving government contracts. This procedure, exemplifying the public service orientation of the Ordnance Department, allowed novel metal and woodworking techniques that had originated in the private armories to become part of the public domain. Because of this free exchange policy, few patents for vital machines and machine processes were issued before the Civil War.[25]

This knowledge, once diffused, had amazing effects and applications. In Middlefield, Connecticut, in 1845, Stephen Finch originated the turret lathe under a government contract while producing percussion locks for an army horse pistol. All present day copying and profile turning lathes trace their ancestry to Thomas Blanchard's gun stock lathe at Springfield Armory. Even at the most primitive stage of development, Blanchard's machines produced much more uniform work than artisans with hand tools could do. Consequently, arms makers, no matter how hard-pressed they were for funds, virtually had no choice but to install Blanchard's equipment if they wished to meet Ordnance Department specifications and continue on government contracts. The development of the universal milling machine

also resulted from a government contract. Between 1861 and 1862, the Brown and Sharpe Manufacturing Company produced the first such machine for the Providence Tool Company, which had received a contract at the outbreak of the Civil War to produce Springfield rifles.

By the mid-1840s, the manufacturing methods of the national armories and their contractors had spread beyond private firearms factories, like the Robbins & Lawrence works in Windsor, Vermont, to factories and machine shops producing all manner of metal products. Workmen who had received their early training at a public or private aims factory became master machinists and production supervisors at other manufacturing establishments. Other men left the arms business to start the machine tool industry, and went from there to carry the principle of uniformity into making railroad equipment, sewing machines, pocket watches, typewriters, agricultural implements, bicycles, and so on.

For example, Jacob Corey MacFarland, a skilled machinist, left the Springfield armory around 1845 to become the foreman of the Ames Manufacturing Company's machine shop at Chicopee, Massachusetts. The Ames Manufacturing Company began to devote more and more of its resources to the production and commercial sale of machine tools. Indeed, the future of the machine trade looked so bright that a number of new, more specialized companies soon joined the field. Francis Asbury Pratt worked at the Colt Armory for two years; Amos Whitney worked there for four years. In 1860, they started out on their own, and in 1869, formed Pratt and Whitney of Hartford, Connecticut, manufacturing machine tools for making firearms and sewing machines. Their appearance paved the way for the establishment of a bona fide machine-tool industry in the United States. The fact that all these enterprises sprang up so close to the Springfield Armory in New England turned the North into an industrial power while the South remained tied to its agrarian roots.

As Geoffrey Perret notes,[26] the engine lathe, milling machines, and other machines created entire industries that changed daily American life. Singer's sewing machines produced cheap clothing in the 1850s. The McCormick reaper produced cheap food. Cheap rolling stock produced cheap transportation. Liman Blake invented machinery that turned out millions of excellent cheap shoes for Union soldiers. Singer, McCormick, and Blake all directly descended from Whitney, Hall and North. Thus, the armory method, especially its machine tools and precision instruments, soon transformed—

indeed created—American industry. Division and specialization of labor and standardization of products became commonplace.[27]

Alvin Toffler described the machine tool industry as giving technology a womb by inventing machines designed to give birth to new machines, in infinite progression. More importantly, it brought machines together, in interconnected systems under a single roof, to create the factory and ultimately the assembly line within the factory.

The government was also trying to spread other knowledge. The early use of steam for engines caused injuries and death when the boilers exploded. To determine the causes of the explosions, the secretary of the Treasury, in the 1830s, contracted with the Franklin Institute in Philadelphia to conduct experiments concerning the problem; awarding one of the earliest government research contracts.

## Changes in the Arms Industry

After 1830, the contract armory system for procuring small arms declined for several reasons. Most of the old makers disappeared from the lists of manufacturers during the 1830s and early 1840s. Some firms that depended too much upon one craftsman died with that individual. Others could not finance the mounting capitalization costs caused by the new technology and frequent model changes, and the uncertainty of further government patronage.[28]

Many contractors could not survive the uniformity system and its rigid inspections, which almost invariably revealed that contract arms were inferior to those made at the national armories. They were destroyed by the very systems they helped to create. Repeated flaws, subterfuges, and shoddy work convinced many that such pioneers as Lemuel Pomeroy, Asa Waters, and Marine T. Wickham could not meet the stringent requirements of the new technology. For a time, it appeared as if contracting would disappear altogether. While the Mexican War temporarily halted this trend, the makeup of the arms industry had changed markedly by mid-century. By 1846, only three of eleven major firms active in the 1820s still held government contracts. By 1856, all but one—the Whitney Arms Company—had gone out of business. Replacing them were larger, corporately organized enterprises headed by younger, more aggressive businessmen such as James T. Ames, Samuel Colt, Epiphalet Remington, Samuel Robbins, and Richard

S. Lawrence. Unencumbered by old equipment, machinery, and ideas, they used and improved the mechanical method.[29]

The contract system failed for another reason. Some years later, General George Talcott, chief of ordnance, was court-martialed for malfeasance in no way connected with these gunmakers. The trial uncovered the fact that he owned a large iron-foundry in Richmond, Virginia, devoted to making cannonballs for the United States; that his nephew ran the shop, which received very lucrative contracts, and that Talcott had become very rich. The money intended for the armories' contracts had gone to his shop. General Winfield Scott relieved Talcott from the Office of Chief of Ordnance, stripped him of his commission of brigadier general, and ordered his name erased from the roll of army officers.[30]

The contract armory system for arms disappeared until the frenzy for arms caused by the Civil War revived it.

### *The Army's Road Building Contracts*

While the government was developing new methods of production, it was also contracting for the expansion of the country.

In 1811, Congress authorized the Treasury Department to award contracts to build a road from Cumberland, Maryland, to Wheeling, West Virginia. Contracts for the construction of the first ten miles of the National Road west of Cumberland were signed in April and May 1811. Nine years after the enabling act, stagecoaches carrying passengers and mail ran regularly between Cumberland and Wheeling and, by branching off, to Washington and other cities. Congress then extended the road. Contractors were largely responsible for building the eastern segment of "Uncle Sam's Pike." For example, the May 19, 1819, advertisement for construction of the section between Union Town and Washington, Pennsylvania, required written proposals for the entire expanse. A description of the location of the road was available for inspection. Proposals were to be opened on the second Monday in June. War Department engineers would direct the construction, but the contractors had to furnish materials and finish by October 1, 1819. When construction moved west of Wheeling, Congress gradually gave the War Department a greater role in the process but not without passionate debate.

Today, the federal government has expansive, virtually unquestioned authority. In the 1820s, however, critics opposed any internal improvement by the federal government.[31] Although presidents from Thomas Jefferson to Martin Van Buren recognized that the nation needed to build wagon roads, the politicians could not agree on the constitutionality of internal improvements. James Monroe concluded that the federal government could only fund projects for common defense and of national interest—not works for state or local benefit. Monroe's successor, John Quincy Adams, did not adhere to such rigid requirements, but Andrew Jackson tried to return to Monroe's basic requirement that only projects of national and military importance dictated the use of federal funds.

Therefore, Congress began funding the construction of military roads. Since proponents touted national defense as a constitutional justification of the federal road program, these projects were assigned to the secretary of war, who would award the contracts. This was not merely a subterfuge to get around the objections. There was a legitimate reason for the War Department to award these contracts, which even the hardliners would admit.[32] The army needed better roads to control the Indians even if it had to build them. America's pitiful roads (little more than rutted dirt paths) had wrecked almost every offensive operation in the War of 1812 and as far back as the Harmar and St. Clair Expeditions. The worse disasters had occurred because of the often impassable roads in the Ohio River and Detroit areas. Nevertheless, even Henry Clay viewed such projects as a subterfuge. He pointed out sarcastically that a "detachment of stagecoaches" was soon to march over a so-called military road, since proposals had already been sent to the Post Office asking for permission to use the road.[33]

Two different road building systems developed in the 1820s when road building began in earnest. In appropriating funds for nonmilitary territorial roads, Congress merely made the president responsible for proper expenditure, and authorized him to name three civilian commissioners to make surveys. They would send plats, diagrams, and field notes to Washington, and the president, on the advice of the engineers in the War Department, accepted or rejected proposed routes. Only then did construction begin. Funds permitting, civilian contractors built the roads with hired labor. But Congress specifically authorized the president to use soldiers on nonmilitary routes, if necessary.

Between 1820 and the 1850s, the army worked out, through experimentation, a successful procedure for military road building in the trans-Mississippi West.[34] Since only able engineers could determine the cost and routes of proposed improvements, Calhoun proposed to use army engineers to aid road and canal construction. He planned extensive preconstruction surveys to be used by Congress to decide which undertaking to finance. After approval, he planned to use the army, as well as public funds, to build roads and canals, especially on works near the frontiers and in other thinly populated areas. Since the army was small, however, troop labor could not always build the roads, and so the War Department's typical instruction to the engineer in charge was that he could do the work either by contract or he could "employ hands for that purpose. The former is believed to be the preferable mode, particularly if persons residing along the line, and thus interested in the success of the work, are willing to undertake it at modest rates." Superintending officers commonly selected local agents to direct operations. These officers had some discretion as to the pay of agents, which often ranged from 2.5 to 5 percent of disbursements on their projects. This method had worked well in constructing fortifications.

One of the first uses of contractors ended badly, however. In 1824, Congress had appropriated $15,000 for the exploration and survey of a route from Memphis to Little Rock. Periodic allotments allowed local contractors to build the road east of Little Rock as far as the St. Francis River.[35]

Lieutenant Alexander H. Bowman of the Army Engineers supervised the work. He completed a survey of the route in the spring and summer of 1833, and issued construction contracts for the following year. At the close of 1834, a track 160 feet wide had been cleared of timber and underbrush and a central line of 34 feet prepared for the embankment. The dampness of the swamp made it difficult to keep workers because they became ill or deserted. The inadequate working crew and wet weather ultimately combined to force the contractors, after financial loss, to forfeit their contracts. Realizing that they could not complete the embankment, Lieutenant Bowman abandoned the contract system and proceeded with the construction by hired labor under direct employment of the United States.

During this period, probably the greatest problems of conflict of interest arose since the Revolution. Engineers were scarce, especially those with extensive experience in road and railroad building. So in 1824, the General Survey Act authorized the use of military engineers for transportation

improvements of commercial or military importance. The government expressly permitted army engineers to do off-duty or part-time work with railroad companies. Promoters of a railroad from Detroit to St. Joseph in the Michigan Territory asked that an officer be assigned to supervise the building of the first section of their line between Lakes Erie and Michigan. The Army Topographical Bureau explained that such aid was feasible, but not by the direct loan of an engineer: "It is not at present the practice of the Department to detail officers of the army to superintend the construction of railroads. Whenever they are thus employed, they are engaged upon their own responsibility, and they must be either on furlough, or they must devote to the business such portion of their time, as does not interfere with their public duties." The bureau then informed Lieutenant John M. Berrien that he was free to superintend the construction of this railroad in his spare time.[36]

Railroad and roads contractors eagerly sought army engineers. Often engineers joined these companies and became their chief engineers without resigning their army commissions and with the full knowledge of their superiors. For example, army engineers worked extensively for the Baltimore and Ohio Railroad. The War Department had sent three engineering companies to aid the railroads but after that, their role blurred. Although he remained an army officer, one of the leaders of the engineering detachments became chief engineer of the road until 1836.

By 1830, army officers were routinely being given furloughs to enable them to work for the railroads. The New Jersey Railroad Company, for instance, asked to obtain the services of one Lieutenant William Cook, who had until then worked on the Baltimore and Ohio. The Chief of Engineers replied that if the company applied directly to the secretary of war, the secretary would undoubtedly grant Lieutenant Cook a furlough for six months and would later extend it, if necessary.[37]

Congress disliked the practice and, in 1837, the House Committee on Military Affairs asked the following questions:

> 1st. Have officers of the Army been permitted . . . to engage in the service of States, Companies or individuals, and receive compensation.
>
> 2d. In case such practice has prevailed, how many officers . . . have been so employed during the last five years, designating the service upon which employed and if with the permission of the Department, the amount of compensation paid to each of them.

> 3d. The views of the Department as to the effects of the practice upon the public service, and whether it should be prohibited or regulated by law.[38]

Colonel Abert, the chief of the topographical engineers, answered that, since 1824, the War Department upon request had ordered officers to help states, companies, and groups of individuals when it did not injure the public interest. These engineers had made reports to the War Department and recipients of the surveys, and their services were considered to be authorized by the General Survey Act. The states and companies had voluntarily paid some of the officers for making surveys or superintending construction because the Topographical Bureau had stipulated only that they pay the officers the equivalent of allowances lost by not being on strictly public duties.

These answers did not satisfy Congress and during the debate on the 1838 Army Appropriations Act, Senator James Buchanan insisted on a provision "to prevent the employment of [army] engineers by private companies." He argued that civil engineers were no longer scarce and that army engineers employed by canal and railroad companies "had accumulated large fortunes in the service of these companies, while the business of the Government was neglected."[39] The Act of July 5, 1838, stated that army officers could not be removed from their regiments or corps for work on internal improvements, and that they could not be employed by private companies.

Other problems complicated road building contracts. The citizens of the two communities the road would connect often differed about its construction. Consider road building in the Washington territory in 1856. Two rival factions emerged, both urging construction along a route beneficial to their own interests, guaranteeing that contract bids would be within the limits of the appropriation, and volunteering services and supplies to the army project. The engineer in charge, Lieutenant Derby, tried to resolve the conflict by advertising for bids without specifying the route. He intended simply to award to the lower bidder. The chief of the Pacific Roads Division rejected such a procedure as beyond Derby's discretion and notified the lieutenant: "It is your duty to select the best route, and if you are satisfied upon the point without any question of doubt, advertise it and advertise it alone."[40]

Derby divided into five subsections a new route from Cowlitz Landing to Ford's Prairie (Northwest of Mount St. Helens), drew up detailed

specifications for each improvement, and called for construction bids. He followed the army procedure of publishing notices in the territorial press and posting placards in public places. Eventually, the bids submitted by spokesmen for one route were disqualified because they submitted estimates for only a part of the advertised construction. The lowest bidder represented those promoting another route and the army contracted with him.

The losers protested directly to the Bureau of Topographical Engineers, and Colonel Abert referred the controversy to the secretary of war. Jefferson Davis disapproved the contract and declared: "Proposals will be invited to construct a road of certain standard and durability between these points, that is, between Cowlitz Landing and Ford's Prairie, without designating its location, and the contract awarded to the lowest responsible bidder."[41] Thus, he reversed the army's position and accepted the compromise urged by Lieutenant Derby several months before.

Other problems beset contractors improving roads across Kansas and Nebraska.[42] In February 1856, for example, the contract to build five bridges on the Fort Riley-Big Timbers road went to James A. Sawyers, the low bidder. The bureau refused the local engineer's request for an escort for Sawyers' workmen, and the contractor, in desperation, wrote directly to Jefferson Davis pleading for protection from the Cheyenne Indians. The War Department acquiesced and the local commandant sent a detachment from the Second Dragoons at Fort Riley to join the laborers, after they had been in the field for more than a month.

Before long, Sawyers realized that he was losing money on the contract. At the beginning of 1857, Sawyers put in claims for what he termed "extra work" not in his contract. The army engineer forwarded the claims to the bureau with an evaluation of each and a recommendation that all be disallowed. The War Department agreed, although everyone admitted that Sawyers had little profit to show for his season's work. The Sawyers contract demonstrates that the army system of awarding to the lowest bidder, who invariably ran short of funds before completion and then sought relief, had proven disadvantages. The estimates would need to be doubled to induce local contractors to do the work, because what they said of Nebraska in 1857 was true everywhere: "in this country they expect to make a small fortune in every contract with the government."[43]

By the middle 1850s, the situation was complicated because Davis, a southerner, was secretary of war, and many northerners did not want him to have the ability to spend funds on road building. Many members of Congress preferred to give the road building responsibility and funds to the Interior Department, which Congress had created in 1849. For a time, it was a "Department of Miscellany" and covered what the other departments did not. For example, it contracted for the construction of prisons for the Justice Department.

The debate in July 1856 over the wagon road between Minnesota and Nebraska typifies the problem. In the House, members objected to the bills because Jefferson Davis would direct the expenditure of the money, so they inserted the Interior Department as the responsible department. The Senate debated vigorously. The southern states'-rights senators were in a quandary, they did not want such federal activity at all but, if it had to be, they wanted Davis to control it.

Senator Clement C. Clay from Alabama remarked, "If the purpose of the road were to provide for the military defense of the country, I should have no scruples in voting for it." But one matter bothered him.

> . . . I have been surprised to find that the control and direction of the construction of this road is given to the Secretary of the Interior. This strikes me as a novel feature; and it changes, to some extent, the character of the work, as I have understood and am inclined to regard it. . . . I move to strike out "Secretary of the Interior" and insert "Secretary of War."[44]

California Senator Weller countered that the bill was written as it passed the House, and argued against the War Department's control of federal road building. Michigan's Charles E. Stuart persuasively argued that the road was through Indian country, and that the agents of the Interior Department supervised these Indians. According to Stuart, the House had wisely seen that the Secretary of the Interior, more than any other executive officer, could administer the road work with less likelihood of interference by the Indians. The amendment to transfer the construction to the War Department failed, and Congress passed the original bill. President Franklin Pierce signed the measure on July 22, 1856, and began assigning road construction to the Department of the Interior.

However it was accomplished, federal road building helped the nation to expand and set the stage for the next milestone in government contracting.

## The War with Mexico

Inevitably, the westward expansion driven by the "manifest destiny" philosophy and facilitated by its road building caused the United States to collide with Mexico over the southwest territories. Despite its jingoistic rhetoric, the United States was not ready for the Mexican War with either supplies or plans to procure supplies.[45]

The war began on April 24, 1846, but the posturing had started long before. In 1845, the War Department had even sent an Army of Observation close to Mexico, led by Brigadier General Zachary Taylor.

The law of 1809 required the government normally to buy goods by soliciting bids. Such a method, called sealed bidding today, was ponderously slow. Since 1842, army officials had been stressing the advantages of open-market purchases (speed and greater flexibility—what today is called negotiated procurement). Sending Taylor's army to Texas added force to their argument, since troops left posts where supplies were due under contract. Contracting officers needed flexibility to enter into new contracts and modify old ones. As in every war since, the secretary of war allowed open-market purchases during the war. At the war's end, however, the secretary reinstated the sealed bid system much to the disgust of some officials, who insisted the system should be ended altogether.[46]

The Mexican War was a land war, not a sea war. Responsibilities for army procurement, distribution, and transport of supplies and men lay primarily with the Quartermaster Department, the Subsistence Department, the Ordnance Department, and the Medical Department. The army not only had to feed and equip the volunteers who enlisted in the summer of 1846, but had to transport them to Mexico. For the first time, the Mexican War forced the army to transport its forces hundreds and even thousands of miles.

The immediate and overwhelming shortage was transportation: wagons, shallow draft steamboats, and animal transport. The unpreparedness was amazing since, from September 1845, dispatches from Taylor himself and his quartermaster had continually pleaded for additional wagons. Despite these pleas, Quartermaster General Jesup, during 1845, had apparently been completely unaware that extraordinary demands for wagons and steamboats were coming. From July to December 1845, he had awarded only 110 wagon contracts, and even advised a quartermaster officer in Philadelphia

that: "The making of the wagons should not be hurried: see that they, as well as the harness, be of the best materials and workmanship." General Jesup later explained that no information in Washington enabled the War Department to determine whether wagons could be used in Mexico. Indeed, even after the war began, Jesup could not give a map of Texas to one of his inquisitive officers, "there being none on hand for distribution."[47]

After the declaration of war, General Taylor frantically repeated his quartermaster's calls for wagons. This broke the logjam. Congress enacted the first war measure in May and gave the rush of money and support that always comes with a state of war.

Energetic procurement officers began to buy equipment and arrange for transportation for troops and supplies.[48] Jesup directed quartermasters at Philadelphia, Cincinnati, and Pittsburgh to buy 700 wagons for mules and oxen with the necessary sets of harness, with delivery as soon as possible. His officers at every possible procurement point in the United States went into the open market and began ordering and buying wagons. Willing to buy wagons at any price, quartermaster officers scoured Philadelphia, New York, Pittsburgh, Troy, Columbus (Ga.), Savannah, Buffalo, Cincinnati, New Orleans, St. Louis, Memphis, Vicksburg, and Natchez. When Jesup heard that a manufacturer at Pembroke, New York, had some wagons for sale, he sent the assistant quartermaster at New York to examine and buy them on the best possible terms. When he learned that the Georgia penitentiary at Milledgeville supposedly produced many wagons, he wrote the assistant quartermaster at Savannah to "Ascertain whether the information is correct [and] do the best you can, and in the shortest possible time."

The department waived specifications and increased prices to stimulate production, but the lack of an industrial base hampered contracting because of other factors. Only seasoned timber was suitable to build wagons, but large quantities of it were not available. Workmen were also scarce since many had joined volunteer companies. Former centers of wagon production had almost disappeared because of competition from other means of transportation. York, Pennsylvania, for example, had produced many of the wagons used during the Seminole War, but the railroads had greatly reduced the wagon business in that part of the country. Contracts had to be made with scores of wheelwrights throughout the country, because most firms were small and produced only a few wagons at any one time. The need was

urgent and time was short. In this war, as in others, although the government was willing "to pay for time," it could not easily buy that commodity.

Jesup's difficulties multiplied because subordinate army commanders did not realize the need for mobility and the difficulty of supplying an army. They demanded wagons far more than necessary to maintain an efficient force because the wagons brought the civilian standards of living along with the troops. The commanders supplied soldiers in the field with dancing girls, bars, theaters, newspapers, ice, liquor, vaudeville, gambling houses, fancy tobaccos, fancy groceries, camp followers, Bibles, souvenir items, etc.[49] Another more important problem was a parsimonious commander-in-chief. James Knox Polk believed in conquest on the economy plan. His tight-fisted control over the purse strings hampered procurement and transportation.

A similar crisis atmosphere infected steamboat and other sea transport procurement. Again, quartermaster agents scoured every available market to buy the boats at exorbitant costs. When the army prepared to invade Vera Cruz, it hired Richard F. Loper of the firm of Loper and Baird of Philadelphia on a per diem basis as a special agent. The army wanted Loper to contract at Atlantic coast shipyards for the construction of 140 barges, in conformity with drawings and specifications furnished by the navy.

The army had learned a great deal about water transportation during its wars with the Seminole Indians. For the first time, the army capitalized on Fulton's invention and used steamboats extensively to support operations. Most of the troops and supplies used in Florida went by ship, usually chartered sailing vessels from New York, Philadelphia, and Washington, or by steamboat from Charleston, Savannah, and New Orleans. Before the Florida Indian wars ended, the army preferred army-owned steamboats, more reliable and cheaper, over steamboats hired from private contractors, although it chartered about forty steamboats during 1836 and 1837. In the fall of 1840, five government-owned and six chartered steamboats were in regular service, mainly transporting forage for the 2,140 horses and mules in use in Florida. These lessons in transportation proved useful in the Mexican War.

Troops ordered to the Pacific coast normally went from New York either by way of Cape Horn or the Isthmus of Panama.[50] The voyage around the Horn, in sailing ships chartered by the Quartermaster Department, usually lasted over five months. By way of the Isthmus, troops could arrive at San

Francisco in a month. That route was more expensive than via Cape Horn since it used first-class steamers on the Atlantic and Pacific Oceans and, until the construction of a railroad in 1855, muleback and canoe passage across the Isthmus. The use of sailing ships on this route was too hazardous, since any long delay in Panama would expose the troops to cholera. Under the contracts for this route, the contractor had to feed the troops en route for an average of $225 for each commissioned officer and $150 for each enlisted soldier, as well as 15 cents per pound of extra baggage over the 100 pounds allowed on the steamer and 25 pounds across the Isthmus. Owners received a flat sum for ships chartered for the voyage around Cape Horn. Jesup preferred to charter the entire ship since he could send annual supplies of medicines and subsistence with the troops, who could take more than the usual amount of baggage with them.

Taylor's invading force was to march overland to Camargo and be supplied by steamboat up the Rio Grande. But he could not move immediately because he lacked the transportation equipment, especially pontoon equipment (developed during the Second Seminole War), which he had requested while he was still at Corpus Christi. The problem stemmed partly from his failure to requisition in time and partly because of the effort required to build more wagons in the United States, and to collect shallow-draft steamboats at river towns on the Mississippi and the Ohio and send them across the Gulf of Mexico. Ten steamboats were operating by the end of July. By the end of August 1846, the government had bought enough wagons, but they did not begin arriving until November, after the campaign ended. Meanwhile, to supplement his wagon train, reduced to 175, Taylor had to rely on 1,500 Mexican pack mules and a few native oxcarts. He also conducted local procurement on a strictly cash basis, including having U. S. Grant serve as a regimental quartermaster.

Although some congressmen believed that certain sections of the country received a disproportionate share of contracts, purchasing officers bought all the accouterments of war in the same manner as wagons and steamboats throughout the country. For most of these items, supply was adequate but the process remained hectic and came perilously close to failure. Fortunately, the Mexican supply system was even more confused.

## Changes In the Process

By June 30, 1846, quartermasters, commissaries, paymasters, and other officers already had spent over $3 million of the $10 million appropriation for the "Mexican Hostilities." The procurement moved faster than ever before because now the telegraph could rush wartime procurement orders. Only two years before the war, the government had financed an experimental telegraph line from Washington to Baltimore, and private enterprise had extended lines to New York and Philadelphia in 1845. Jesup could now order clothing and equipment from the Schuylkill Arsenal, arrange shipments from New York, or direct his quartermaster in Baltimore to speed the procurement of wagons. For record purposes, the department confirmed the telegraphed order by letter the same day. The demand for such record keeping caused passage of an act in August 1846, which required strict accounting of receipts and payments. It prohibited the deposit, loan, or other use of public funds for private purposes, and established other safeguards against embezzlement. Perhaps more significant, it required that after April 1, 1847, all payments had to be in gold or silver coin or, if the creditor agreed, in treasury notes. This assurance of sound financial backing eased the troubles that had plagued procurement officers in earlier days.

Interestingly, the militia during the war was better armed than the Regular Army. Although entrepreneurs like Colt and Remington had spread the use of percussion arms, General Scott refused to issue them because they had not been sufficiently tested. The volunteers, however, refused arms from the government and instead relied on their personal Colt revolving rifles, pistols, Hall breechloading rifles, and other percussion weapons. Colonel Jefferson Davis, later secretary of war, flatly rejected old flintlock muskets for his Mississippi volunteers and finally obtained Whitney rifles for them. The use by Taylor's Texas scouts of the Colt revolver convinced the army to award contracts to Samuel Colt, who will be discussed later.

The war exhibited one interesting aspect of the debate over contractor-produced versus government-produced goods. The army had always contracted for its shoes, known as bootees, but by the summer of 1847, the contract method had become so inefficient that complete dependence on it ended. To guard against shortages, the Quartermaster Department set up a bootee-making establishment at the Schuylkill depot. By the end of the war, it was turning out twelve thousand pairs a month in correct sizes and acceptable quality. The system succeeded so well that the War Department

continued it after the war. It abandoned the contract method completely since the bootee establishment could fill all demands of a peacetime army.[51]

America's victory over the Mexicans facilitated the country's expansion through the southwest, but the impetus came with the discovery of gold in California.

*Chapter 6*

# Freighting Empires and the Overland Mail Service

The idea of "manifest destiny" did not lose its influence when the Mexican War ended on February 2, 1848, with the Treaty of Guadalupe Hidalgo. As the army and settlers moved westward and stayed, the country's expansion forced the development of two more areas for government contracting—freight and overland mail.

## Freighting Empires

From the time the Army of the West occupied New Mexico in August 1846 to the disruption caused by the Civil War, a span of fifteen years, the army was the single, most significant factor in the economic development of the Southwest. The U.S. government designated Santa Fe as an army depot and post and established six more posts in New Mexico Territory, garrisoned by 875 men and supplied from Santa Fe.[1]

The army's voracious appetite consumed most of what the territory's rural society produced, including many things that had been unavailable before or had been produced in very limited quantities in a primarily barter economy. One example was sauerkraut, which the army bought in large quantities to prevent scurvy when no fresh vegetables were available.[2] In return, military purchases of services and locally produced goods introduced more cash to all segments of the population, including the Pueblo Indians, than ever before and caused a notable increase in production. All this caused one army interpreter to remark, "I expect [this] presents the only instance in history where the people of an invaded country have benefited."[3]

The major difficulty in dealing with the Indians was that they would sell very little for money, preferring to trade for goods. As a result, the army used civilians to barter with the Indians for their corn, fodder, and other commodities.

The army in the Southwest also experienced one of the extreme forms of the controversy over whether the government should buy goods or produce them. As a money-saving measure, President Fillmore's secretary of war, Charles M. Conrad, issued General Order No. 1 for 1851, a document much criticized as an attempt to turn soldiers into farmers. The order contained two main initiatives. First, "to promote the health of the troops, and to reduce the expense of subsisting the army," gardens were to be planted at all permanent posts where land was available or could be leased on reasonable terms. Conrad hoped enough vegetables could be raised to supply the troops and the post hospitals throughout the year. Second, in the western departments, at all posts "as may be designated by department commanders," the troops were to cultivate farms to raise grains for bread, forage, and long forage. The results of the farming program varied drastically from one post to another, but no post achieved the desired goals, so the program was eventually discarded.[4]

As the army pushed westward and populated forts along the frontier, it marched through primitive country where no local procurement was possible. All requirements, from horseshoe nails to artillery, had to come as far as one thousand miles from inland waterways and be hauled by herculean effort in wagons or pack train from the Missouri River. Thus began an industry that in 1857 and 1858 dominated plains travel: the freighting of supplies to a rapidly increasing number of western forts.[5] Before the government turned to contracts for this transportation service, it tried doing it itself.

Although the Santa Fe Trail had existed for years, the government's wartime efforts in 1846 and 1847 to supply the troops in New Mexico with its own drivers and wagons were pitifully inefficient and prohibitively costly. Most traders' wagons reached Santa Fe before the government trains because experienced drivers manned the traders' trains, while young army teamsters drove the army trains. The canny Indians quickly learned to attack the easily frightened recruits, most of whom had never before seen an Indian, rather than the experienced, sharpshooting frontiersmen employed by the traders.[6]

Because of its sorry experience with supply trains, the War Department decided in May 1847 to try contracting with civilian freighters for overland transportation of some supplies to Santa Fe. These freighting contracts worked so well that the army contracted again in 1848 and 1849.

The main contractor, James Brown of Independence, Missouri, agreed to transport stores from Fort Leavenworth to Santa Fe for 11 3/4 cents per pound with delivery within sixty-five days after the goods were received. Brown was eager to transport the supplies, but his means were limited. Although he had enough capital to supply the necessary oxen and provisions and to supply a surety bond of $600,000, he could not afford to buy wagons and other essentials. So, the army agreed to sell him up to 120 army wagons at cost, plus ox yokes, chains, and other equipment, on the condition that Brown reimburse the army out of his first payment.

By 1850, contractors hauled more than five times the amount of military supplies freighted in government wagons from Fort Leavenworth. That year, the army at Fort Leavenworth and Santa Fe stopped transporting its own supplies with uniformed teamsters. Contract freighting proved so much more economical than government contracting that the Quartermaster Department wanted freighting used at all posts in the new frontier.

In late August 1850, the army desperately needed to transport one hundred wagonloads, about half a million pounds, of military supplies to Santa Fe. Because it was so late in the season, all the freighters hesitated to take the contract and make a midwinter journey across the plains, even at an increased rate of payment. Eventually, however, Brown, Russell & Company agreed to take the risk.

Problems developed en route, resulting in a potentially lengthy delay. The army could not wait, however, since the garrison was apparently on short rations and badly needed the supplies. The quartermaster demanded that the trains arrive at Santa Fe without delay or he would buy other supplies at the expense of Brown, Russell & Company.

The company delivered with disastrous results. Many of the original 720 oxen died of exhaustion. In order to complete the trip, the company had to contract for oxen and drivers, probably from other freighters wintering in New Mexico, and to pay $14,000 for forage.[7]

When he learned what had happened, William H. Russell, Brown's partner, submitted a claim for $39,800 in losses. He argued that the government's demands, especially the ultimatum, went far beyond the company's contractual duties because the contract did not specify delivery within a given time. Thus, the duties did not include such extraordinary sacrifices and

expenses as employing extra men and animals to accelerate delivery. Congress eventually agreed and the claim was paid in installments.

Despite such problems and the dangers of the freighting business, government contracting was lucrative. It became even more so as a result of a major development in 1854.[8] Previously, the government had awarded contracts to the lowest bidder to transport separate allotments of supplies. Both the contractors and the government disliked this cumbersome, time-consuming process. Each consignment, whether one wagonload or several trains, had to be negotiated individually. Moreover, the quartermaster had no discretion to award on the basis of the contractor's experience, qualifications, and financial status. The contractors disliked the system because it forced them to assemble the necessary wagons, oxen, and teamsters on short notice for a single trip. When they returned in the fall, they usually sold the oxen and sometimes the wagons, since they did not know if they would receive a contract the next year. In 1854, however, Quartermaster General Jesup decided to abandon the old system of awarding contracts. Instead of dealing with each consignment every year, the army would let one contract for the transportation of all supplies to all the posts in the West and Southwest for two years.[9]

The new system would transform freighting from a highly speculative venture to a solid business enterprise. The solicitation for a new contract, the largest, most important, contract ever let for transportation of military supplies in the United States, stimulated the commercial juices of the freighters. No single experienced individual or firm of contractors in western Missouri, however, had the money to handle such a contract alone. Thus, the new plan drew together the three men who together emerged as the chief freighters on the Santa Fe and Oregon Trails: William H. Russell, William B. Waddell, and Alexander Majors.

The partners operated under the name of Majors & Russell, changing it three years later to Russell, Majors & Waddell. Majors & Russell offered to freight not only in the usual months of July to October but throughout the year in exchange for a monopoly on all freighting from Forts Leavenworth, Riley, Laramie, and Union, as well as the town of Kansas (City) to posts or depots located in Kansas and New Mexico (including El Paso and its vicinity), as well as Utah and Nebraska Territories. The firm offered to transport to any post within a large district instead of making deliveries, as had been customary, only to such posts as the Quartermaster Department

specifically designated in the contract. Thus, if the army moved troops from one post to another or established a new post, the department would not have to make a new contract. Moreover, Majors & Russell did not require the department to either give them a minimum of freight for transportation or pay a penalty. Instead, they offered to ship the entire quantity of supplies, which might vary from 50,000 to 2,500,000 pounds. The firm offered a schedule of rates based on a new method of computing the prices: a fixed sum per 100 pounds per 100 miles.[10]

The rates and other advantages to the government were so attractive that the Quartermaster Department signed a contract with Majors & Russell on March 27, 1855, for services in 1855 and 1856. It was the largest single contract ever let by the Quartermaster Department at Fort Leavenworth up until that time. The army signed other contracts with the firm in 1857, 1858, and 1860, with the rates still based on a fixed sum per 100 pounds per 100 miles, but adjusted to the month in which shipment occurred, with the lowest rate in the summer months.[11]

The office and headquarters of the firm were in Lexington, under Waddell's supervision. Russell, a shrewd businessman who in partnership with various freighters had been transporting supplies for the army since 1849, early recognized the need for a Washington office. He went to Washington and New York to look after contracts, finances, and payment from the War Department. Majors hired the teamsters, loaded the trains, and oversaw them on the road. Majors was not your typical freighter. He wrote the following pledge, which he required his employees to sign: "While I am in the employ of A. Majors, I agree not to use profane language, not to get drunk, not to gamble, not to treat animals cruelly, and not to do anything else that is incompatible with the conduct of a gentleman. And I agree, if I violate any of the above conditions, to accept my discharge without any pay for my services." He gave each of them a Bible "to defend himself against moral contamination," and a pair of Colt revolvers and a rifle to defend himself against attacking Indians.[12] Some of the interesting characters who worked for the company were "Buffalo Bill" Cody and "Wild Bill" Hickok.

When the last train pulled out from the loading docks at Fort Leavenworth, Majors & Russell had five hundred wagons representing a total of twenty trains carrying some 2,500,000 pounds of supplies to various posts in the West. The partners had invested $95,000 in wagons. The 3,500 yoke of oxen drawing them, appraised at $75 a yoke, were worth nearly $300,000. Adding

the value of buildings, land, goods in the stores at Lexington and Leavenworth, and the outfits for the trains, the partners had invested more than $500,000, exclusive of employees' wages, to fulfill the two-year contract.[13]

While each partner was wealthy, the partners' net assets probably did not equal their investment. They financed their venture mainly with credit. They bought wagons, oxen, and equipment with acceptances, or drafts, due in 90 to 120 days. Their contract with the government, coupled with their personal reputations for integrity, allowed such obligations to be accepted as readily as cash. In fact, their "paper" circulated as a medium of exchange among banks, merchants, and individuals in western Missouri and St. Louis.

On February 25, 1857, again under the name of Majors & Russell, the three men signed a one-year contract with the army at Fort Leavenworth, thus gaining a monopoly on the transportation of all military supplies west of the Missouri River for another year. From this contract sprang the greatest scandal perhaps ever to hit government contracting. Some of its terms should be set out in detail.[14]

The firm agreed to receive from fifty thousand to five million pounds of supplies at Forts Leavenworth and Riley in Kansas Territory, Fort Union, and the town of Kansas (City), Missouri, and to deliver the supplies to any military post or depot in the territories of Kansas and New Mexico; El Paso, Texas; the Gadsden Purchase; and Utah, south of the fortieth parallel. The agreement also provided that they deliver supplies to Fort Laramie and to Oregon, south of the fortieth parallel.

To protect against Indians along the New Mexico route, any train carrying less than fifty thousand pounds was to have a military escort. Trains carrying more than fifty thousand pounds supposedly should have been able to protect themselves. Majors & Russell's agents at Santa Fe and Fort Laramie would receive from ten to sixty days' notice of the quantity and destination of supplies. Since payment was based upon transporting 100 pounds per 100 miles, the distance from Fort Leavenworth to Fort Union was set at seven hundred miles; to Fort Kearny, at three hundred miles; and to Fort Laramie, at six hundred miles.

## The Mormon Expedition

On June 19, 1857, on orders from Washington, Captain Thomas L. Brent, quartermaster at Fort Leavenworth, notified Majors & Russell that it would have to transport some 2.5 million pounds of supplies to Salt Lake City for the new Army of Utah.[15] For several years, relations between the government in Washington and the Mormons in Utah had steadily worsened. Acting on the advice of his cabinet, President James Buchanan decided to appoint a governor to succeed Brigham Young and to send a military expedition to the territory to support the new executive. On May 28, 1857, he ordered twenty-five hundred men to assemble at Fort Leavenworth and depart for Utah at the earliest possible moment. General W. S. Harney was given command of the expedition, which was called the Army of Utah, but four months later Colonel Albert Sidney Johnston of the 2d Dragoons replaced him as commander.[16]

The requisition added to what had already been shipped, far surpassed the maximum of five million pounds specified in the contract of February 25, 1857. In fact, trains already on the New Mexico route carried enough supplies to satisfy the contract. Furthermore, the task violated the contract provision requiring sixty days' notice of any shipments. The company had no wagons, oxen, other equipment, or teamsters of their own available on such short notice, and the rate of pay stipulated in the contract for June 1 to September 30 loadings for Salt Lake City was much too low—the same as the rate to Fort Laramie. When the contract was signed on February 25, no military post existed in Utah, and so neither the quartermaster nor the contractors anticipated shipping supplies to that point, the rate of pay to that point had been written in as a mere formality.

The contractors conservatively estimated that it would cost at least $20 per one hundred pounds to transport the supplies for the expedition to Salt Lake City. They notified Brent that they could not ship the supplies without enormous financial risk.

Under today's contracting standards, Majors & Russell could have refused the Utah requisition as a change outside the scope of the contract. Brent replied that he could not accept their refusal. Since the company was the regular contractor, it must do the work and rely on Congress to reimburse it for any losses incurred. Brent further agreed that if it would go ahead with the work, he would certify the facts stated by the contractor, and he assured

it that Congress would certainly compensate fairly for transporting more than the five million pounds of supplies stipulated in the contract. As a final argument, Brent stated, no doubt truthfully, that if the contractor refused to transport the supplies, the expedition could not march to Utah that summer as the president directed.

Although Majors & Russell was not prepared to transport this enormous amount of supplies to Salt Lake City, it dared not refuse for fear of jeopardizing its position as principal contractor in the West. Although financial ruin loomed as a distinct possibility, it relied upon Brent's reassurances and agreed to transport the supplies.

Majors & Russell loaded fourteen trains of supplies for the Army of Utah, but Mormons captured and burned three in the Green River Valley. The three trains held over three hundred thousand pounds of supplies valued at $72,000 and three hundred head of oxen worth $13,260.

Nor was that all. One evening after the teamsters had corralled the wagons and set up the tents, Mormon raiders fired the grass to the windward. Soldiers and teamsters grabbed empty gunnysacks to beat down the fire, which posed such a threat that the troops guarding the loose cattle at the rear raced in to help. The Mormons grabbed this opportunity. Sweeping down upon the unguarded herd, they stampeded the animals and drove them off in triumph. These remaining trains, after the loss of almost all their oxen, arrived at Fort Bridger in the latter part of November.[17]

Upon arriving at Fort Leavenworth, the trail bosses turned the receipted bills of lading over to the accounting office. The bill totaled $323,201.05, not counting the claim for the losses, which was still being prepared. When Russell, who was then in Washington, heard of their return, he telegraphed them to come to the capital immediately and report to him. While the trail bosses were in Washington, Russell took them to see President Buchanan, various senators and representatives, the quartermaster general, and Secretary of War John B. Floyd. But when Russell presented receipted bills of lading demanding $323,201.05 for transporting supplies to Utah, he was told he would have to wait. The amount due, added to the losses in wagons, oxen, and equipment, totaled the substantial sum of $642,242.45, which the company badly needed for operations in 1858.

The problem was that the cost of supplying the Army of Utah in 1857 had busted the biennial appropriation for the War Department, which had been prepared for normal times. In addition, Congress had not yet made the usual appropriation to the War Department for 1858, probably because of opposition to the whole Utah episode.

By January, the Quartermaster Department had exhausted its appropriation for the fiscal year ending June 30, 1858. Jesup reported that no quartermaster supplies could be procured, no transportation arranged, and no cavalry and artillery horses purchased until Congress provided funds or the secretary of war authorized the department to contract for supplies to be paid for with funds later appropriated. This authority was vested in him by the 1820 statute enacted after the fiasco with the Johnson Brothers.

General Jesup wrote to Secretary Floyd on March 5, 1858:

> SIR: The appropriations for the Quartermaster's Department are entirely exhausted, and the service is everywhere paralyzed for the want of means. The estimates now on my table from the military departments and posts throughout our territory, extending from the Atlantic to the Pacific, and from the Kennebec and Puget's Sound, to Florida Point and Arizona, including the drafts before-mentioned, exceeds a million and a half dollars. If appropriations cannot be obtained in a very few days, I most respectfully but urgently recommend that the power vested in the Secretary of War by the act of Congress of the 1st of May 1820, which authorizes contracts for the subsistence and clothing of the army, and for the Quartermaster's Department, without appropriations, be exercised. Every hour's delay will add to the expenditure.[18]

Floyd then authorized Jesup to buy the needed supplies despite the lack of appropriations. Later, the Senate asked Floyd to explain why he authorized the contract for additional food, clothing, and other supplies. He replied, "I could no longer hesitate to perform what was an obvious duty." While these payment problems unfolded, the contractor incurred new obligations.[19]

In the past, one contract had covered both the Fort Laramie and the New Mexico freighting routes. In 1858, however, the army decided to have separate contracts for the two routes. On January 16, 1858, Quartermaster General Jesup and the partners, now under the name of Russell, Majors & Waddell, signed a two-year contract, covering the Salt Lake route, to transport from fifty thousand to fifteen million pounds of supplies, the largest amount of supplies ever to be transported west of the Missouri River

in one year. The designated loading points were Fort Leavenworth and Fort Riley and any other agreed-upon points on the west bank of the Missouri River north of Fort Leavenworth and south of the fortieth parallel. The supplies were to be transported to any posts then established or which might be established thereafter in the territories of Nebraska and Oregon north of the fortieth parallel or in the territory of Utah. Forts Kearny and Laramie were also included. A one-year contract for the New Mexico route was signed on the same day.[20]

The partners signed as Russell, Majors & Waddell possibly because the claim for losses in Utah in 1857 was already being prepared under the name of Majors & Russell. The partners might have believed it would be better to use a different name in the 1858–1859 contract.

Russell turned to credit to resolve his tremendous cash crisis. Since 1851, the quartermaster general could not contract for supplies or services for more than $2,000 without the approval of the secretary of war. This regulation made Floyd a crucial part of Russell's plan. Early in 1858, he explained his financial situation to Floyd. Russell suggested that he be allowed to issue drafts or acceptances (as they were commonly called) on the War Department against the earnings of the firm in transporting military supplies in 1858. These acceptances would be endorsed by the Secretary of War and discounted to banks or private individuals, or used as security for loans. This method of raising money or making payments was common between business houses and individuals, and the only difference here was that a U.S. official would endorse the acceptances. Most of the drafts would be issued against the firm's transportation account, a few against beef and flour contracts.[21]

Secretary Floyd faced two embarrassing and difficult choices: abandon the idea of sending supplies and reinforcements to Johnston, or help Russell to raise money. The first was unacceptable. President Buchanan had already decided that reinforcements should be sent to Utah as early in 1858 as they could travel. He had announced on January 11 that 3,018 officers and men would assemble at Fort Leavenworth and march to Utah. Supplies for the three thousand reinforcements had to be transported to Utah. A delay was intolerable. Albert Johnston needed supplies as soon as possible because the army had been on two-thirds rations or less. Floyd, like his successors in the twentieth century, had to bail out an important contractor. He authorized the writing of acceptances, which commonly looked like this:

$15,000. Washington, September 13, 1860.

Eight months after date pay to our own order, at the Bank of the Republic of New York City, fifteen thousand dollars, for value received, and charge to account of transportation contract of the 12th day of April, 1860. Russell, Majors & Waddell.[22]

Since 1819, when the Johnson brothers had used drafts on the War Department to bolster their sinking business enterprises, Quartermaster General Jesup had distrusted the use of drafts or acceptances. Floyd overruled his objections to permitting their issue in 1858.

The drafts were to be solely obligations of the firm, to be paid by it at maturity, and none were ever to be presented to the War Department for payment. Secretary Floyd's endorsement did not mean his department would redeem the acceptances, but merely showed that future payments by his department to the contractors would suffice to satisfy the drafts as they fell due. Apparently, no fraud was initially intended, since everything was on the table for all to see.

Besides allowing Russell to draw the acceptances, Secretary Floyd, in March 1858, began to write to various banks and individuals explaining what the drafts were and why they were issued. He urged them to accept the paper so Russell, Majors & Waddell could raise the necessary money. The first of the acceptances, three drafts for $100,000 each and two for $50,000 each, were issued in March 1858. By the following December 18, $1,090,714 worth had been written. This method of financing thrust Russell, Majors & Waddell deeper into debt but enabled them to carry on in 1858.

Early in the year, Congress considered a deficiency bill to fund the War Department and enable it to pay Russell, Majors & Waddell for transporting supplies to Utah in 1857. Because of its importance, Alexander Majors had gone to Washington to help Russell and his friends in pushing the bill through. Both houses vehemently debated the whole Mormon difficulty and called upon Secretary Floyd to produce all contracts made to supply the Army of Utah. Some Congressmen attacked Majors, Russell, & Waddell as swindlers, and even accused President Buchanan of maintaining the Army of Utah for the contractor's benefit. Nevertheless, the deficiency bill passed in May 1858, and provided funds to pay Russell, Majors & Waddell for transportation that year and for 1857. By the end of 1858, the firm had received $2,425,378.35.

By that time, the vehement criticism of the firm in Congress and in anti-administration newspapers had impaired its credit and forced a change in its operations. Russell, Majors & Waddell decided to subcontract much of the transportation of supplies to Utah and thereby shift the initial costs. On March 30, 1858, Alexander Majors, upon his return from Washington, subcontracted with nineteen companies to transport 625 wagonloads—some 3,750,000 pounds of military supplies—to Fort Bridger or Salt Lake City at $18.00 and $19.60, respectively, per one hundred pounds. Twenty-four trains were needed to make the trip. Russell, Majors & Waddell agreed to furnish the wagons, ox yokes, and covers at cost, and other necessary outfits at current prices. The subcontractors furnished their own oxen, paid the teamsters, and provided the rations. They would be paid from the first money due Russell, Majors & Waddell for the supplies they carried. By this arrangement, the partners avoided the need to invest about $500,000.

Matters got worse. On January 8, 1859, the partners wrote to Secretary of War Floyd offering to turn in their contracts. They proposed that the government buy, at market price, all of their oxen, horses, mules, wagons, equipment, and station improvements. They also suggested that the value of these assets be determined by three disinterested appraisers, one of whom should be appointed by the government, one by the contractors, and the third by the appraisers themselves. In addition, they asked Floyd to annul their contract to supply beef cattle to the Army of Utah in 1859. Since the firm had ordered four hundred wagons and four thousand ox yokes for use in transporting supplies in 1858, these items were included in the inventory of materials on hand. "We have seen statements of enormous profits accruing to us," the partners said, "and embrace this occasion to relieve the government of their future payment."[23] Floyd rejected their resignation, so they planned to continue the business in 1859.

Since the contract of January 16, 1858, for the transportation of supplies on the New Mexico route covered one year only, a new one was necessary for 1859. Despite attacks and criticism on the floor of Congress and in the newspapers, Russell, Majors & Waddell won the contract for another year. The contract for the Utah route had one year left to run.

About March 1, Quartermaster General Jesup, still quartermaster general after almost forty years, notified Russell, Majors & Waddell that they would be required to transport 843,000 additional pounds of flour—about three trainloads—to Camp Scott and Camp Floyd in Utah.

In addition to his notice to Russell, Majors & Waddell, the quartermaster general asked the millers in St. Louis and elsewhere to submit bids on the flour to be hauled. Among those who responded was Gilbert & Gerrish of Salt Lake City, who proposed to furnish the quota with flour ground from wheat grown in Utah. The Quartermaster Department considered Utah wheat flour to be inferior to that manufactured in Missouri. Consequently, the local quartermaster advised the quartermaster general in Washington "not to depend upon the Territory of Utah for a single pound of flour." As a result, the department disqualified the Gilbert & Gerrish bid and awarded the contract to mills in St. Louis.[24]

At this time, Russell met Ben Holladay of Weston, Missouri. Holladay had been trading with the Mormons and freighting to Utah since 1849. Knowing that the Utah mills could supply the flour, he suggested that Russell, Majors & Waddell buy the entire 843,000 pounds from the St. Louis mills and deliver Utah flour to the army instead. By this action, the government would be relieved of losses on flour damaged in transit on the twelve-hundred-mile haul from Fort Leavenworth to Utah. Such losses had been heavy the year before, and the freight charges on the damaged wheat alone had amounted to over $50,000.

Russell liked the idea because it would make his firm the contractors for the flour. Holladay became a partner in the contract and went to Utah to arrange for the manufacture and delivery of the flour. The proposition was laid before Secretary of War Floyd, who approved the idea on the condition that any deficiency be made up with acceptable flour. Nothing was apparently said about the fact that the army had already rejected Utah flour as unsatisfactory. Holladay had no difficulty in buying flour at seven cents per pound. The Utah flour would cost $57,610. While the flour was being ground, he bought 21 wagons, 782 mules, and 7 horses, as well as harness and other equipment from the Quartermaster Department. He also hired teamsters to drive the wagons. Russell, Majors & Waddell became the owners of 1,686,000 pounds of flour, half of which was in Utah and half in Missouri. They sold the Missouri flour in Missouri to whoever would buy it.[25]

In the summer of 1859, Horace Greeley, editor of the New York Tribune, stopped in Leavenworth on his way to the Pike's Peak gold diggings. Greeley learned of the flour arrangement, which he alleged had netted the firm $170,000 clear profit. Russell, Majors & Waddell had defrauded the

government, he declared. "The Army of Utah did nothing but enrich the contractors favored by the War Department and the saintly speculators of Mormondom." The reason for maintaining that far-off post, he said, was "for the pecuniary gain of the contractors." He painted a graphic picture of their resources:

> Such acres of wagons! such pyramids of extra axle trees! such herds of oxen! such regiments of drivers and other employees! No one who does not see can realize how vast a business this is, nor how immense are its outlays as well as its income. I presume this great firm has at this hour two millions of dollars invested in stock, mainly oxen, mules and wagons. (They last year employed six thousand teamsters, and worked forty-five thousand oxen).

Greeley's allegations appeared in the San Francisco Bulletin and received national attention.[26]

Nevertheless, on April 11, 1860, the quartermaster at Leavenworth signed a two-year contract with the partners for the transportation of military supplies to posts on the New Mexico route. The contract provided that the contractors should receive from 100,000 to 5,000,000 pounds of supplies from the Quartermaster Department at Forts Leavenworth and Riley and the town of Kansas (City) and transport them to Fort Union or any other points on the route.

Meanwhile, the partners were compiling the bill for losses sustained in supplying the Army of Utah in 1857–1858. On December 7, 1859, they printed a preliminary eight-page analysis, "Statement of the Claims of Majors & Russell for Transportation, 1857,"[27] which attributed the losses to the huge requisition the army made on June 19, 1857, for teams, wagons, and outfits to transport supplies for the Army of Utah. "In any view of the case," the partners said, "we are entitled to payment for the losses sustained by us, and the extra compensation claimed upon the freight transported by us above the limit of 5,000,000 named in our contract." The total claim for actual losses and additional compensation amounted to $493,772.61.

In February 1860, the firm presented to Congress "A Brief Statement of the Claim of Majors & Russell, also the Evidence upon Which It Rests" with supporting affidavits; a copy of the contract of February 25, 1857; and a list of items it had transported to Utah. But Congress took no action. As late as September 29, 1860, Russell reported that prospects for getting action

during the coming winter were good "if a President is elected by the people."[28]

## The Unfolding of the Indian Trust Fund Scandal

In 1859, anti-administration newspapers had declared the Floyd acceptances illegal, discrediting them to such an extent that they became difficult to negotiate. In July 1859, Duncan, Sherman & Company wrote Senator Judah P. Benjamin, asking his opinion concerning the legality of the acceptances. Their firm was one of those to whom Floyd had written early in 1859, asking them to help Russell in raising money on the acceptances. They said the letter had assured them that both President Buchanan and Attorney General Stanton had approved the acceptances.

Benjamin then asked the president about the matter. President Buchanan said he knew nothing about it and did not know under what law they had been issued. He was sure, however, that Floyd had endorsed them lawfully. Floyd admitted that he had not submitted the matter to the attorney general but that issuing acceptances had long been a custom of the War Department, although he did not know of any law actually authorizing their issue. Benjamin told Floyd that he was acting imprudently and urged him to stop the practice. Two days later, Floyd wrote him that he had decided to do so. Instead, he continued to endorse the acceptances for large amounts.

Russell was petrified at this threat to his finances. On a train from New York, Russell told a friend, Luke Lea, that he had heard of a man named Bailor who might be able to help him. Lea did not know anybody by that name but did know a man, Godard Bailey, who might help in expediting payment of its claim from the War Department. Bailey was a relative of Secretary Floyd's wife and a lawyer and clerk in the Department of the Interior. Russell asked Lea to see him as soon as possible, tell him of the Majors & Russell claim against the government and the situation concerning Secretary Floyd's acceptances, and ask him if he could help. Lea did. He saw Bailey on July 12, 1860, and told him of the situation.

The news clearly disturbed Bailey, who went to the War Department to confirm it.[29] W. R. Drinkard, the chief clerk, acknowledged that protested acceptances would devastate Secretary Floyd's reputation. Drinkard also said that he firmly believed the acceptances would be paid on time as Russell, Majors & Waddell had enough money due them for transportation.

Moreover, Russell had very promptly met all previous ones at maturity, and he was sure that Russell was perfectly responsible. Bailey remarked that he did not know Russell and cared nothing about him but was interested in Secretary Floyd. He had means at his disposal, and if he were satisfied of Russell's responsibility, he would help him. Since Russell happened to be in the department at that time, Drinkard introduced him to Bailey.

Russell confirmed what Lea and Drinkard had said about the possible protestation of the acceptances and the likely consequences to Secretary Floyd's reputation. Bailey asked how much was needed to protect the acceptances and when the sum could be repaid. Russell replied that he needed $150,000 for ninety days. Bailey agreed to help Russell to avoid the disgrace of Secretary Floyd and the disruption of army transportation. He had some state securities which he would bring to Russell's room at two o'clock that afternoon. At the appointed time, Bailey delivered $150,000 worth of bonds. He neither asked for nor received any promise of interest, commission, or compensation for their use but emphasized that the individual bonds had to be returned. After giving Bailey a note on Russell, Majors & Waddell for $150,000, Russell took the bonds to New York but they were so heavily discounted that they netted only $97,000. Yet it was enough to pay the maturing acceptances.

The reprieve was only temporary, however.[30] More than half the bonds were Missouri bonds that had been issued to build railroads. The others were Tennessee bonds. With various southern states threatening secession openly and the position of Tennessee and Missouri in doubt, the value of the states' obligations declined disastrously. The bondholders demanded additional security as collateral, on the threat of selling the bonds. Russell had no money to deposit with them.

In September, Russell went to Bailey and told him bluntly that he was still financially embarrassed and that some bondholders were threatening to sell their bonds. Greatly alarmed, Bailey revealed that the bonds were part of what was known as the Indian Trust Fund, representing unpaid annuities to various Indian tribes. The Department of the Interior held them in trust and Bailey was merely the custodian of them. That was why he demanded that the identical bonds had to be redeemed. "The disclosure," Russell said, "completely overwhelmed me. It added entanglement to embarrassment. I saw instantly, and with intense reality, how difficult it would be to extricate myself from my unfortunate dilemma." Corroborating Russell's story, the

Washington correspondent of the St. Louis Tri-Weekly Republican later reported that both Bailey and Secretary of the Interior Jacob Thompson declared that Russell knew nothing about the true ownership of the bonds when he took the first lot.[31]

Russell later explained:

> Driven by necessity of protecting the bonds already given me, and extricating ourselves from the embarrassments surrounding us, and having acceptances of the Secretary of War exceeding $300,000 then about to mature; relying confidently upon the government and my own resources for the means to protect all the bonds I might receive; and being persuaded that the act on my part was not criminal, although I did not then, and do not now, think it was fully justifiable, and being desirous to protect Mr. Bailey in what he had done, and the credit of the War Department, and knowing that if I failed to protect these bonds and acceptances, the credit of our firm would be entirely destroyed, our transportation thereby defeated, and the supplies of the army cut off, I did accept from Bailey additional bonds, to the amount of $387,000 at par, upon the same terms and conditions upon which I had received the former ones.[32]

Whatever Russell knew or suspected about the first lot of bonds, when he accepted from Bailey a second group of Missouri, North Carolina, and Florida bonds worth $387,000, he must have known he was embezzling. In place of the Russell, Majors & Waddell note for $150,000 that he had given to Bailey for the first bonds, he substituted another note, for $537,000, representing the face value of both lots. This time, Bailey requested that the bonds be returned before his term of office expired on March 4, 1861.

Again, Russell took the bonds to New York where the Missouri and North Carolina bonds were readily accepted, at a heavy discount, but the Florida bonds were unanimously rejected. Russell came back in the latter part of November with the same story and the same promises. Bailey, knowing nothing better to do, gave him $333,000 worth of bonds.

A few days after turning the last lot of bonds over to Russell, Bailey lost all confidence in Russell's ability to redeem his promises.[33] On December 1, 1860, he wrote a full confession and listed the numbers of the bonds he had taken. Eighteen days later, Bailey wrote Secretary Floyd a letter confessing what he had done, and requested that the letter be burned. On the morning of December 22, he went to Floyd, who told him the appropriation of the bonds would have to be made public. He would wait, however, until the return of Interior Secretary Thompson, who was expected that day. Bailey departed,

and left a note to be delivered to Thompson as soon as he returned. Then he went home, packaged the acceptances and Russell's receipt for the $870,000 worth of bonds he had received, and delivered the package to Senator Rice who, with Bailey's consent, took the package to the White House and gave it to the president, who opened it immediately.

While the president and Rice were discussing the matter, Secretary of State Jeremiah S. Black and Attorney General Edwin M. Stanton came in, and a short time later, they were joined by Secretary Thompson, who had just returned. After considerable discussion of what should be done, they decided to check the bonds in the Indian Trust Fund first to see whether more than $870,000 worth had been taken. Attorney General Stanton and Secretary Black went directly to the Department of the Interior, while Rice and Thompson went to get Bailey. All the bonds were there except for the $870,000 worth. At the president's request, Secretary Floyd resigned his office on December 22. The bond issue was not the only problem. Floyd disagreed with Buchanan's refusal to order Fort Sumter evacuated.

Although it was Sunday, President Buchanan called an emergency meeting of the Cabinet on December 23, and questioned Bailey all night. Bailey made a full confession and explained why he had taken the bonds. On the morning of December 24, Secretary Thompson ordered the arrest of Bailey and Russell. Bailey, who had promised Senator Rice that he would not try to escape, was taken into custody at his home and placed in a Washington jail. His bond was set at five thousand dollars. A United States marshal arrested Russell in New York the same day, Christmas Eve.

Also, on December 24, Representative John Sherman of Ohio, at the request of the Secretary of the Interior, introduced a bill for a select committee to investigate the relations between Bailey and Russell and the missing bonds.[34] The measure passed, and a committee of five members was chosen, with Isaac Morris of Illinois as chairman. At the first session of the committee, on December 29, 1860, the first witness, Secretary Jacob Thompson, read Bailey's confession into the record. The next witness, Luke Lea, explained his part in bringing Russell and Bailey together. Former Secretary Floyd testified on December 31, 1860, the following day, and again on January 3.

Russell voluntarily appeared before the committee on January 11, 1861. Chairman Morris explained to Russell that he was under criminal

prosecution, and that the committee would not force him to answer any questions. Russell could answer voluntarily if he wished but was within his rights in withholding his answers. Russell replied:

> I am anxious to make a full statement in regard to the bonds. I claim to be an honest man, and would prefer to make out a statement of the whole transaction in writing, and have you spread it at length on your records. I ask that as a favor from the Committee. I am under criminal prosecution, and think it is due me, that I should be permitted to make a full statement, though I do not fear the result of criminal prosecution. If the Committee prefers the statement made verbally I will make it that way.[35]

The committee did prefer an oral statement. After brief questioning, during which Russell acknowledged the receipt he had given Bailey for the $870,000 worth of bonds, he renewed his request for time to submit a written statement. The committee acceded to his request and told him to take as much time as he needed. In a statement dated January 16, 1861, Russell told substantially the same story as Lea and the others.

Meanwhile, a grand jury for the District of Columbia considered the question of the stolen bonds. On January 29, it indicted Godard Bailey, William H. Russell, and Secretary John B. Floyd on four counts of conspiracy to "combine, confederate and agree together by wrongful means to cheat, defraud, and impoverish the United States" by removing $870,000 worth of coupon bonds from the Department of the Interior on December 10, 1860. It also indicted Floyd for malfeasance in office and Bailey and Russell for larceny and abstraction in removing and carrying away the bonds. The grand jury also charged that Russell did "fraudently and feloniously incite, move, procure, aid, counsel, hire, and command. . . . Bailey to commit the . . . abstraction." He was further indicted for receiving stolen property.[36]

Russell was never prosecuted. A judge quashed the indictments against him on March 11, 1861, because of the incriminating statements he had given to Congress. On March 17, 1861, the U.S. Attorney entered a nolle prosequi in Floyd's case, because no proof supported the indictment or indicated that he had any part in the embezzlement of the bonds. Godard Bailey forfeited his bond, disappeared from Washington, and could not be found. He may have been another Confederate sympathizer abandoning the capital. His case remained on the docket until June 1863, when the U.S. Attorney entered a nolle prosequi. That closed the entire case so far as the court was concerned.

When the House of Representatives on December 24, 1860, authorized the select committee to investigate the missing bonds, it did not know that anything else would be involved. "It soon became evident," said Chairman Morris in his report, "that the mere abstraction of certain bonds from the Interior Department . . . was an incident of minor importance in comparison with the transactions preceding and connected with the act."[37]

He was referring to the acceptances and Floyd's endorsement. The committee's report portrayed Russell, Majors & Waddell as "chiseling" contractors who "not only absorbed all the sums earned by them under their contracts, and sold all the bonds they received from Mr. Bailey, but also raised very large sums of money upon the acceptances issued by the Secretary of War." While it did not hold Floyd responsible for the "fraudulent abstraction" of the Indian trust bonds, the committee unanimously condemned the Secretary's issue of acceptances to be "unauthorized by law and fraudulent in character." Though without proof, the committee suspected that Floyd had profited generously from the contracts given to Russell, Majors & Waddell.[38]

Part of the denunciation probably came for other reasons. Floyd had served as states' rights Democratic governor of Virginia from 1849 to 1852. He was later accused, as secretary of war, of transferring an excessive number of arms from northern to southern arsenals so they could be easily seized by the Confederacy. After Virginia's secession, he commanded a volunteer brigade for the Confederate Army. Dismissed by President Davis for abandoning his post at Fort Donaldson in 1862, he was commissioned a major general by the Virginia Assembly.

For years afterwards, various holders of the Floyd acceptances tried to recover from the government. They appealed to the War Department and to Congress and finally to the courts. In 1868, the Supreme Court of the United States upheld the decision of the Court of Claims, and denied their claim. Thus, twenty-five holders of $861,000 worth of acceptances were forced to swallow their losses.

More than anything else in the history of government contracting, the Trust Fund Scandal and the Floyd acceptances seared in the public's mind the conviction that contractors were unscrupulous scoundrels interested only in money. The scandal stained everyone associated with it.

## The Overland Mail Service

Overland mail transportation was the second new area of government contracting resulting from westward expansion. It developed simultaneously with freight contracting. In 1847, less than two weeks before the Treaty of Guadalupe Hidalgo, James Marshall, while building a sawmill for John A. Sutter, discovered gold in the Sacramento Valley of California. Eager gold seekers poured in. In 1845, California had less than 700 citizens; four years later it had more than 60,000, plus many thousands more from foreign lands. By 1850, it contained 100,000. Pressure built for transcontinental communication, which was difficult because the gold rush had caused the miners to leapfrog over the prairie.

The safest route to California was by water over the same route that troops had taken during the Mexican War. Before the end of 1848, the Post Office awarded a contract for semimonthly service by sea between New York and San Francisco. The U.S. Steamship Company carried letters every month to the Caribbean side of the Isthmus of Panama for $290,000 per year. Another firm carried the mail across the Isthmus by mule and canoe and received twelve cents per pound of mail. The amount of $199,000 went to the company that brought mail from San Francisco to the Pacific side.[39]

Forty-niners marooned in the gold country demanded a rapid, reliable, and regular overland mail to supplement the sea mail. They wanted letters from home, newspapers, and government-printed matter and were simply not satisfied with the prevailing postal system. The contracts to accomplish transcontinental mail service are closely associated with two of the West's most enduring symbols: the six-shooter and the stagecoach.

Delivering mail had been the government's obligation since the birth of the Republic, but much of it was contracted to private carriers, using whatever mode of transport seemed suitable. By the mid-19th century, there was no major problem in delivering mail in the East where roads, rails, riverways, and canals were excellent. The West was a different story.[40]

The beginnings of mail delivery in the West were modest and dangerous. Today, flying over the Rockies and plains in products of modern government contractors like Boeing and Lockheed, it is difficult to imagine the perils and unbelievable hardships endured by these early contractors. Indian troubles were common. For example, during the 1850s no less than

twenty-two distinct Indian "wars" were fought. Mail contractors regularly appealed for and received compensation for their losses, and their annual payments often had to be raised. Troop detachments periodically escorted the mail stages or were sent to punish Indians for attacking the mailmen. Carrying the mails was critical for the contractor's financial success. A mail contract was so important that half-broken mustangs were not used on mail coaches since losing a mailsack could jeopardize the vital contract.

Salt Lake City was the hub of the mail system since a government post office had been established there during the winter of 1849.[41] Official mail service began in the summer of 1850. Samuel H. Woodson and his partner James Brown (not the same Brown as the freighter at Fort Leavenworth) had received the government contract specifying departure from Independence and Salt Lake City on the first day of every month with stops at Uniontown on the Kansas River and Forts Kearny, Laramie, and Bridger. The yearly price for Brown and Woodson was $19,500. No mail stations were maintained and one team of pack animals was used for the entire trip.

The "monthly" mail between Independence and Salt Lake City began on August 1, 1851, when Thomas D. Scroggins, Woodson's employee, left Independence with mule-drawn light wagons to transport the mail. Scroggins reached Salt Lake City over a week late, on September 9, and returned to Independence over three weeks late, on October 24, thereby establishing a pattern. The monthly schedule ran normally during the summer but not in the winter.[42]

In 1851, Woodson subcontracted the Salt Lake-to-Fort Laramie section, with mails scheduled to be exchanged at Laramie on the 15th of each month. In the winter of 1852–1853, Feramorz Little, subcontractor on the Fort Laramie-to-Salt Lake route, had great difficulty in making his trips. He and his Indian companion, after leaving the fort in November, struggled through deep snow in the South Pass country for a month. Unable to reach the Salt Lake Valley over the ice of Weber River, they finally left their horses, cached the bulky mail, and continued on foot, dragging the letters over the snow of the Wasatch Mountains for forty miles to their destination.[43] The December mail carriers who had started eastward from the Mormon capital had to return because of the snow. Regular service resumed in the spring. The service was thus irregular and the schedule seldom maintained, but the mail got through. Mormons first learned of Utah having received territorial status from the mail that Woodson carried.

Nevertheless, Salt Lake Valley residents often complained about the irregular service from Independence and Laramie, especially after William M. F. Magraw and John E. Reeside won the 1854 contract by underbidding Woodson. The Desert News editor noted that between July 1854 and August 1855, only three monthly mails had arrived on time—and some had not arrived at all.[44]

The problem was not solely due to Magraw and Reeside. An Indian uprising had inflicted heavy losses on them. They pleaded their case to the government, which raised the annual compensation from $14,440 to $36,000. The next year, they submitted similar claims. The higher compensation continued another year, but Magraw lost his contract in 1856 for unsatisfactory service.

The new mail contract, in October 1856, was awarded to Hiram Kimball of Utah, the low bidder.[45] Kimball was the agent of Mormon leaders who planned to build a big carrying company to operate by way of Fort Laramie. Brigham Young took over Kimball's contract and planned a great Mormon commercial enterprise which would carry not only the mails but all goods between the Missouri River and Utah. Young had proposed such an undertaking even before the mail contract was awarded, but with this aid, he could initiate his plan. The severe weather during the winter of 1856–1857 delayed the enterprise, but the Brigham Young Carrying and Express Company (popularly known as the Y. X. Company) was formed in 1857 to carry the mails "by swift pony express" and to prepare a wagon line to haul freight. The Mormons planned not only to establish stations but to found settlements at intervals along the line to furnish supplies and protect the emigrants as well as the mail.

In the spring, the company organized and outfitted teams with farming and other tools to form the settlements. They set up staging points and some regular settlements along the route, mostly by using labor and materials supplied free by the Mormons, at the behest of Brigham Young. The Mormons had created a new class of "express missionaries" and spread these young men out along the trail, outfitted and supplied by wealthier and older members of the church. The first mail went through in twenty-six days. The Mormons had spent at least $125,000 on elaborate forts, way stations, and trailside settlements when the government annulled the four-year contract on June 10, 1857, barely six months after it had been signed, on the pretext that Kimball was late in performing. The charge was true, but only

because blizzards had, as usual, delayed the mails. In fact, news about the contract had not been received in Salt Lake in time for the Mormon-sponsored Y. X. Carrying Company to begin operations until the spring of 1857. The Mormon unhappiness at losing this contract contributed to the "Mormon War" of 1857–1858.

## Mail Service to California

The mail from the East did not stop at Salt Lake. Plans were made to send it further west.[46] In 1851, contracts were let for a system between Salt Lake City and Sacramento, with George Chorpenning and Absalom Woodward receiving $14,000 per year for a monthly mail service. Chorpenning inaugurated the service with his May 1, 1851, departure from Sacramento with 70 to 75 pounds of mail on a mule. They arrived in Salt Lake City fifty-three days later, having been delayed by heavy snow in the Sierra Nevada Mountains. In November 1851, Woodward and two of his men were killed by Indians on the Malad River in western Utah. During the winter of 1851–1852, bad weather and worse roads so delayed deliveries that the postmaster general canceled Chorpenning's contract and gave it to W. L. Blanchard of California with a raise in price to $50,000 a year. When Chorpenning went to Washington and got his contract reinstated, his price was increased to $30,000 a year. He was the successful bidder in 1854, 1856, and 1858, when the service was placed on a weekly basis for $130,000 a year. Chorpenning bought ten stagecoaches, and organized the first stage line between Salt Lake City and California.

Although some of the contractors changed, this postal system connected Missouri with California through 1858 but was not punctual, especially on the Independence-to-Salt Lake section in winter. During winters, the Salt Lake-to-Sacramento contractors deserted the Humboldt River trail in favor of the route down the "Mormon Corridor" to Los Angeles. From there, people like John A. "Snowshoe" Thompson and others traversed Sierra snowdrifts on snowshoes to Sacramento.[47] Other routes were also adopted. In 1857, James Birch won a contract to convey mails twice a month between San Diego, California, and San Antonio, Texas. The 1,500-mile run extended across inhospitable deserts most of the way and through even more inhospitable Apache country (where a military escort had to be provided); it took thirty days. The first mail left San Antonio on August 9 and reached San Diego on August 31.

From Independence via Salt Lake City to Sacramento, mail could now go in two months, and from the East Coast to the West Coast in about ten weeks. A monthly mail service had been started along the Santa Fe Trail from Independence and on from Santa Fe to San Antonio, Texas, in 1850, via El Paso. Birch's San Antonio to San Diego line, also via El Paso, was a logical completion of this network, but it was much too slow to satisfy those who wanted faster communication with the West Coast. Consequently, the famous Butterfield Overland Mail was born in 1858.

Californians particularly yearned for the change. In May 1856, California's Senator John B. Weller placed on the desk of the Senate s presiding officer two heavy volumes, bound in hand-tooled leather, containing a petition and the signatures of 75,000 of Weller's constituents. After thus seizing his colleagues' attention, Weller boomed: "California, when she speaks, desires to be heard." He then read what his constituents had to say—"We are a population of five hundred thousand in number, occupying the Western limits of American possessions upon the Pacific. Our State is the growth of little more than five years. Our mines, not yet fairly opened for successful working, have realized a moderate estimate of $300 million, which we have sent forth to the world." The Californians then demanded that Congress commit funds to improve overland mail service to what the Californians' petition described as their "distant colony."[48]

On March 3, 1857, Congress authorized the postmaster general to contract for an overland stage route from the Mississippi to San Francisco, appropriating $600,000 per year for the contract.

Aaron Brown, an ardent pro-slavery partisan from Tennessee, was postmaster general. Even though the statute allowed the contractor to choose its starting point on the Mississippi and specifically named San Francisco as the California terminus, it gave Brown unrestricted choice of contractor, regardless of low bid or experience, and therefore absolute control of the route over which the California mail would be carried.[49]

On April 20, the Post Office Department advertised for bids. Separate proposals were invited for semimonthly, weekly, and semiweekly services, and the bidder had to specify his starting point on the Mississippi and the route over which he proposed to operate. Nine bids were received since the profits would be enormous if the postmaster general let a contract for semiweekly service at a $600,000 annual price.

After a tremendous struggle between the proponents of rival routes and a good deal of lobbying in Washington (the "Battle of the Routes"), Postmaster General Aaron Brown awarded a $600,000 contract on September 16, 1857, to John Butterfield of New York, a founder of the American Express Company. Butterfield's associates in the venture were the western stagecoach pioneers W. B. Fargo and W. D. Dinsmore. Eastern capitalists put up most of the money.

As some northerners had feared, Brown and Jefferson Davis from Mississippi, the secretary of war, threw all their powerful weight behind a route through southern, and not central, states and territories. Under the contract, Butterfield would take the mail from St. Louis and Memphis to San Francisco by a roundabout southern route of more than 2,750 miles through Little Rock, El Paso, Tucson, and Fort Yuma to San Diego and then up through California, by Los Angeles and the San Joaquin Valley, to San Francisco Bay. The South had outmaneuvered the North. Northerners and Californians protested, but the deal was done.

Despite the longer route, the Butterfield Overland Mail was a resounding success from the start. On September 15, 1858, the first Butterfield Overland Mail carriers left San Francisco and Missouri headed in opposite directions. Less than twenty-four days later the mail had reached St. Louis and San Francisco (reaching San Francisco at 7:30 a.m. on October 10). The steamer John L. Stephens, carrying mail that had also left St. Louis on September 16 and gone east by train, arrived in San Francisco from Panama at 5:00 p.m. on October 16. President Buchanan telegraphed his congratulations to Butterfield claiming that henceforth east and west would be connected by a "chain of living Americans."[50] By 1860, it was carrying more mail than the inter-ocean steamers. It never did get mail or passengers from St. Louis to San Francisco in less than twenty-one days as Butterfield promised it would, but it came pretty close. Twenty-three days, twenty-three hours on the first westward run stood as a record for a long time, although only "inside twenty-five days" was required by the mail contract.[51] Butterfield had exhorted his employees at every meeting to—"Remember, boys. Nothing on God's earth must stop the U.S. Mail."[52] Like Majors, Butterfield provided each driver with a Colt six-shooter to protect the mail. Colt and his government contracts will be discussed shortly.

Other important routes remained. In the spring of 1858, John M. Hockaday and Company obtained a contract for carrying the mail in four-mule wagons

or carriages from Independence, Missouri, to Salt Lake City. This weekly service was to operate on a twenty-two-day schedule. New post offices-stage stations now began to appear.

At the other end of the route, George Chorpenning's 1858 contract for $130,000 specified weekly service between Placerville, California, and Salt Lake City. Adding Hockaday's schedule to sixteen-day service by Chorpenning produced mail service from Independence, Missouri, to Placerville, California, in thirty-eight days. Since the Butterfield Overland stage already had a semiweekly overland service for a southern route, this 1858 upgrading of service on the central route was prompted largely by the War Department's need for swift communication with its large army post near Salt Lake City.

A change of policy in the Post Office Department followed the death of Postmaster General Brown in March 1859. The new postmaster general economized on the various overland mail operations; he cut Hockaday and Chorpenning's route to semimonthly service. These reductions dealt a severe financial blow since massive governmental financing was crucial to any enterprise of this scope.

Financially embarrassed by the reduction, J. M. Hockaday & Company on May 11, 1859, sold its contract and equipment for $144,000, including a bonus of $50,000, to Jones, Russell & Company, a subsidiary of Russell, Majors & Waddell's, which had just launched the Leavenworth & Pike's Peak Express. Jones, Russell & Company moved their Leavenworth & Pike's Peak Express Company's line to the new mail route. Exactly one year later, on May 11, 1860, the postmaster general canceled Chorpenning's contract, alleging failure to perform, and gave it to Jones, Russell & Company. Hockaday's and Chorpenning's financially troubled concerns were quickly subsumed by the renamed Central Overland California and Pike's Peak Express Company, which itself was soon in precarious financial straits.

Later Chorpenning presented a claim to Congress for losses incurred in carrying the mail from 1851 to 1860. The claim was allowed and he received a Treasury warrant for $443,010.60. Payment on it, however, was stopped, and he never received any money due him. He died a poor man on April 3, 1894.

The Report of the Postmaster General for 1859 renewed the "Battle of the Routes." The report stated that although the Overland Mail Company had performed with great regularity and on time, the contract had become a financial millstone for the department. The route cost $600,000 a year yet postage receipts on it had amounted to only $27,229.94. Thus, allowing for anticipated increases, the department, at the end of six years, would have lost more than $3,000,000. Anxious to cut these losses, he proposed reducing the semiweekly service to save $150,000 a year. The attorney general, however, advised that since Congress had established the mail service, the postmaster general could not change it. Therefore, the postmaster general urged Congress to provide a remedy as soon as possible. He recommended that, if no compromise could be made with the Overland Mail Company, the United States Treasury absorb the cost of the service until a railroad could be built to the Pacific.

This reignited the rivalry among western mail lines, and especially between the southern, or Butterfield, route via El Paso and Tucson and the central route via South Pass and Salt Lake City. It also resulted in a new and important development in western communication. Russell believed that Congress would revise the contract for the transportation of mail to California in 1860. Having secured the old Hockaday and Chorpenning contracts and organized the Central Overland California & Pike's Peak Express Company, he felt that the partners now had an excellent chance to win the great prize: the $600,000 mail contract held by the Overland Mail Company since 1857. To obtain the new overland mail contract, Russell and his partners embarked on undoubtedly the most extensive ploy ever devised to win a government contract: the famous Pony Express. The partners realized that a lone horse and rider could not carry enough mail to make a self-sustaining enterprise. They launched the venture to demonstrate the practicability of the central route for year-round travel from Missouri to San Francisco. The image of the express rider caught the public's attention and removed any doubt that the central route was feasible.[53]

On April 11, 1860, Senator William M. Gwin moved to call up the Overland Mail bill. That measure provided for a semiweekly service for $600,000 to carry all the mail from the Missouri River to Placerville, California, in twenty days along the line of the Pony Express on the central route, with a daily mail to Salt Lake City. Senator Gwin and his friends argued that the bill ought to be passed at once, because the Post Office contract for ocean

service to California would end on June 30. The supporters of the bill and friends of the central route declared that nothing stood in the way of efficient overland service except the Overland Mail contract. They urged that a reasonable indemnity be paid to Butterfield and a new contract let. During the debates on the subject, the southern route and the Overland Mail Company were intensely criticized. Russell, who was now waging the most desperate battle of his life to prevent the collapse of Russell, Majors & Waddell and the Central Overland California & Pike's Peak Express Company, wrote Waddell that he looked upon the mail contract held by the Overland Mail Company as their only means of salvation. If they did not get it, they were ruined.

While Congress debated the various bills designed to solve the problem, Russell was busy with plans of his own. On June 13, he wrote Waddell that he did not think Congress would pass any of the Overland Mail bills then before it. Therefore, he was "in treaty" with the Post Office Department for a contract, which he hoped to receive that day, to carry mail on the central route three times per week for $600,000. Although it would pay very well, it was not as good as he wanted. It would, however, lay a foundation for a later contract that would pay $1,200,000. The present contract would require 40 additional coaches, 150 sets of harness, and 200 mules, most of which Russell, Majors & Waddell already had.

Russell was right. Congress did not pass any of the remedial bills. Moreover, the appropriation for the Post Office Department cut off the ocean service. The situation was now worse than ever before. With the discontinuance of the ocean mail, the only communication lines left between the East and the West were the Overland Mail Company on the exorbitant southern route and the Central Overland California & Pike's Peak Express Company on the central route. Since Congress wanted to break the contract with the Overland line and make a new contract to transport all the California mail over the central route, Russell was sure that the Post Office would negotiate with him. He said John Butterfield would not dare undertake the huge task, probably because of financial obstacles. "We will certainly get a good thing," Russell declared optimistically.[54]

Although Russell was sure that the mail contract issue would turn out in his favor, he was not so confident about getting money to meet immediate obligations. "Now is the pinch of the game," he said, "and I fear the result. If we can get along thirty days the rubicon is passed and we are all safe. . . . It

would be awful to go down now after so much sacrifice and vexation, and too when we have such good prospects ahead with which to pay out."[55] He had expected $127,000 from the Hockaday contract and $35,000 from another source, but both failed him. He just managed to get past June.

When Congress adjourned without solving the overland mail problem, Russell and the supporters of the central route redoubled their efforts. Since the ocean mail had been abandoned, Russell added $300,000 to his offer to the Post Office Department. For $900,000, he would transport all the mail six times a week on a twenty-five-day schedule. This contract was Russell's sole hope of avoiding bankruptcy. All of Russell's letters to Waddell urgently appealed for more money from the negotiation of acceptances or in drafts on the U.S. Treasury issued by the quartermaster at Fort Leavenworth for transportation services. Russell also hoped to get money from the claim for losses in Utah in 1857–1858. Secretary Floyd had agreed to pay it, but the claim was never paid. Russell's finances in July 1860 became bleaker when his monopoly on mail over the central route ended with the start of a rival company, the Western Stage Company.

## The New Overland Mail

Soon after Congress convened in December 1860, Russell and the supporters of the central route prepared to win the old, vexatious "Battle of the Routes." It may seem amazing that Russell and his partners could be serious contenders for any contracts, given the Trust Fund scandal. As is the case in the twentieth century, however, the government had very few contractors who could do the job and was reluctant to disqualify any of them.

On February 2, 1861, the annual Post Route bill, which that year provided for a daily mail service from the Missouri River to California for not more than $800,000, came before the Senate. If the bill passed, the line would run over the central route. Public dissatisfaction with the southern route, both in the East and in California, indicated that the measure might pass.

While Congress debated the overland mail propositions, the news reached Washington that the Overland Mail Company's line had been "cut up by the roots" in southern Missouri and Texas by the Confederates.[56] The rebels had stolen the stock driven off the coaches, and halted the mail at Tucson, Arizona, and Fort Smith, Arkansas. The best the company could do was try

to keep the line open between San Francisco and Tucson in the west and from St. Louis to Fort Smith in the east. Since much of the Overland Mail line lay in southern territory, there was no hope of restoring it, the north needed a new plan immediately. Seven southern states had already seceded and Missouri, Arkansas, and Texas could join them at any moment. The beginning of the Civil War marked the end of the "Battle of the Routes," for there was no longer a southern route.

Washington had only one solution: a single mail line over the central route. Only five days after Washington learned of the destruction of the Overland Mail line, the Senate Finance Committee recommended the passage of the Post Office Appropriation bill, which would transfer what was left of the Overland Mail Company to the central route. After the formation of the Confederacy, Congress passed the bill on March 2, 1861, and moved the Butterfield Overland mail from the route via El Paso and Tucson to the central route via Fort Laramie. It increased the stagecoach service to a daily schedule and the Pony Express to a semiweekly service until the transcontinental telegraph line, then under construction, was completed. It set the compensation for the combined service at $1,000,000 per year.

The Senate Post Offices and Post Roads Committee proposed a consolidation of the two lines, the Central Overland California & Pike's Peak Express Company and the Western Stage Company, which held the contracts covering the central route, with what was left of the Overland Mail Company. This compromise was accepted as just; as a result, competition between the two companies ended and they arranged matters satisfactorily.

On March 16, 1861, Russell and the representatives of the Overland Mail Company signed a contract with E. S. Alvord, the president of the Western Stage Company. Under this contract, service on the central route was divided between the three companies. Alvord's company agreed to discontinue all service west of Fort Kearny and to keep operating between Fort Kearny and Omaha. This ended competition in the express, mail, and passenger businesses between the Missouri River and Denver, and precluded the possibility of a rival line to Salt Lake City. For the concession, Alvord's company received $20,000 a year out of mail pay, 70 percent of which came from the Central Overland California & Pike's Peak Express Company, and 30 percent from the Overland Mail Company.[57]

The agreement provided that the Central Overland California & Pike's Peak Express Company should operate the eastern half of the line from St. Joseph to Salt Lake City, the Overland Mail Company would control the line from Salt Lake City to Placerville, California. Therefore, the Central Overland California & Pike's Peak Express Company became a subcontractor on the line it had operated alone. Its share of the mail pay would be $470,000, and revenue from passenger and express fares was also to be divided. Pony Express receipts were to be divided equally, with each company paying expenses on its own part of the route. The Pony Express rate was reduced to $1 per half-ounce letter, however, the Pony Express soon passed into history when the first overland telegraph was completed on October 24, 1861. The daily mail began on July 1, 1861. The coach that left St. Joseph, Missouri, on that date reached San Francisco on the evening of the 18th.

Russell and his partners, however, were finished. They advertised on December 6, 1861, that the firm would be sold to the highest bidder at auction in Atchison, Kansas, on December 31. This ended Russell's career as an organizer, promoter, and financier. On April 3, 1868, he filed a bankruptcy petition in the U.S. District Court for the Southern District of New York. The one preferred creditor was the United States, which held the $870,000 worth of receipts that Russell had deposited with Bailey as collateral for the Indian Trust Fund bonds.[58]

Ben Holladay bought the Central Overland California & Pike's Peak Express Company and assumed the contract of March 16, 1861. On March 21, 1862, the company's mail contract was transferred to the new owner. When the Overland Mail Company's contract expired in 1864, the mail contract for the whole line was let to Holladay for four years. He sublet the western end of the line to the Overland Mail Company, changed the name of the concern to the Overland Stage Line, and expanded his lines to the northwest. In 1866, he sold his entire holdings to Wells Fargo & Company. Thus passed into history the last fragment of the historic enterprise created by Russell, Majors & Waddell.

Wells Fargo managed to get the job done faster and cheaper than their competitors. Early in their operations in the East, they turned a profit delivering letters at six cents each when the Post Office was charging twenty-five cents. The Post Office ordered Henry Wells to stop undercutting its rates. He replied with a bold counterproposal: his company would contract to deliver all U.S. mail, anywhere in the nation, for six or even five

cents a letter. The assistant postmaster general hastily declined the offer, reportedly exclaiming, "Zounds, sir, it would throw 16,000 postmasters out of office!" but Wells had made his point. The Post Office soon dropped its rates in the East all the way down to three cents a letter.[59]

*Chapter 7*

# Contracting Trends as the Nation Approached Civil War

## Military Contracting Becomes More Structured

While the army experimented with contracts and government freighting of supplies to the West and entrepreneurs lobbied for control of mail transportation routes, both the military and postal procurement systems were becoming more formal and complex. In addition, the American arms industry was making tremendous worldwide advances, as illustrated by the technical and marketing success of Samuel F. Colt, which decisively altered the economics of government procurement.

From 1815 to 1860, although what the government was buying transformed the country, the contracting process became more structured. Congress and the departments imposed formalized procedures to ensure accountability and reasonable prices. To achieve accountability, they required detailed recordkeeping and multiple copies; to achieve reasonable prices, they required competition and advertisement, except under very limited circumstances. A reciprocal relationship developed between the regulations by the executive branch and the statutes enacted by Congress. They copied and advanced ideas from each other in a leap-frog process that continues today.

The 1821 General Regulations for the Army dealt only with what was to be procured, not how. The General Regulations of 1825 were more detailed. They required that "as far as practicable," all supplies would be procured by formal advertisement. The proposals would not be opened until the time for submitting proposals had expired. An abstract of the proposals, showing the names and terms of the several bidders, would be prepared and all proposers would have access to the other proposals, which would be carefully preserved for future reference. All contracts were to be executed in triplicate. One copy, together with the advertisement, would be sent to the quartermaster general's office. The contractor would supply a bond, conditioned on the faithful performance of the contract, supported by two

sureties. Because of the problems with advances on the Johnson contracts, no payment could occur until supplies had been delivered or services performed.

Congress apparently liked the army's contracting principles and applied them to the Post Office in 1836 and to the rest of the government in 1842. The Act of August 26, 1842, required that stationery and job printing contracts be awarded to the lowest bidder, after advertising in one or more principal newspapers published in the locale for at least four weeks. Proposals in response to specified requirements were to be sealed until the announced day of opening in the presence of two people. The awardee had to give appropriate security or the contract would be awarded to the next lowest bidder. Such proposals had to be kept for congressional inspection.

The next year, 1843, a law dealing with supplies for the navy required the navy to prepare and present to Congress an abstract of bids. This apparently was based on the concept already present in army regulations and applied to the Post Office in 1836. In 1846, Congress imposed stricter recordkeeping and financial requirements.

The next procurement statute on August 31, 1852, required that a contract be advertised for sixty days before bid opening; that a bond for twice the contract price be submitted; and that bidders could attend the bid opening. That same year, the army amended the general regulations to require written contracts for the renting of quarters for new recruits. To feed them, the army mouthed the statutory language of prior advertisement, but realized that this would not normally be possible. It, therefore, cautioned the appropriate officials to make the best contract possible.

The navy, since 1845, had a similar, although more limited, authority to buy supplies "which it may be necessary to purchase out of the United States for vessels on foreign stations" without advertising.[1] Also in 1845, Congress authorized the Navy Department to purchase medicines through negotiation rather than formal advertising. The department also received specific authority to procure certain perishable items without advertising—namely, butter and cheese in 1847, preserved meats and dried vegetables in 1861, and flour and bread in 1867.

The 1857 General Regulations of the Army were the most expansive to date and added the requirement that contracts be made with the lowest

responsible bidder, unless all the bids were unreasonable. In that case, the government could reject the bids and readvertise. By General Order No. 13 issued on June 17, 1859, the War Department forbade contracts extending beyond the period in which the purchased supplies were required.

On June 23, 1860, Congress passed a landmark contracting statute that essentially repeated the requirement of the 1857 Army Regulations. Senator Jefferson Davis, a former secretary of war, added the requirement as an amendment to the act ten days before passage. The act was later incorporated in section 3709 of the Revised Statutes and provided:

> All purchases and contracts for supplies or services, in any of the departments of the Government, except for personal services, shall be made by advertising a sufficient time previously for proposals respecting the same, when the public exigencies do not require the immediate delivery of the articles, or performance of the service. When immediate delivery or performance is required by the public exigency, the article or service required may be procured by open purchase or contract, at the places and in the manner-in which such articles are usually bought and sold, or such services engaged, between individuals.[2]

The particular significance of this statute was the requirement of advertising with only two exceptions: contracts for personal services and contracts when public exigencies necessitate immediate performance. This statute, with certain exceptions, continued to regulate the placement of military contracts until World War II. It was suspended whenever the nation mobilized for war.

Additionally, one further and important exception to section 3709 of the Revised Statutes must be mentioned. Not only the courts, but also the attorney general and the comptroller general consistently ruled that advertising was not required if competition was impracticable—that is, if there was only one source. From then on, when only one source was available, neither the War nor Navy Departments used formal advertising to effect such procurements. That exception would result in a scandal in the 1930s, involving aircraft procurement.

In 1861, army regulations also began requiring use of standard forms, specifically for hiring surgeons and subsistence contracts. The contract allowed the commissary general of subsistence to terminate it earlier than its stated duration. It also required execution in quintuplicate—more than was

required in 1857—and reflected a growing concern about fraud and abuse and availability of sufficient copies for auditor and congressional scrutiny.

## New Procedures for Postal Contracting

The Post Office continued to foster new modes of transportation to carry the mail faster. In 1813, Congress authorized the postmaster general to contract to carry the mails by steamboat if service could be year-round and would cost no more than mail carriage over adjacent land routes. Four years later, the postmaster general authorized contracts for steamboat service between New Orleans and Natchez. By 1823, steamboats had become such common mail carriers that Congress declared all steamboat routes to be "post roads." In 1836, Congress added canals as a permissible means of transport for mail, and listed railroads two years later, although the Post Office had been awarding mail contracts to railroads since 1835.

As Rudolph Sobernheim has documented, typical contracts from 1813 to 1823 were very brief. They began with a clause defining the contractor's route and compensation and possibly the mode of transportation to be furnished: two-horse stages on the shorter routes and four-horse stages on the longer routes. Article 2 required the contractor to deliver the mail at each post office existing or to be established en route, later, it required the contractor to carry all mail tendered for transportation "with certainty, celerity, and security" in accordance with the schedule incorporated into or annexed to the contract.[3]

The standard contract also contained three short clauses specifying the forfeitures and penalties for late deliveries. Failure to deliver the mail at any post office or any delay of fifteen minutes or more, as well as by-passing a post office, carried a penalty of $10. If a delay caused a connection with the stage of another route to be missed, and the mail had to be held for another coach, the trip was considered lost and penalties up to $80 were to be deducted from pay or to be recovered by suit. Penalties and forfeitures were halved if the contractor's delay "arose from unsurmountable casualty or a public enemy" but the parties expressly agreed that without performance, there would be no compensation.[4]

Under the 1823 contracts, the postmaster general could terminate the contract if the contractor missed a trip, due to his negligence or misconduct. He could alter the schedule or route or both, provided the contractor was

paid for the added expense and the mail did not have "to be conveyed at a greater rate than six miles per hour."[5] If the contractor failed to comply, the postmaster general could terminate the contract.

Finally, all the contracts ended with a proviso that they would be voided if the contractor became a member of Congress or if a member of Congress were to acquire any interest, direct or indirect, personally or through others, in the contract and that the contract should be subject to the Act of April 21, 1808, the "Officials Not to Benefit" law.

Not surprisingly, considering the importance of mail to the developing country, Congress and the Post Office in this period amplified mail contracts procedures and instituted a series of principles that modern contracting officers would clearly recognize.

An 1825 act required that contracts be advertised for twelve weeks. Bidders who refused to accept the contract became liable for the cost of reprocurement. Furthermore, the act prohibited increases in the contract price unless service was proportionately increased. This was designed to curb a widespread abuse: contractors would submit low bids, receive the contract, and once in place, would proclaim they were unable to deliver the mail at the contract price. Postal officials, under pressure to ensure timely delivery and, therefore, unable to suffer the delay of reprocurement, would increase the price even above the prices of other bidders. After the act, however, contractors merely had to "improve" the service to receive extra money. Ingenious improvements included changes from horse to coach, for example.

The Post Office also began to add substance to its regulations. In its 1832 instructions, the Post Office required the dismissal of mail carriers who became intoxicated while carrying mail. The postmaster had to employ another carrier immediately at the expense of the contractor. Every failure of the mail to arrive within ten minutes of the contractually scheduled time was to be reported. All these requirements, however, did not prevent inefficiency and fraud. Many of the problems stemmed from the fact that contracts were often signed in the name of the local postmaster; enforcement depended on those individuals, who varied mightily in vigor, intelligence, and integrity.

After a lengthy investigation of the Post Office Department, Congress, in 1836, enacted a statute designed to correct all the uncovered problems.

Bonds and contracts would thereafter be made to and with the United States, not with the local postmaster, and any suits would be instituted in the name of the United States. The postmaster general had to file a duplicate of any contract within sixty days with the department auditor, report to Congress each year on the money paid to contractors, and determine the mode of transportation to be used in carrying the mail along the route and advertise it accordingly.

Mail contracts had been let once a year. The statute specified that if a contract had to be made at other than the "annual letting," it must be advertised in a newspaper near the route to be serviced, but the postmaster general could enter into temporary contracts until a regular letting occurred. Proposals for making contracts were to be sent to the department where they would be sealed until the bidding was closed. They would then be opened and marked in the presence of any two of the four highest postal officials (the postmaster general and his three assistants).

Contracts were to be awarded to the lowest bidder unless the low bid was not more than five percent below that of the present contractor. The Post Office was not to accept bids from people who consolidated or combined their bids, or who limited competition by inducing prospective bidders not to bid, or who had failed to execute or perform any prior contract. (The debarment of these bidders was limited to five years by the Act of March 2, 1849.) The postmaster general was to record "a true and faithful abstract" of all the offers and to provide a copy to Congress at each session.[6] Bidders had to post a bond, which was forfeited if they failed to enter into a proffered contract. Remembering the activities of Duer and Morris, postal employees were forbidden from having any interest in any mail contract. No person was to receive payment in advance of performance.

The 1843 Regulations of the Post Office were the first to have sections specifically dealing with "Contractors" and "Proposals." They specified that late bids would not normally be received nor would bid modifications be considered. The Act of March 3, 1845, mandated that all future mail contracts be let to the lowest bidder, tendering sufficient guarantees for faithful performance, without regard to the mode of transportation other than necessary to ensure the "due celerity, certainty, and security" of such transportation. The 1847 Postal Regulations called such bids "star bids" since they were normally marked with an asterisk by Post Office personnel. The routes later became known as "star routes," still a common postal term.

Due to the danger and unpredictability of western mail developments, the 1855 Postal Regulations allowed the postmaster general to change the contract and schedule and equitably increase the compensation, if necessary. The postmaster general could also annul the contract for repeated failures including disobeying departmental instructions; on timely notice, the contractor could relinquish the contract under certain circumstances. The regulations required that any bid received after the time designated in the advertisement, or submitted without the guarantees required by law, or that combined several routes in one sum of compensation was not to be considered unless the other bids were extravagant.

The 1857 and 1859 Postal Regulations greatly expanded the bidding process. Bids had to be specific and conform strictly with the advertisement. The advertisement had to be based on the department's best information; if that information was mistaken, as long as the points to be supplied were correctly stated, the "bidders must inform themselves."[7] No claims for additional compensation for such mistakes would be allowed. Bidders were, as far as practicable, to use the department's printed forms for proposals. Once submitted, bids should not be withdrawn. Each bid had to be guaranteed by two responsible persons. A substantial bid modification was to be treated as a new bid and not be considered after the last hour set for receiving bids. Many of these principles are still found in modern contracting regulations.

## Arms Contracting Enters a New Age

American arms had become world famous.[8] One outstanding new firm, the Ames Manufacturing Company, began in the early 1830s to make swords and sabers under government contracts, but soon branched out into other items for private as well as government markets. In the next few years, the company accepted contracts for carbines and bronze cannon. The Remington Company, too, got its start about this time with the purchase of machinery and a not yet completed carbine contract from Ames. As early as 1851 at the London World's Fair, American rifles—specially a number of Mississippi rifles by Robbins & Lawrence—received medals.[9] The British sent commissions to the United States to study factory methods. They inspected Colt's armory, the National Armory at Springfield, the Robbins & Lawrence armory, and other works, and immediately ordered American machinery. Between 1855 and 1870, England, Russia, Prussia, Spain,

Turkey, Sweden, Denmark, and Egypt to mention the most important, bought American machinery for the manufacture of rifles and pistols, followed by others such as Japan, Argentina, Chile, Peru, and Mexico. During the Turkish War, American armories such as the Winchester Repeating Arms Company, the Providence Tool Company, and the Union Metallic Ammunition Company heavily supplied both the Russian and the Turkish governments with arms and munitions.

Above them all stood Samuel Colt. He combined Whitney's ideas with advanced marketing. Enchanted by the arms business from his early youth, he was fascinated by the story of Fulton's attempt to sell a torpedo to the French and English governments. With an aptitude for inventing, Colt perfected a torpedo that amazed President Tyler, but did not result in contracts.[10]

However, a torpedo did not make his fame and fortune; the revolver did. He whittled a working model of a revolver while he was working on a ship. He patterned it after the ship's wheel whose spokes were stopped by the clutch at any point. Colt, back on shore, made a model from metal. Many four-barreled pistols had been used before the nineteenth century, but primitive firing devices and poor construction had rendered them virtually useless, if not dangerous to the firer. Colt's improved style solved one problem and Joshua Shaw solved the other when he invented the percussion cap around 1815. It was an expendable copper cap filled with fulminate of mercury, which ignited a cartridge when a hammer struck it, thus eliminating the need for flints and powder pans. Colt patented his first revolver in 1835. He established a factory in Paterson, New Jersey, capitalized at $250,000, and submitted his product to the War Department.

A committee of officers reported unanimously that Colt's revolvers were "entirely unsuited to general purposes of the service."[11] But, the obtuseness of these dinosaurs did not stop Colt. He improved the weapon and took it to Florida where the United States was battling the Seminole Indians. There, he impressed many army officers, who favored it, but not enough to change the War Department's decision.

Colt's company failed in 1842, a victim of military myopia, but meanwhile, unknown to Colt, the revolver was a great success in Texas. Fighting conditions there required a weapon that could be fired rapidly from the saddle, not the slow-firing muskets then in use. Colonel Sam Walker and his

famous Texas Rangers showed that the new revolver was indispensable in this sort of warfare.

The Mexican War reversed Colt's misfortune. General Zachary Taylor found that his Texas scouts were invaluable and that one reason was their revolvers. So, he demanded that the War Department rush him large orders of Colts. The War Department ordered 1,000 revolvers at $24,000 and the inventor immediately started another factory in Connecticut to comply. From then on, Colt's fortune was made.[12] Thereafter, the Colt revolver permeated the history of the American West in the form of pistols for the cavalry or gunfighters, or sidearms furnished the teamsters and stagecoach drivers.[13]

Colt's skill as an inventor was matched by his business acumen. In 1848, he offered to sell 10,000 revolvers to the War Department at $25 each. Since he had sold 2,000 at $28 each during the Mexican war, he was called a profiteer. What he was demonstrating, however, were economies of scale and the learning curve. The first weapon might cost $1,000 to make; the second $800; progressing ever downward as workmen and managers improved their techniques. A larger volume would reduce costs per unit even more. He started a revolution in capitalism, which was a necessary accompaniment to Whitney's mass production. Colt was the first manufacturer to offer a lower unit price to attract a larger volume of business. Before that time, the unit price was the same for a quantity of one or a thousand.[14]

Colt, the businessman, also saw the entire globe as a market. As early as 1853, Colt built a factory in London and established separate licensing agreements with arms makers in Belgium, Austria, and Prussia.

It is ironic that, in the 1850s, Europe bought American arms. In 1861, the North and South would race desperately to Europe to buy arms of every description.

*Chapter 8*

# The Civil War to 1880

In 1861, the agricultural economy of the South, fostered by Whitney's cotton gin, battled the manufacturing and industrial might of the North, created by Whitney's mass production techniques.

The Civil War, the greatest of American tragedies, tested the contracting process—and it barely passed. That process, especially from the 1820s to the 1850s, had been carefully structured to ensure accountability and competition. The war, however, overloaded the purchasing infrastructure, which lacked experienced officers to supervise the system. Many civilians had to be appointed along with many newly commissioned officers. As might be expected with such a large influx of strangers, numerous venal types snuck in and found willing coconspirators in a horde of equally venal contractors. The war saw scandals on a scale never before encountered.

These scandals came in the midst of an overwhelming demand for weapons, food, and other supplies. The Union need to buy weapons was exacerbated because the South destroyed much of the productive capacity of the Harpers Ferry Armory. That loss and the inundation of recruits forced an unparalleled reliance on foreign suppliers. This period saw the birth of the first modern weapons system, the battleship, but that was not the only improvement in weapons technology. The repeating rifle and even the machine gun saw action as well.

This was the first true war of industrial mobilization. This mobilization was not planned, at least not in the North; it evolved as the huge demands of the army impelled it forward. Previous mass production had been for muskets, rifles, and pistols in quantities of thousands. This war forced production of hundreds of thousands of items—not just weapons, but shoes and clothes. That presented special problems because, unlike muskets, clothes must come in all sizes. Thus, the Quartermaster Department introduced a concept of standard measurements for men's clothing ("sizes") that was applied to men's clothing after the war. By such innovations, the war fostered the rise

of truly national industries that provided the civilian community with the benefits of military mass production techniques.

On April 15, 1861, just six weeks after taking office and just two days after Fort Sumter fell, Lincoln called out 75,000 militia for three months of service. Procurement had to scramble to prepare. Ironically, General Albert Sidney Johnston, who led the army against the Mormons and would later lead an army of the Confederacy, was quartermaster general of the U.S. Army on that date and for a week thereafter. He issued the first procurement directive of the war instructing the quartermaster at Philadelphia to buy enough knapsacks, canteens, and camp equipage to supply the 75,000 members of the militia. He followed this with an order to "direct all your energies to the preparation of fatigue clothing for Volunteers."[1]

Contracts had barely been let before supply demands doubled when Lincoln's proclamation of May 3 doubled the size of the navy, increased the regular army to 22,000 men and called for 42,000 volunteers to serve for three years. The early procurement activities were thoroughly disorganized and constituted one of the sorriest examples of mobilization ever to occur in this country. Federal agents from different bureaus, state agents, and private individuals bid against each other in the domestic markets and competed with the southerners in foreign markets. Corruption developed in private negotiations between government representatives and contractors even when there was no competition between government agents. The pressure of large-scale purchasing, carelessness, and collusion was so great that the government paid fantastically high prices for the shoddiest commodities and enabled profiteers to amass private fortunes.[2]

Haste was the biggest problem. Government officials wanted results. They were more anxious to overcome delay than to assure themselves of fair prices, more anxious to arm and clothe their troops than to satisfy regulations. On the other hand, too many contractors grabbed the opportunity to fleece the government by charging outrageous prices for material that was mediocre or worse. The lack of central coordination and the confusion among government agents and state governors attracted profiteers who feasted on the confusion. Middlemen with nothing to offer but promises and connections got rich by getting government contracts and then subletting them at a much lower price to a manufacturer or even to another middleman.

Greed turned many manufacturers and merchants who had enjoyed good reputations into rapacious profiteers in a feeding frenzy for lucrative government contracts. One official described them as follows:

> These hurried to the assault on the treasury, like a cloud of locusts alighting down upon the capital to devour the substance of the country. They were everywhere; in the streets, in the hotels, in the offices, at the Capitol, and in the White House. They continually besieged the bureaus of administration, the doors of the Senate and House of Representatives, wherever there was a chance to gain something.[3]

The situation got so bad that Secretary Stanton closed the doors of the War Department at 3 p.m. to all but government officials so that they might at least have a few hours in the day in which they could do something besides answer applicants for contracts.

Fraud, profiteering, and extravagance occurred most often when officials failed to follow prescribed procedures. The 1860 law provided that the government should advertise for all contracts for supplies or services, with one exception: if immediate delivery were necessary, needed supplies or services could be bought by open purchase or contract. Unfortunately, it was too easy to abuse this exception and make every case a direct purchase. Another rule, not always followed, required the senior ordnance officer to contract for the ordnance stores. It is difficult to see how a commander in the field could follow this rule and still accomplish his mission in an emergency. Yet the same emergency that allowed exceptions to procurement by competitive bids and justified the field commander's ignoring ordnance procedures also allowed profiteering and graft. Haste battled accountability.

Actual contracting differed little from earlier periods, except that the telegraph hastened the process even more than in the Mexican War. Sometimes orders were sent by telegram, sometimes by letter, and sometimes by formal contract. A series of orders to Colt's Patent Firearms Manufacturing Company in 1861, for example, included all these forms. The chief of ordnance simply telegraphed Samuel Colt in May: "Deliver the five hundred pistols to Major Thornton at New York Arsenal. For further orders, wait mail." In June, the chief of ordnance sent a letter to Colt saying, "Please furnish this department, as soon as possible, with five thousand Colt's revolver pistols, of the latest pattern. The pistols are to undergo inspection, and the price will be the same as allowed for the same kind of pistols recently furnished by you."[4] In July, General James Wolfe Ripley, the chief

of ordnance signed a formal contract for 25,000 muskets with Colt specifying that the arms would meet the exact Springfield pattern, with interchangeable parts, delivered according to a strict schedule, and packed twenty to the box. The contract payment of $20 for each stand of arms was payable on receipt in Washington of certificates of inspection and evidence of delivery of at least 1,000 muskets.

Not all contracts went as smoothly as those with Colt. The Ordnance Department faced a monumental problem because of Confederate actions.

## The South Acts

Southern governors, aided by southerners in the federal government such as Secretary of War Floyd, had bought arms from the United States for their state militia and had transported them to southern arsenals where they could easily be seized. The South did three other things to overcome its lack of industrial capacity: it bought as much as possible before the war; it destroyed what it could of the North's gunmaking capability; and it bought arms in Europe.

On February 9, 1861, Jefferson Davis became president of the Confederate States. His contacts as a former secretary of war were one of the most valuable military assets of the Confederacy, which quickly moved to exploit it. On February 20, Davis signed an "Act to Provide Munitions of War, and for Other Purposes," authorizing the president or the secretary of war (although such an office did not yet exist) to make contracts for heavy ordnance and small arms and for machinery to manufacture small arms and munitions of war, to employ artisans and agents, and to establish powder mills "on such terms as in his judgment the public exigencies may require."[5]

One day later, Davis authorized Raphael Semmes to go to the North to buy arms and munitions. Davis recommended the Hazard Powder Company in Connecticut as a likely prospect and mentioned that an "artificer named Wright" at the Washington Arsenal might sell a cap machine. Davis also told Semmes to buy the improved rifle-making machinery then for sale at Harpers Ferry, to contract for a friction-primer plant in the Confederacy, to buy all the artillery he could find, and to bring back as many armorers and skilled men as possible from the North's ordnance depots. He contracted for a vast amount of materiel until April 19, 1861, when the North declared the embargo on shipments of arms to the southern states. The Confederate

administration also formed its important connection with the Tredegar Iron Works, the South's only important iron works. Prior to April 17, when Virginia seceded, the Tredegar establishment in Richmond was still in the United States; however, that did not prevent interested parties from bringing the proprietor to Montgomery by March 1 to begin negotiations with the Confederate government.

After hostilities started, Confederate forces raided the Harpers Ferry Armory in the spring of 1861, and salvaged John Hall's rifle manufacturing machinery before torching the armory. The loss of the machinery at Harpers Ferry cost the Union half its rifled arms capacity. The rebels then carted away the machinery to a Virginia manufacturing armory, next to Tredegar Iron Works.[6]

## The North Responds

At the start of the war, the federal armories held 35,000 rifled muskets but were mainly filled with 370,000 old fashioned 69-caliber smooth-ball muskets and approximately 50,000 rifles and carbines of varying qualities. The Confederates seized one-fourth of the armories' holdings on January 21, 1861. The chief of ordnance reported that the North had 477,087 small arms versus 140,794 in the South and 122 field guns versus 41 in the South. The condition of these small arms and guns varied from serviceable to useless.[7]

The federal government frantically used three methods to get the large numbers of weapons it needed.[8] It increased the production of government arsenals (a task complicated by the Confederate damage at Harpers Ferry), it contracted with private manufacturers and arms dealers in the United States, and it procured weapons overseas.

### *Domestic Production and Procurement*

Production at the remaining government small arms factory, Springfield Armory, expanded from eight hundred in April to sixty-nine hundred in October 1861, but this had little effect on the immediate supply problem.

The 1809 and 1860 laws still required all contracts to be advertised for bids, except in emergencies. Brigadier General James Wolfe Ripley, chief of ordnance from 1861 to 1863, had been indoctrinated from his days as a lieutenant in the idea that regulations had to be followed. During the Creek

War, General Andrew Jackson had threatened to hang him for refusing to fill an irregular requisition submitted by a unit under Jackson's command. Ornery, imperious, and driven by a slavish adherence to rules and the belief that economy mattered above all else, Ripley would not depart from the time-consuming system of competitive procurement prescribed by regulations.[9] The twentieth century saying, "If you can keep your head when all others around you are losing theirs, maybe you don't understand the situation," applies perfectly to Ripley at the start of the Civil War.

Arms production during the first two years of war expanded astonishingly. The Springfield Armory turned out 802,000 rifles, of which all were assembled from parts made by private vendors. Another 670,600 Springfield rifles were made solely in the private sector. Northern arms producers were turning out 50,000 shoulder arms per year when the war began; two years later, they produced more than that each month. This was exceptional, since these weapons were state-of-the-art. The uniformity system pioneered in the arsenals worked fantastically. American weapons far surpassed the European arms, which neither looked nor worked as well. The commercial sector—especially such firms as Colt, Remington, Sharpe, and Parrott—ultimately became a major base for both guns and small arms. Private industry supplied all the artillery (although carriages and caissons were made at the arsenals), all the gunpowder, and a large share of the small arms procured during the Civil War. Other purchases, from domestic industry and abroad, included nearly 1,225,000 muskets and rifles, over 400,000 carbines, and 372,800 revolvers.

Some seventeen companies played a significant role for the North. The biggest single munitions contractor during the war was Robert P. Parrott (of West Point Iron and Cannon Foundry), famed for the big rifled gun which bore his name, who received 2,332 contracts worth $4,733,059. Close behind was Colt's Patent Fire Arms Company at Hartford, Connecticut, which held 267 contracts worth $4,687,031. No less than fifteen companies—including J. T. Ames, Herman Boker and Company, Alfred Jenks and Son, Naylor and Company, E. Remington and Sons, Sharpe's Rifle Manufacturing Company, Starr Arms Company, and Spencer Arms Company—had contracts amounting to at least one million dollars each. The old firm of Eli Whitney still contracted but only to the extent of $353,647.[10]

## Foreign Purchases

Importation was the first method used to augment ordnance supplies. Despite expansion of private industry and government facilities, it soon became apparent that domestic resources could not begin to meet the immediate demands for full-scale war. Federal and state agents went to Europe for clothing and individual equipment as well as munitions, but total expenditures for textiles and blankets purchased abroad did not exceed $380,000. Weapons were the object of the search. Besides providing the government a temporary source of weapons until the Springfield Armory and the contract system could meet the Union's needs, such overseas purchases would block, or at least make more expensive, the efforts of Confederate arms buyers.

As if Ripley were not a big enough millstone, the Ordnance Department was slow to start buying in the European market, as in the domestic market, because Secretary of War Simon Cameron opposed such buying. Although it clearly would have been impossible to arm and clothe Union armies during the first one and one-half years of war without European goods, foreign procurement clashed with strong protectionist sentiments, which demanded that American money help American industry. An ardent protectionist when he had been a senator, Cameron was reluctant to go into foreign markets at all. Stark realities such as Congress' authorization for the enlistment of 500,000 volunteers and the nightmarish casualty figures from First Bull Run in July 1861, however, soon changed his mind.

By the end of July, Europe swarmed with federal and state purchasing agents from both the North and the South and also with private speculators buying arms for resale in the United States. Five agents reportedly arrived in Europe on one ship, there to bid against each other for arms—some good, some obsolescent, some unserviceable—for the Union forces. Acting on his own authority, Major General John C. Fremont sent his agents to buy rifles, cannon, and shells in England and France for the use of troops in his department of the West, and the American ministers at London and Paris approved these transactions.

British Enfield rifles and the official French army rifles were the most sought after weapons, but since the number available did not approach the quantities needed, the agents accepted weapons of all types. Europe had a surplus of arms because many countries were changing from muzzle to

breechloading guns. They seized this opportunity to unload their armories of obsolete weapons at high prices. Prices skyrocketed, quality decreased, and corruption and fraud ran rampant. Union forces were saddled with European arms that the soldiers often considered little better or, in some instances, even worse than the rusting smoothbores in the federal armories. While the northern agents had rushed to buy most of the available surplus supplies, including obsolete weapons, Confederate agents astutely contracted for the output of some of the best factories in London and Birmingham. If northern agents had contracted for existing stocks and future production of all the best weapons, the Confederacy would have suffered as a result. Curiously, many of the weapons sold overseas were based on American technology.[11]

Within a year, Union agents had returned with over 726,000 muskets, rifles, and carbines—more than ten times the quantity purchased from American manufacturers during that period. Even American private contractors subcontracted for a large share of parts in Europe. These parts, as well as arms purchased directly by the government, were inspected in Europe by ordnance officers sent for that purpose. By October 1861, the mass confusion caused the federal government to withdraw its agents from Europe, and have American ministers at European capitals buy supplies. In late November, Secretary Cameron asked the states to recall their agents.

Shortly after becoming secretary of war, Edwin Stanton in January 1862 forbade further contracts for any article of foreign manufacture that could be made in the United States, and revoked all outstanding contracts in foreign countries. Further foreign purchases did have to be made during 1862, but all foreign procurement virtually ended by 1863. Indeed, the quartermaster general found it necessary to apologize in his report of 1862 for buying many excellent uniforms and equipment in Europe at prices no greater than those being paid for mediocre domestic material.

While congressional investigations uncovered profiteering, graft, and official corruption, the wholesale procurement of foreign arms was the only feasible method of quickly arming vast numbers of Union troops to address the initial crisis. Every effort was made to increase the production of rifles at the government arsenal at Springfield and by private manufacturers.

## Cameron's Cronies

The contracting process, difficult enough to begin with, was further burdened by Secretary of War Simon Cameron. His reluctance to enter foreign procurement was not his only misstep.

During the first two months of the war, Cameron bypassed the Quartermaster Department and appointed his staunch political friends and supporters, especially Pennsylvania Republicans, as War Department agents to buy supplies and direct the transportation of troops. The congressional committee later investigating government contracts concluded that he simply appointed "irresponsible temporary agents, through whom a system of favoritism could be consummated."[12]

The appointment of Alexander Cummings illustrates the problem.[13] On April 19, 1861, the Baltimore municipal authorities cut rail communications in that city and isolated Washington. Four days later, Cameron appointed Cummings, one of his campaign managers in the national convention of 1860, to buy and ship supplies and transport troops from New York to Washington until rail communications could be restored. In doing so, he totally ignored the fact that an assistant quartermaster general and Major Amos B. Eaton of the Subsistence Department were already stationed at New York to perform exactly that task. What must have been even more galling to those officers was that Cummings had no commercial experience and, moreover, no general acquaintance with business in New York. For twelve years, he had been a Pennsylvania newspaper editor and, in 1861, was publisher of a New York newspaper. Cummings did not even have to work with them; he dealt directly with Governor Edwin D. Morgan of New York.

The secretary of the treasury, without requiring security, gave $2,000,000 to an organization called the New York Defense Committee. Under Cameron's broad directive, this money was at the complete disposal of either Governor Morgan or Alexander Cummings. Since the governor was preoccupied with other duties, Cummings alone spent most of the money.

Operating outside the restrictions of army regulations, without accountability, he bought supplies on an emergency basis, not in response to requisitions but based solely on what he thought was needed in Washington. The Van Wyck congressional committee aired all the details of his

shortcomings as a purchasing agent, and two examples speak volumes about this "bull in a china shop." Cummings spent over $21,000 to buy linen pantaloons and straw hats because "hot weather was coming on." Had he asked, he would have learned that regulations did not allow uniformed troops to wear such garb. Without consulting Commissary Eaton, Cummings also bought food from E. Coming & Co., a hardware firm in Albany, New York.

Perhaps the most damning comment on Cameron came from Lincoln: "He was so corrupt, the only thing he wouldn't steal was a red hot stove."[14] When Edwin M. Stanton replaced Cameron as secretary of war on January 15, 1862, he gradually reformed the procurement system.

## Innovations In Weapons

The hidebound views that rejected the Colt revolver and would later frustrate the Wright brothers pervaded procurement. That myopic conservatism was especially tragic because so many innovations had come together that would now render suicidal some of the tactics used effectively as recently as the Mexican War.

The Ordnance Department had rejected Colt's repeating rifle. In 1860, a twenty-six-year old Quaker, Christopher Spencer, had patented the breechloading repeating carbine. Spencer, who had learned his trade under Colt, was ready to produce his repeaters when the Civil War began. General Ripley turned him down, but not merely because he resisted change. Ripley and other ordnance officers had seen many breechloaders fail miserably and dangerously. Moreover, they cost twice as much as muzzle loaders of the same caliber and took three times as long to manufacture. The cost of Spencer's 10,000 unproven carbines could buy 30,000 proven muzzle-loaded rifled muskets.[15] Ripley was following one of the immutable laws of mobilization: Don't innovate! You don't have time. Buy what you know works!

Through a friend of Secretary of the Navy Gideon Welles, Spencer sold the navy the first order for 700 Spencer rifles and carbines in June 1861. This led to the organization of the Spencer Rifle Manufacturing Company. Eventually, through the combined influence of Secretary Welles and James G. Blaine (then speaker of the Maine House of Representatives), plus a direct appeal to President Lincoln, the War Department bought 10,000

repeaters from the Spencer company in December 1861. Even so, this was only a temporary victory, when the army was buying almost any weapons.

As Colt had done in the Seminole War, early in 1863, Spencer traveled to demonstrate his weapon to the Army of the Cumberland and the Army of the West: Nearly everywhere he went, officers and men were enthusiastic, but still the Ordnance Department hesitated.

In August 1863, Spencer met with Lincoln, who tested the repeater himself and was greatly impressed with it. Spencer set up a shingle against a tree, fired a few shots at it and then handed the gun to the president who took aim and got results less satisfactory than did the inventor. He handed the gun back to the inventor with the remark: "When I was your age, I could do better."[16]

At last, when battle testing and presidential testing confirmed the advantage of the Spencer repeater, and when General George D. Ramsay succeeded General Ripley as chief of ordnance, orders for the Spencer firearms began to increase. Most of the orders were for carbines for the cavalry, which even General Ripley had conceded might be of value; the army made no attempt to arm the infantry with repeating rifles until 1864. The delay was unfortunate since the gun could have shortened the war. The Confederates called the repeaters, "that damn Yankee gun that can be loaded on Sunday and fired all week."[17] By the war's end, the government had bought over 12,400 Spencer rifles, about 94,200 Spencer carbines (mostly during the last year of the war), and 58,238,000 Spencer cartridges, from the Spencer company. In addition, the Burnside Rifle Company made 30,000 Spencers. Direct sales to soldiers, private organizations, and the states brought the total number of Spencer seven-shooters to about 200,000.

Lincoln was the main hope for the new technology, as chronicled in Robert Bruce's, *Lincoln and the Tools of War*. He was an inventor himself and often tested the products of entrepreneurs. During the first year of the war, Lincoln ordered Ripley to buy 37,000 breechloading rifles and 36,000 breechloading carbines. The real delays came from the manufacturers. Spencer took eight months to fill his contract for 10,000 guns. That was typical even of those with small contracts.

The troops loved the breechloaders. Early Civil War formations still required men to stand shoulder-to-shoulder because it was extremely difficult to load

a muzzle-loader lying down. The breechloader could be reloaded lying down and that permitted the infantry to volley from behind trees and stone walls. The combination of a breechloader, repeater, and rifled barrel for greater accuracy and range allowed troops to put down a withering (almost machine gun-like) fire on enemy soldiers a quarter of a mile away. That doomed the old formation style of battle. Toward the end of the war, firepower on the battlefield was increased further when the North began using the rapid-firing magazine carbines with a metal cartridge rather than a muzzle-loaded ball.

These advances forced generals to consider what contractors could supply and make sure their tactics coincided. Previously, the army could only buy items that were familiar to the soldier and were already incorporated into the tactics books. These advances in firepower changed that and dramatically altered how Civil War battles differed from Mexican War fighting only sixteen years before. Consider the cavalry charge: that fabled attack of valiant men on racing steeds designed to bring the cold steel of their sabres upon the hapless adversaries. Such an onslaught worked well when the defenders were armed with muskets that were relatively short-ranged, inaccurate, and had to be laboriously reloaded after each shot. Now, however, the defenders had longer range, accurate repeaters. The result was a turkey shoot. Robert O'Connell tells the story of a Major Keenan who led a cavalry charge against Stonewall Jackson's troops at Chancellorsville. The charge was a ghastly failure and the bodies of Keenan and his adjutant were found to have been riddled with thirteen and nine bullets each.[18] Generals now had to keep one eye on the marketplace. The cavalry charge and the Napoleonic frontal attack largely passed into history, especially after the folly of Pickett's charge at Gettysburg in which entire regiments disappeared after the Yankees began volleying.

An even more revolutionary development was within the Union's grasp: the machine gun. At the start of the war, a primitive version of the gun, called the coffee mill gun because of the resemblance, was demonstrated to a crowd of dignitaries that included five generals, three cabinet officers, the governor of Connecticut, and President Lincoln. The demonstration went very well and the audience, particularly Lincoln, realized the military potential of the new weapon. Lincoln urged Ripley to consider the gun and stated, "I really think it worth the attention of the Government."[19] The businessmen who had conducted the demonstration returned to New York convinced of immediate contracts but nothing happened. They wrote to both

Lincoln and Ripley. Lincoln forwarded the letters to Ripley who had all the correspondence dutifully recorded, filed, and forgotten. He refused to answer letters about new weapons, despite Lincoln's specific interest in the gun.

Stymied, the company returned to Washington in October 1861 and reestablished contact with the president, who ordered ten Union "repeating guns" from the firm of Woodward and Cox for $1,300 each. Fifty of the guns were later sold to the Union army from the American Arms Company for $735 each. These primitive machine guns were used in the Civil War but they jammed consistently.

## Contracting for Powder

Fortunately, the government had a steady supply of powder to propel projectiles from whatever weapons it bought.

Throughout the South, the DuPont Company had enjoyed a growing market for its blasting and sporting powder.[20] Business had fallen off during the last half of 1860, but it rose in early 1861 as its agents in New Orleans, Macon, Charleston, and other southern localities received large orders. Shipments went out from the Brandywine River mills until April 12, when the Confederate batteries of General Pierre G. T. Beauregard fired upon the federal garrison at Fort Sumter in Charleston Harbor. Thereafter, no powder was shipped southward.

Two days after the fall of Fort Sumter, when the South scurried to offer huge sums for war supplies, DuPont wrote its Richmond agent:

> With regard to Col. Dimmock's order we would remark that since the inauguration of war at Charleston, the posture of national affairs is critical and a new state of affairs has risen. Presuming that Virginia will do her whole duty in this great emergency and will be loyal to the Union, we shall prepare the powder, but with the understanding that should general expectation be disappointed and Virginia by any misfortune assume an attitude hostile to the United States, we shall be absolved from any obligation to furnish the order.[21]

Besides this loss of southern orders, DuPont had lost about $150,000 when the rebels seized its southern inventories, about 643,000 pounds of powder.

The Union filled the gap. It first ordered 900 barrels of cannon powder and 100 barrels of musket powder, a total of 100,000 pounds at eighteen cents per pound, to be delivered to arsenals in Philadelphia by June 15. The army ordered another 1,000 barrels in June, followed by orders for 2,000 barrels in September. During 1861, the army and navy bought $404,405 worth of powder, roughly 40 percent of the company's total output; the other 60 percent going to DuPont's commercial trade amounted to slightly over $600,000. In 1862, the company received another $661,000 from government contracts; in 1863, $527,000; and in 1864, $444,000. The Ordnance Department later stated that 42 percent of all powder it bought came from DuPont.

Much of the business came from a new powder that Lammot DuPont had helped develop in 1859; therefore, only DuPont could mass produce it when the war broke out. Called "Mammoth Powder," it gave the North's naval guns crucial superior firing power.[22]

DuPont hired more men, some with no experience in powdermaking, and the mills went on a twenty-four-hour schedule to fill the Union orders. After forty-seven men from the powder mills had enlisted, Henry DuPont asked that the remaining workmen be exempted from military service; otherwise, he would have to shut down the mills. Washington exempted them within three days. The mills, however, could be as dangerous as a battlefield. Between 1861 and 1865, eleven explosions ripped through the mills, forty-three men died, and scores more were injured.[23]

Soon after the war began, the DuPont Company calculated that it had a six-months' supply of saltpeter on hand and on order with its suppliers. The Ordnance Department had almost four million pounds in storage, an adequate amount for the predictable future. By October, however, the supply had dwindled dramatically. Assistant Secretary of the Navy Gustavus Fox conferred with President Lincoln who feared that British sympathies for the South (and its cotton) might close the British East Indies market of saltpeter to the Union. Secretary of State William H. Seward and Secretary of War Simon Cameron summoned Henry DuPont to Washington on October 30 to review the saltpeter situation. To avert a shortage, Lammot DuPont was to sail to England and singlehandedly corner the world's saltpeter market by buying all the saltpeter available there and what was enroute from India, in the name of the DuPont Company. The mission was to be kept strictly secret. The government would send $500,000 in gold bullion to him in

London on the next American steamer after he arrived. DuPont succeeded and a source of saltpeter was secured.[24]

Despite this and other service, DuPont and his colleagues had to confront one of the excess profit taxes common in wartime. Faced with the escalating costs of carrying on the war, the House Ways and Means Committee was considering a tax on producers of explosives whose revenues had skyrocketed. Not surprisingly, the powder manufacturers considered such a tax excessively burdensome and discriminatory. Representatives of the larger companies and some smaller companies, in all about seven-eighths of the industry, met in Washington and proposed alternatives to be submitted to Congress. Lammot DuPont presented their case.

On March 18, 1862, he reminded the congressmen that the explosives business was vital in both war and peace, that it was hazardous at all times, and that it sold its products on long-term credit, usually six to nine months, yet the producers had to pay their taxes in cash each month. The bill discriminated because it taxed powder at 29 percent, while the tax on many other manufactured products averaged only 3 percent. Lammot convinced the Ways and Means Committee to amend the tax schedule to make it more equitable; this version was adopted without change on March 28. Lammot also succeeded in killing the idea of government-owned powder plants.[25]

## Meigs, Master of Contracting

The Quartermaster Department bought clothing, shoes, blankets, tents, knapsacks, haversacks; camp kettles, and canteens; it obtained ambulances, wagons, horses, mules, harness, and forage; and it purchased stationery, straw, wood for fuel, as well as hundreds of items used in construction projects and repairs. It chartered and bought steamboats, tugs, barges, ferry boats, and gunboats. It not only contracted for railroad transportation of troops and supplies but also procured engines, cars, and items needed for repairing military railroads. Each commodity posed problems.

Fortunately for the nation, Montgomery C. Meigs became the quartermaster general in 1861. With the replacement of Ripley and Cameron by Ramsay and Stanton, Meigs completed the triumvirate of those who would dominate contracting during the war.

When Meigs assumed office, he had thirteen clerks. By 1865, he had six hundred civilian employees.[26] As an engineer in charge of construction projects, Meigs had considerable experience with contracts and had his own distinct ideas about contracting. First, he tried to control clothing contracts. Before large contracts were awarded, quartermasters had to send all bids, with a comparative analysis, and the proposed contract to Washington for examination and final approval.

In one of the first applications of this policy, Meigs collided with wartime reality. Meigs believed that small orders widely distributed among clothing houses were better for the government. So, he did not want any contract to exceed 10,000 uniforms and then only at government prices published in 1859. Rising prices in 1861 made this unrealistic. Early in July 1861, the firm of Hanford and Browning of New York offered to supply 50,000 uniforms to the depot quartermaster at the Philadelphia Army Depot, who was authorized to contract in whatever mode he considered most expedient and cheapest to fulfill his need for thousands of garments. After satisfying himself that the company had the material and that the prices, though somewhat higher than those of 1859, would not exceed the depot's cost to produce the garments, the depot quartermaster signed a contract.

When Meigs found that the contract included more than 10,000 uniforms and, in fact, called for $1,200,000 worth of clothing at prices higher than he had stipulated, he disapproved the contract. An annoyed and embarrassed depot quartermaster argued that clothing was badly needed; Hanford and Browning was a reputable firm, which could perform its contract, the price was lower than any he had received from other responsible or irresponsible persons; and he considered that he had been given full authority to act. Meigs reconsidered and, concluding that it was "better to be the victim of the trick than to delay the supplies," authorized the quartermaster to receive and issue the clothing.[27]

Meigs soon learned that more large contracts were needed to prevent suffering by the troops in the coming winter. He learned, too, that contracting with numerous small companies meant delays and complications and that furnishing valuable material to irresponsible contractors risked rampant fraud. So, he directed quartermasters to reject bids that appeared to be at rates causing "loss to the contractors, oppression to the working hands or stealing and cribbaging of materials." Instead, he advised the New York clothing depot to employ two or three of the "most respectable houses in the

trade" to do the work at what the Philadelphia clothing depot demonstrated to be fair rates.[28]

Moreover, he disliked what today are called indefinite-quantity or option contracts. He required contracts to be let for certain quantities only, rather than advertising for a certain quantity and offering the privilege of doubling that quantity later. Instead, new bids were to be invited if more articles were needed. Meigs soon revised his position. To replenish stocks, he ordered advertisements inviting proposals at Philadelphia, New York, and Cincinnati. To avoid inflating prices by inviting bids for the whole amount at once, the advertisements announced that after ten days the bids received would be opened and contracts awarded; then, from time to time, additional contracts would be given to the lowest bidder. In other words, the advertisements became standing invitations to manufacturers and were not withdrawn until January 1863.

## Congress Acts to Reform the System

Revelations of fraud rang a firebell for congressional actions. On July 8, 1861, in extra session, Congress immediately appointed a committee to investigate government contracts. The committee, chaired by Charles H. Van Wyck of New York, held hearings throughout the country for more than a year, investigating such issues as the procurement of arms, horses, blankets, and food, as well as the chartering of vessels.

During the 1850s, Congress had investigated fraud and mismanagement in contracting activities at the highest levels of the War Department. These prior investigations paled by comparison to the 1861 investigation, which concluded, after two huge volumes of extensive and sometimes secret testimony:

> The government has been the victim of more than one conspiracy, and remarkable combinations have been formed to rob the treasury. The profits from the sale of arms to the government have been enormous, and realized, too, in many instances, even by our own citizens, through a system of brokerage as unprincipled and dishonest, as unfriendly to the success and welfare of the nation, as the plottings of actual treason.[29]

The scandals became so pronounced that seventy years later, during the 1930s, critics would recount them as part of the "Merchants of Death" theory that arms merchants had been instrumental in goading the United

States into World War I. The committee's report so infuriated Lincoln that he declared that these greedy businessmen "ought to have their devilish heads shot off."[30]

When the war began, Philip S. Justice, a gun manufacturer, contracted to supply 4,000 rifles at $20 apiece, but the government refused to pay. They seemed to be old, condemned muskets or so-called new rifles made from parts of old and condemned pieces. Soldiers feared firing them; hammers broke off; sights came off even with a nudge. Some of the rifle barrels suffered from imperfect boring and burst during target practice. The barrels were sometimes not one-twentieth of an inch thick, and the stocks were made of green wood, which shrank so that bands and trimmings became loose. The bayonets were often so frail that they bent like lead and many broke off during bayonet drill.

Congressman Wallace complained:

> When we look at the manner in which our army and government have been defrauded by speculators, we must shrink from the idea of trusting to private contractors to furnish the necessary means for our national defense. Dependence upon private contractors for arms and munitions of war is too precarious and uncertain in all respects, as well as too costly, upon which to rest such an important and vital interest of the nation.[31]

One profiteer was John Pierpont Morgan. Before the war, the army had condemned some obsolete and dangerous guns and ordered them auctioned. They sold at between $1 and $2. In 1861, 5,000 of these condemned guns remained. On May 28, 1861, during the initial frenzy for weapons, Arthur M. Eastman appeared and offered $3 apiece for them. Simon Stevens furnished the cash for the transaction, but J. P. Morgan was the real backer.

After buying the condemned guns for $3.50 each, Stevens wired General Fremont at St. Louis that he had 5,000 new carbines in perfect condition. As we have seen, Fremont was already buying without regard to regulations. He immediately ordered the guns and urged that they be sent at once. Fremont paid $22 each for the guns, producing a profit of $92,426 for Morgan.

When Fremont's soldiers tried to fire these "new carbines in perfect condition," they often succeeded only in shooting off their own thumbs. When the government recognized the swindle, it refused to pay Morgan. Morgan promptly sued and his claim was referred to the special commission

which was examining claims arising from Fremont's department. This commission allowed half of the claim and proposed to pay $13.31 a carbine. Unsatisfied even with this handsome profit, Morgan sued in Stevens' name in the Court of Claims. He won the full sum because, regardless of the wisdom of its bargain, the government still had signed the contract. Caveat emptor.

Colonel Joseph Holt and Robert Dale Owen concluded in a separate investigation that contractors had decided that "the country, as a whole, is a fair subject of plunder."[32] Fred A. Shannan, in *The Organization and Administration of the Union Army, 1861–1865*, wrote that army contractors handled at least a billion dollars of government money during the war and, by conservative estimate, kept half of it.

The Van Wyck congressional committee investigating government contracts condemned the irresponsible agents who sacrificed the public interests through lack of integrity, but it praised the Regular Army quartermasters and commissaries as officers who, with a few exceptions, were men "of ample and equal capacity and fidelity," ever zealous for the public welfare. The committee exposed one such exception: Major Justus McKinstry, quartermaster at St. Louis, who was responsible for supplying the troops of the western department, first under Brig. Gen. William S. Harney and then under Maj. Gen. John C. Fremont.[33]

St. Louis had not been a depot for army supplies, so when Lincoln called for volunteers, McKinstry had to scramble to equip them. He had no money and he later maintained that he could not depend upon the government of Missouri for aid. Moreover, troops arrived before he could get supplies from eastern depots. He resorted to open-market purchases and used middlemen who could extend the necessary credit. Such trying circumstances condoned emergency procurement at the start of the war, but thereafter McKinstry continued to disregard the law on contracts. He procured large quantities of supplies by simply ordering a firm to supply certain articles, all made of the best material, conforming to army regulations and requirements. The merchants told him the cost of production and transportation; he then allowed them a "fair" profit. One firm in St. Louis furnished over $800,000 worth of supplies without the price of any of them being previously determined. McKinstry allowed them a profit of 40 percent.

Actually, much of the blame rested on General Fremont's peremptory demands for supplies, which caused McKinstry to view every requisition as an emergency. Fremont, busy building fortifications in St. Louis and arming and equipping his troops, appealed not only to the War Department for support but to Postmaster General Montgomery Blair and President Lincoln. Meigs tried to reassure Fremont that he would be fully supported, but Fremont nevertheless appointed agents who operated outside the Quartermaster Department in making contracts and disbursements. He delegated to the Union Defense Committee of Chicago the power, duties, and funds of the department in contracting for and providing clothing for the troops. The costs that Fremont ran up in the western department soon appalled the government.

The army arrested McKinstry on November 13, 1861. A general court martial convicted him of favoritism and corruption and dismissed him from the service. Quartermaster Robert Allen was transferred from the Pacific coast and assigned to St. Louis. After only a few days, he telegraphed the quartermaster general that "unless the wanton, reckless expenditures in this command are arrested by a stronger arm than mine, the Quartermaster's Dept. will be wrecked in Missouri along with Gen. Fremont. The Army Regulations are a blank & the laws of Congress a contemptible farce."

All of Fremont's contracts for fortifications, supplies, food, arms, steamboats, wagons, and horses totaled only about $12 million. The waste lay not in the amount spent; the problem was that so much of the money went to dishonest contractors, while many of the troops in the western department lacked firearms, clothing and blankets. Allegations of impropriety under Fremont prompted the secretary of war on October 25, 1861, to appoint a board of three commissioners to investigate the pending claims and report to him on their validity. The board evaluated the proof presented by the claimants and made its recommendations to the secretary. Thus was created by administrative fiat the forerunner of the same formalized Boards of Contract Appeals that would exist in the twentieth century.

Yet, congressional committees dealt kindly with Fremont, for his earnestness, zeal, honesty, and patriotism were above question, and he had great political influence as the 1856 Republican nominee for the presidency. Fremont, however, was a prime example of the "Peter Principle" and was unfit to command the western department. He was soon relieved of

command and replaced by Maj. Gen. H. W. Halleck, who took command late in the fall of 1861. Halleck reported complete chaos in the department. "The most astonishing orders and contracts for supplies of all kinds have been made and large amounts purport to have been received but there is nothing to show that they have ever been properly issued, and they cannot now be found."

Fear of fraud has always been one of the major causes of government red tape. The Van Wyck committee concluded that the law on competitive bidding was dead, and that the nation needed new and more precise protective legislation.

Major General Meigs had persuaded Congress to resist earlier attempts at corrective legislation because the existing laws were sufficient, but the examples of the Van Wyck committee proved too much. On June 2, 1862, Congress passed an antifraud act that required all war, navy, and interior contracts to be written, signed by the contracting parties, and filed in the newly created "Returns Office" of the Interior Department—together with all bids, offers, proposals, and a copy of any advertisement. Before forwarding these documents, the contracting officer had to execute an affidavit before a magistrate attesting to their authenticity. Finally, to produce uniformity, the secretaries were required to furnish each contracting officer "with a printed letter of instruction" setting forth his duties, forms of contract printed in blank, and sample affidavits.

Furthermore, in that same summer of 1862, Congress applied the rules and regulations governing the army, including court martial, to anyone furnishing supplies to the army. The law also provided that any contractor convicted of fraud or willful neglect of duty was to be fined, imprisoned, or punished as a court martial adjudged. General Order 20, May 12, 1864, contained an opinion of the War Department solicitor that if a contractor did not perform a contract to furnish supplies needed by the field, the contractor could be court-martialed. Congress extended the law in 1864 to inspectors and to the agents of contractors. Finally, another 1862 law penalized congressmen who accepted compensation for services in connection with government contracts. It was extended in 1864 to include department or bureau heads, clerks, or any government official. Thus, by the last year of the war, anyone with influence over contracts, contractors and their agents, inspectors, and quartermasters had been brought under the law's restrictions

and penalties. Actual enforcement of these laws, however, appears to have been limited.

Meigs feared that the whole war effort might be stifled with antifraud red tape. He complained "Let any member propose a new provision of law stated to be intended to restrain contractors or officers and it goes through with little examination."[34] He wrote to Senator Henry Wilson on August 2, 1861:

> I know the responsibility attaching to any Government officer who ventures to argue against a bill whose object is stated as the prevention of frauds, but it is my duty to say to you that if the conditions in regard to contracts imposed by this bill become law the country may as well at once yield to the Southern rebels all they ask . . .
>
> Every purchase, every order to purchase or deliver, if accepted, is a contract. These orders are sent by telegraph. Contracts are thus made with persons a thousand miles away. If we are to trammel every purchase with new conditions of writing, of record, of affidavit, no human brain will be capable of conducting the business of the great supply departments of the Army. As a protection against fraud, he who will steal will not hesitate to shield himself from detection by violating an oath made as common as a customhouse oath. The greater the fraud the more perfect the papers.[35]

Although he could not prevent passage of these remedial laws, Meigs advised the secretary of war that it would be impractical to comply with them. Quartermasters in the field made many purchases of supplies during active operations, and could only obey the law by having magistrates attached to their offices as clerks. In addition, sending bids to a separate record office in the Interior Department, Meigs argued, would deprive the quartermaster general of any opportunity to examine and control the award of contracts. He insisted that existing legislation merely needed provisions imposing sufficient penalties for fraud, with quick and efficient processes for enforcing them. More legislation would merely embarrass and delay the public service.

On June 16, 1862, Secretary of War Stanton agreed and ruled that the law applied only to such contracts that had to be in writing under laws in force at the time of their award. Any other interpretation would make the act impracticable. A month later, Congress itself reconsidered its action and suspended the law until the first Monday of January 1863. Meigs undoubtedly hoped that the law would be amended before that date, but despite his efforts to win members to his view, Congress adjourned without

reconsidering the law, which automatically became effective in January 1863. Stanton's order of June 16, 1862, again operated for the remainder of the war.

Congress also heeded Meigs' call for penalties for fraud. On March 2, 1863, it enacted the False Claims Act, popularly titled "The Abraham Lincoln Law." As Senator Wilson proclaimed: "These Halls have rung with denunciations of the frauds of contractors upon the government of the United States. Investigating committees in both Houses of Congress have reported the grossest frauds upon the Government." Senator Howard added:

> This bill has been prepared at the urgent solicitation of the officers who are connected with the administration of the War Department and Treasury Department. The country, as we know, has been full of complaints respecting the frauds and corruptions practiced in obtaining pay from the Government during the present war; and it is said, and earnestly urged upon our attention, that further legislation is pressingly necessary to prevent this great evil.[36]

The act imposed criminal and civil liability for presenting any false claim against the government. Under the act, a private citizen/"informer" who initiated an action in court alleging the defendant was guilty of making a false claim to the government was entitled to 50 percent of the amount recovered and costs. This was the bounty provision the government had first used sixty years before.

Secretary of War Stanton needed no new laws. As soon as he took office in January 1862, he attacked graft and profiteering. On January 29, he required all persons claiming to have any kind of contract or order from the War Department to give a written notice of such contract, together with a statement of what had been done under it, within fifteen days. "It is seldom that any necessity can prevent a contract from being reduced to writing," the order said, "and even when made by telegraph its terms can be speedily written and signed; and every claim founded on any pretended contract, agreement or license now outstanding, of which notice and a copy is not filed in accordance with this order, shall be deemed fraudulent and void."[37]

In July 1864, Congress reorganized the Quartermaster Department by centralizing control of contracts in the Office of the Quartermaster General at Washington. Oddly enough, Meigs did not like this idea, which would give him more control over the process. He feared that such centralization

meant too many contracts would be made at "this centre of political influence and intrigue."[38]

## Fraud

Nevertheless, the fraud continued as Erna Risch detailed in his landmark work, *Quartermaster Support for the Army, 1775–1939*. Postwar investigations revealed that fraudulent practices were even more prevalent than the War Department had suspected. One official told Meigs that most of the contracts made in fiscal year 1865 "smell to heaven."[39]

### *Clothing and Blankets*

Despite inspection, the Quartermaster Department bought clothing and blankets that were little better than trash.[40] They were made of "shoddy": a trade term for fabrics made from materials which had already been spun into yam and woven into cloth and then were later ground up into a fibrous mass, respun, and rewoven. Clothing houses saved the clippings to produce shoddy. A journalist described shoddy as "a villainous compound, the refuse stuff and sweepings of the shop, pounded, rolled, glued, and smoothed to the external form and gloss of cloth, but no more like the genuine article than the shadow is to the substance." Soldiers, after one day's march or a little rain, found their clothes and blankets "scattering to the winds in rags, or dissolving into their primitive elements of dust under the pelting rain." "Shoddy" became a synonym for cheap and poor quality.

### *Shoes*

Fraud in the production and inspection of shoes was as prevalent as in the manufacture and inspection of cloth.[41] Major General McClellan telegraphed from the Army of the Potomac that a march by two divisions had worn out the men's new shoes, the soles of which had been filled with chips. A so-called leather composition, that looked and smelled like leather but fell to pieces like paper when it became wet, was used as an inner sole, filling up the shoe between the welt and the outside sole.

### *Transportation*

The government was also cheated when it sought ways to transport these worthless supplies.

**Railroads.** Normally, in contracting with railroads to transport supplies, the army had used competitive bids. The Van Wyck committee learned that competitive bidding had been abandoned at St. Louis. There, General Fremont had appointed Edward H. Castle to supervise railroad transportation in the western department. Assistant Secretary of War Thomas Scott in Washington had drafted a schedule of rates in July 1861 when the Quartermaster Department had sought advice in settling claims with railroad companies. He conformed the schedule fairly closely to the agreement made by delegates from twenty-one railroads who met at Harrisburg, Pennsylvania, on June 4, 1861. Castle, with Fremont's approval, had applied these rates to the western department by listing them in a circular to the superintendents of railroads. In general, the schedule provided for a rate of two cents per mile per man for transporting soldiers, and local first-class freight rates for equipment and supplies accompanying a regiment. All other government freight was to be charged local rates according to their regular classification.

The rates allowed in the schedule far exceeded the ordinary "through freight" charges, and the fare of two cents per mile per man was so profitable that in one case, unscrupulous railroad companies collected as much as $20,000 over the normal charge; in another case, the government paid 80 percent more to transport horses "per car" than private customers did. The railroads had used ingenious methods to exploit the schedule. Charging the much higher local rates for government freight, rather than through rates, greatly inflated transportation costs. For example, contracts for the shipment of beef cattle from the west provided for delivery at Harrisburg, Pennsylvania. This made the freight "local" on the Pennsylvania Railroad from Pittsburgh to Harrisburg, and again "local" on the Northern Central Railroad from Harrisburg to Baltimore. If the cattle had been shipped directly from Pittsburgh to Baltimore, through rates would have applied. The companies fiercely competed for such lucrative contracts.

Secretary Cameron argued that the circular on rates was not a contract but was only designed to fix the maximum rates railroads could charge. Thomas Scott testified to the same effect. Neither Cameron's nor Scott's explanation was satisfactory. The quartermaster general, to whom the original schedule of rates had been sent, had not construed it as setting maximum rates. In fact, Scott's instructions had directed him to "observe the following as a general basis." All quartermasters and all agents of the railroad companies accepted

the circular as fixing a tariff rate, and no one tried to bargain for lower rates. When he became quartermaster general, Meigs testified that he was led to believe that the circular represented a "bargain with the roads at a reduction of 33-1/3 percent."[42]

To end the scandal on January 29, 1862 Meigs advised all quartermasters that the former circular had been misunderstood; that they must seek lower rates from the railroads; and that they must pay no more than private individuals did in the transportation of freight. The next month, Secretary Stanton summoned the railroad managers together to berate them about their rate gouging. After their deliberations, the managers agreed to lower the rates.

**Ships.** The war's urgency allowed shipbrokers and middlemen to make enormous profits. Before the war, the Quartermaster Department had advertised for vessels and picked the lowest bid. The panic of the first year of the war did not allow time for competition. During the isolation of Washington in April 1861, for example, the Union frantically demanded two light-draught steamers to transport troops and supplies between Perryville and Annapolis. The government chartered the steamer Cataline on April 25, 1861. The Van Wyck congressional committee later uncovered that this eighteen-year old vessel had been purchased with notes given by four men. They paid $18,000 for the vessel and then chartered it to the government for three months at $10,000 a month, with a guarantee of $50,000 if it sank.

Meanwhile at Philadelphia, the president of the Pennsylvania Railroad "in accordance with the authority vested in me by the Secretary of War,"[43] appointed Richard F. Loper of Philadelphia (who had served a similar function in the Mexican War) to act as a transportation agent in procuring vessels for use on the alternate rail and water route that he helped open to Washington. From April 20 through May 7, 1861, Loper chartered twenty-four steamers for government use.

Loper apparently worked hard and won praise from army officials for his "constant and untiring" zeal and his "generous aid" in procuring vessels for their respective needs. Loper claimed later that he had "neglected everything since the war broke out but to attend to and try to assist the government and serve his country as much as in him lay."[44] His help, however, came high. He charged a 5 percent commission on each vessel and he chartered them at extremely profitable daily or monthly rates. Anthony Reybold of Delaware

City, whose principal occupation was farming, chartered his fleet of vessels to the government through Loper. He received about $1,100 per day, or $401,500 per year. Loper's commissions on these boats alone were at least $20,000 a year, and the investigating committee concluded it would have been cheaper if the government had bought the vessels outright. Loper also had the same view as his colonial predecessors. Since he was a shipbuilder and owned many vessels as president of the Philadelphia Steam Propeller Company, he chartered many of his own vessels. He was able to increase the company's dividends from 10 to 50 percent in 1862 and saved a large surplus besides.

On May 7, 1861, John Tucker replaced Loper and began making contracts through brokers. Loper's services continued, however, because Tucker, an old and valued friend, availed himself of Loper's "practical knowledge and enlarged experience"[45] not only during his term as general agent of transportation, but also while he served as assistant secretary of war until January 21, 1863. Tucker employed Loper and other greedy agents and subagents who chartered the vessels for several military operations. Secretary of War Stanton, who made Tucker his assistant, dismissed as unfounded the charges against him in the winter of 1861–1862. No evidence indicates that Tucker profited in any way, but he did nothing to prevent the excesses practiced by his agents. The Select Committee of the Senate investigated this and other problems in the winter of 1863 and concluded that he "had more or less connection with these gigantic and shameless frauds on the government."[46]

After the committee's instructive report, Meigs directed the quartermasters at the chief ports to annul charters tainted with fraud, and to try to recover all sums that had been extorted by agents or fraudulently obtained. Meigs also advised his quartermasters to compare tonnage stated in charters with the register at the custom house, since the government had paid out considerable sums on falsely reported tonnage. The department introduced a clause in all charters that gave the United States the right to seize a vessel by paying the amount paid for the charter plus 33 percent profit on the valuation and the running expenses and repairs. Navy officers, detailed for the purpose, fixed the valuation. So, if chartered rates ran too high, the vessel soon became the property of the United States. Meigs also required a more adequate inspection system, with officers of the Navy detailed to inspect and appraise vessels offered for charter or purchase. Some of the most extravagant claims

were settled at greatly reduced rates, and quartermasters seized some vessels and refused further compensation when the amount already paid far exceeded the value of the ship.

During the Civil War, the Quartermaster Department chartered 753 ocean steamers, 1,080 sailing vessels, and 847 barges. The department also bought and built 183 ocean steamers, 43 sailing vessels, and 86 barges. Most of these purchases occurred after Meigs had regained control of ocean transportation and had remedied the problem.

**Wagons.** Inspectors often found panels in wagon bodies with knotholes broken out and puttied, axles not welded soundly, poplar hubs and even poplar tongues that snapped like twigs, and other flimsy materials substituted for the well-seasoned white oak called for in specifications. The army could operate despite this fraud since all the large divisions of the army carried spare parts, materials for repair, portable forges, and boxes of smiths', wheelwrights', carpenters', and saddlers' tools. Ordinary repairs could be made during the night halt, and wagons were rarely abandoned on the march.[47]

**Animals.** No enterprise reeked more of fraud than contracting for horses and mules. Quartermasters often bought in the open market to meet emergencies, but even when they advertised for bids, middlemen won contracts. The difference between what the owner received for his horse or mule and what the government paid went to the middleman. The government was cheated not only in the large sums paid to these middlemen but in the quality of the horses and mules it obtained. Contractors bought broken-down wagon and dray horses and mules and sold them to the government at premium prices. By collusion between government inspectors and contractors, the army received horses that were under- and over-aged, spavined, blind, stifled, and afflicted with ringbone, sweeny, and every other kinds of equine disease.

Not all of the thousands of animals bought in the opening months of the war were worthless. Many were sound, but none surpassed the department's minimum specifications. During emergencies, large orders for horses and mules caused standards to plummet. Such an emergency existed while the army was preparing for the movement that culminated in the Battle of Bull Run. When dealers complained that the inspection of horses was too severe, Meigs advised his quartermasters that, although inspections should be efficient, a military movement should not be delayed in order to get first-

class horses ("a horse that will do a month's work, may in certain cases be worth his weight in silver").[48] Robert Morris had expressed the same sentiment eighty years before.

**Food.** For many years, the Subsistence Department had bought rations by awarding contracts to the lowest bidders in response to public advertisements for proposals. This method of procurement continued during the war but the department early in the war advised Cameron that wartime needs demanded open-market purchases.[49]

The annual supply of rations for the western posts had already been bought by contract and was then in transit. Since most of the army until that time was stationed on the frontier, the department had few subsistence stores on the Atlantic Coast to meet any emergency. The large force that collected at Washington and the isolation of the city in April forced the department to procure beef without delay. The department contracted with four partners for 2,000 to 10,000 head of cattle to be delivered at Washington at eight cents per pound gross and in Pennsylvania at five and three-quarters cents per pound gross.

The Van Wyck congressional committee later discovered that these were not cattle dealers and that they sublet their contract to New York dealers, who furnished the cattle at six and one-half cents per pound gross weight in Washington and five cents in Pennsylvania. The latter still made a profit but the original contractors secured an even greater profit as middlemen. Disregarding the supply and transportation situation when the contract was made, the committee condemned the manner in which it was awarded and charged "gross mismanagement, a total disregard of the interests of the government, and a total recklessness in the expenditure of the funds of the government."

Fraud in food procurement was less frequent than in the other areas, however. Except for flour and fresh beef by the block or on the hoof, which were generally negotiated, the army bought most of its food by advertising for- bids in Boston, New York Philadelphia, Baltimore, Cincinnati, Louisville, and St. Louis. It then chose the lowest bid for items needed by troops in the area closest to that city. Flour generally was procured the same way but closer to the field armies.

Whatever losses due to fraud did occur were mitigated by the army's recycling program. The Commissary Department saved a considerable sum of money by the sale of hides, tallow, and other byproducts of its meat industry. The depots at Washington and Alexandria alone recovered $1,370,000 in this way during the four years of the war.

During the war, the Union boosted the revenues of the infant canning industry and bought substantial quantities of Gail Borden's new item, condensed milk.

## Confederate Contracting

The North was not the only combatant having contracting problems. The South's problems were far worse—indeed, fatal.[50]

The South had within its borders practically all of the materials necessary for waging war, but it lacked an industrial economy to transform raw materials into munitions and supplies. If the Confederacy were to equip and supply its army, it needed economic controls of varying types and effectiveness, which it instituted during the war. The South's early acts in contracting, including Raphael Semmes' exploits, were already recounted. But after this initial spurt of vigor, contracting suffered from the same problems as the North. Indeed, the problems and attempted solutions were very similar to the problems during the Revolution, as a weak central government with a disintegrating currency tried to stay afloat.

Contractors in the Confederacy, offering to supply arms, equipment, clothing, and food, flooded the offices of the War Department when the war began. The Confederacy mainly rejected offers of private parties. The only offers routinely accepted came from the states and contracts which the states wished to transfer to the Confederate government. The Confederacy experimented with cost-plus contracts as well as fixed-fee contracts. Since neither was very satisfactory, it eventually developed a fixed-fee contract with a provision for subsequent arbitration of prices.

The South exhibited some idea of an industrial mobilization fifty-five years before that of the United States in World War I. On April 17, 1862, the Confederate Congress passed an act to help businesses with war contracts to build new factories and enlarge existing facilities by loaning, without interest, one-half the cost of such undertakings. Later, it limited profits first

to 75 percent and then to 33-1/3 percent, and factories receiving government help had to sell two-thirds of their production to the government. The South enforced these regulations by denying labor and transportation facilities to recalcitrant manufacturers under the Conscription Act of April 16, 1862, and the wartime railroad laws.

Early in the year, textile manufacturers had contributed to the South's embarrassing shortages by defaulting on contracts and blaming the conscription officers for carrying off workers. The growing manpower shortage gave the government one important advantage in wresting enough supplies for the troops. The Confederate Congress allowed the War Department to exempt textile workers. To ensure adequate production, the secretary of war used his authority in the summer of 1862 to detail workers for the textile mills. Assured of a cooperative industry dependent on the War Department for workers, the government increased the size of contracts for the production of cotton and woolen cloth.

Besides private contracts which would not deliver for months, the Confederates tried to set up a complex of government ordnance works that could supply the armies without reliance on private contracts. Additionally, some commanders did it themselves. Kirby Smith needed forty thousand small arms to complete his military preparations. He sent an agent to Europe to buy the guns on contracts payable in cotton sales proceeds. To pay off current debts, he ordered his commanders to impress cotton to the extent they deemed necessary.[51]

In the end, nothing worked. There was no Robert Morris backed by French money to finance the army for one last push to convince the enemy to give up. Southern contracting imploded.

## The Ironclads

One development of the Civil War changed naval warfare forever: the ironclads.[52]

Robert Fulton's *Fulton I* had been destroyed and apparently forgotten. Twenty years before the war, in 1842, Robert Livingston Stevens of Rehoboth, New Jersey, had urged the construction of a shot and shell-proof steamer, faster than any warship then afloat, and armed with long guns that could fire both shot and his elongated shells designed to explode after

penetration. Movable screens would protect the portholes, which, since the bulwarks would be only four or five inches thick, only had to be a "little larger than the muzzle of a gun, and yet allow it to be fired at any angle."[53] The ship was to have artificial ventilation, boilers adapted to anthracite fuel, and no rigging.

The secretary of the navy, the Board of Navy Commissioners, and the New York Chamber of Commerce recommended Stevens' plan to Congress. After this hearty endorsement, Congress, on April 14, 1842, authorized the secretary of the navy to contract with Stevens to build his war steamer and appropriated $250,000 towards the project.

Secretary Abel Upshur contracted with Stevens on February 10, 1843, for a vessel principally of iron, "shot and shell proof against artillery now in use on board vessels of war, viz., from 18-pounders to 64-pounders; to be propelled by the submerged machinery called Stevens' circular sculls."[54]

Stevens never completed his vessel. Problems started even before construction. John Ericsson arrived in America with his heavy rod iron 12-inch gun. The demonstrated success of this gun in smashing 4.5 inches of iron forced Stevens to increase the thickness of the armor to 6.75. The ship had to be enlarged to take the extra weight, and that was one reason it was never finished.

In his annual report on December 3, 1857, Secretary of the Navy Isaac Toucey stated that Robert L. Stevens, who had died in 1856, and his executor, Edwin A. Stevens, had spent $702,735.37 on the vessel. Toucey suggested compliance with the executor's request that $86,717.84, the balance of the contract price, should "be paid to him from time to time as an equal amount in work and materials shall hereafter be put upon the vessel."[55] No action, however, seems to have been taken before the war began.

In a report to the special session of Congress on July 4, 1861, Secretary of the Navy Gideon Welles asked for authority to build ironclads if an investigation proved them to be feasible. In response to Welles' report, Senator Grimes of Iowa introduced, on July 19, a bill directing the secretary of the navy to appoint "a board of three skillful naval officers" to investigate plans of armored steamships or steam batteries, and appropriating $1,500,000 to build one or more if the board reported favorably.[56]

On August 3, 1861, Congress granted Welles' request. This was the first response to the ominous development at the Norfolk Navy Yard, which the Confederates had taken without a fight on April 20. The Confederate Navy Department had authorized an ironclad early in June and work had already begun on converting the USS *Merrimac*, rechristened the CSS *Virginia*. Welles promptly published an advertisement, dated August 7, calling for

> offers from parties who are able to execute work of this kind, and who are engaged in it, of which they will furnish evidence with their offer, for the construction of one or more iron-clad steam vessels of war, either of iron or of wood and iron combined, for sea or river service, to be of not less than ten nor over sixteen feet draught of water, to carry an armament of from eighty to one hundred and twenty tons weight, with provisions and stores for from one hundred and sixty-five to three hundred persons, according to armament, for sixty days, with coal for eight days. The smaller draught of water, compatible with other requisites, will be preferred. The vessel to be rigged with two masts, with wire-rope standing rigging, to navigate at sea. A general description and drawings of the vessel, armor, and machinery, such as the work can be executed from, will be required. The offer must state the cost and the time for completing the whole, exclusive of armament and stores of all kinds, the rate of speed proposed, and must be accompanied by a guarantee for the proper execution of the contract, if awarded. Persons who intend to offer are requested to inform the department of their intention before the 15th August, instant, and to have their propositions presented within twenty-five days from this date.[57]

A reviewing board evaluated the various proposals and, on September 16, reported its conclusions. After conceding the authors' scant experience with the subject, the report began with some general conclusions about ironclad warships. The board favored iron and wood construction rather than all-iron construction. The report then listed sixteen proposals that had been received and evaluated, including one for a rubber clad vessel.

The board accepted three designs. The first was from C. S. Bushnell & Co. of New Haven, Connecticut, for the *Galena*. The second was from Merrick & Sons of Philadelphia for the *New Ironsides*. Both of these ships were more or less conventional ironclads similar to the ironclads already in use in the French and the British navies. They represented the conservative approach to the problem and received the unqualified approval of the board. The third design, the *Monitor*, submitted by John Ericsson who had ruined Stevens' plan with his armor smashing gun, was for a novel low "cheese board on a raft" with a two-gun revolving turret.[58] The board conceded that the raft and turret arrangements would make her shotproof, but they worried about her seaworthiness. The *Monitor* actually was "a self-propelled gun

platform,"[59] which Ericsson himself described as a fighting machine, but it was one of the first examples of what became known as a weapon system. All components were tailored to achieve the optimum performance in terms of the system's stated missions.

Since Ericsson had no capital to finance the venture, C. S. Bushnell sought the aid of two of the leading figures in the New York iron industry who were anxious to get in the mushrooming armor business. On September 27, Ericsson contracted with C. S. Bushnell, John A. Griswold, and John Flack Winslow. Griswold was a partner in Winsleyer Ironworks in Troy, New York, Winslow was a partner in the Albany wireworks, as well as the Rensselaer Iron Works. These three agreed to provide all the money needed to build the *Monitor* and agreed that the four parties of the contract would share equally net profit or loss. They also agreed that future construction of any ironclads would be handled the same way.

The contract for the *Monitor* was signed October 4, 1861, "between J. Ericsson of the city of New York, as principal, and John F. Winslow, John A. Griswold, and C. S. Bushnell as sureties, on the first part, and Gideon Welles." The navy agreed to pay $275,000 in installments of $50,000. At the same time, because of the experimental nature of the vessel, the government would withhold 25 percent of each payment pending satisfactory completion and performance of the vessel. The contract further specified that if the ship "shall fail in performance of speed for sea service . . . or in the security or successful working of the turret and guns with safety to the vessel and the men in the turret, or in her buoyancy to float and carry her battery," the contractors would refund to the United States the money within thirty days.[60]

In addition to specifying the dimensions, speed, etc., the contract required Ericsson to provide masts, spars, sales, and rigging capable of driving the ship at a speed of six knots. Ericsson completely ignored this position and the navy never tried to hold him to it. The contract also required the completed *Monitor* to be delivered within one hundred days. Work began immediately. Ericsson's backers organized a far-reaching network of subcontractors comparable to what twentieth century contractors would use. Rensselaer provided bar, iron, and revick. Albany produced angle iron for the framing and armor plate. Holdane & Co. in New York and H. Abbot & Co. in Baltimore made more plate. Charles De Lancy of Buffalo made the iron pendulums which served as port stoppers. The Continental Ironworks at

Greenpoint in Brooklyn supplied the hull. Meanwhile Delameter & Co. built the engine.[61]

On October 15, eleven days after signing the contract, the first shipment of angle iron from Albany Ironworks arrived in New York by steamer. After that, daily deliveries arrived at Continental Ironworks or at the turret subcontractor, the Novelty Iron Works, also in New York.

John Ericsson did all the designing and sent his drawings, usually rough sketches, directly to the shop without being copied by the draftsmen. Not even Ericsson's resourcefulness, energy, and enthusiasm could complete the work by January 12, the delivery date. Starting three months later than the South, the North launched the *Monitor* on January 30, 1862, two weeks before the Confederates launched the *Merrimac*.

Ericsson attached two large wooden tanks to her stem because of her questionable buoyancy. On February 19, the *Monitor* arrived in Brooklyn Navy Yard for armament and stores. Here she was armed with two eleven-inch Dalgren guns commandeered from the gunboat *Dacotah*. Two more trials were made before the vessel set out on a famous voyage to Hampton Roads. On the first trip, the main engine developed trouble; the cutoff valves apparently were improperly set and would not permit steam to enter the engine. On the second trial, more trouble developed; the rudder weighed too much forward of the rudder post. The navy immediately wanted to put the *Monitor* into dry dock and build a new rudder, but Ericsson made adjustments in place.[62]

The delays in her completion and the fiasco of her first trials caused the gravest anxiety at Washington as the newspapers began calling her "Ericsson's folly." Throughout February, the Navy Department sent letters and telegrams to Ericsson, urging the dispatch of the *Monitor* to Hampton Roads at the earliest possible moment. The *Monitor* was finally commissioned on February 25, under the command of Lieutenant John L. Worden. When at last she left the New York Navy Yard for sea on February 27, she steered so badly going down the East River that her commander had to put back. Reluctant to send her to sea without one successful test, the department ordered a further trial, which she passed on March 3. On March 6, 1862, the *Monitor* left on her voyage south.

On March 8, as James McPherson describes in a thrilling depiction of this epic battle, the Confederate *Merrimac* steamed towards the five Union ships that guarded the mouth of the James River at Hampton Roads. The *Minnesota* and the *Roanoke* were steam frigates; the *St. Lawrence*, *Congress*, and *Cumberland* were sailing ships. Although the *Roanoke* was disabled by a broken shaft, together they mounted a total of 219 guns and were a formidable armada. The *Merrimac* headed first for the twenty-four-gun *Cumberland* and quickly sank her with several shells into her side before ramming and tearing a seven-foot hole in her hull. While this was happening, the *Cumberland* and *Congress* fired numerous broadsides at the *Merrimac*, which struck and glanced off, "having no more effect than peas from a pop-gun."[63] After sinking the *Cumberland*, the *Merrimac* assaulted the fifty-gun *Congress*, with broadsides which started fires that eventually reached the powder magazine and blew her apart. The *Merrimac* turned her attention to the flagship of the fleet, the *Minnesota*. The *Minnesota* had run aground while trying to help her sister ships, but the *Merrimac's* deep draft prevented her from closing with and finishing the *Minnesota* before nightfall. The rebels left the *Minnesota* and the other ships for the morrow, and called it a day.

It had been a day that changed naval warfare forever. The news stunned the British, who concluded that in the future, anyone who went into action in a wooden ship was a fool, and the man who sent him there was a scoundrel. It was the worst day in the navy's history. The *Merrimac* sank two proud ships within a few hours and badly damaged a third. No enemy had done that before and no enemy would do it again until December 7, 1941. But this was no sneak attack on a peacetime Sunday morning when most sailors were away or asleep. This was a broad daylight attack against a prepared enemy. The *Merrimac* had killed at least 240 sailors, including the captain of the *Congress*—more casualties than the navy suffered on any other day of the war. The South had achieved what weapon designers dream about and dread: a weapon so advanced that it becomes a virtual lion among sheep—it kills with impunity. True, two of the *Merrimac's* guns were knocked out, every fitting on deck and part of her smokestack were shot away, her ram was wrenched off by the collision with the *Cumberland*, two of her crew were killed and several were wounded. But while ninety-eight shots struck her, none penetrated the armor or disabled her.

The South was elated. For one day, it had the mightiest navy in the world. Secretary of the Navy Stephen Mallory talked of taking the *Merrimac* up the East Coast, destroying ships along the way, to New York harbor and bombarding the city and the Union into submission. The North was equally emotional. The cabinet met in emergency session the morning after the debacle. Secretary of the Navy Welles tried to calm Secretary of War Stanton's fears since the *Monitor* was enroute from Brooklyn to Hampton Roads to confront the *Merrimac*. But even if she arrived in time to save the rest of the fleet, no one knew if she could.

The *Monitor* had arrived alongside the Minnesota just after the *Merrimac* left. When the rebels returned the next day to finish the job, they confronted this strange vessel. For two hours they battered each other; the more maneuverable *Monitor* circled the sluggish ten-gun *Merrimac* while punching at her with 175-pound shot from her two eleven-inch guns. Neither could shatter the other's armor, although the *Monitor's* heavy shot cracked the *Merrimac's* outside plate at several places. Once, the *Merrimac* ran aground but freed herself before the *Monitor* could finish her. She tried repeatedly to ram the *Monitor* but by then her engines were barely functioning, and she was "as unwieldy as Noah's Ark"[64] The *Monitor* had just missed ramming the *Merrimac's* stem to disable her rudder or propeller. Soon after this, when a shell from the *Merrimac* struck the *Monitor's* pilot house and wounded her captain, the Union ship stopped fighting briefly. The *Merrimac*, in danger of running aground again, steamed back toward Norfolk. Each crew thought they had won the battle, but actually it was a draw. As McPherson notes, both sides stopped fighting—almost, it seemed, by mutual consent.

An agonized Lincoln had waited for news by telegraph from Fort Monroe; it was worth the wait. Three weeks after smug newspapers had called her "Ericsson's folly," the *Monitor* had saved the Union. News of the battle spread worldwide. In Ireland, John Holland pored over a description of the battle in the Cork Examiner. Holland later emigrated to America and founded the company that would become General Dynamics.

The Navy Department had paid all six installments of the purchase price, less the 25 percent reservation, when the *Monitor* started for Hampton Roads. The delays of the Treasury Department in paying, however, had caused the contractors some embarrassment. Ericsson wrote that "in view of the large amount of funds thus called for from private sources, my

contemplated organization and operation by what is called night gangs, has been to some extent frustrated." The navy paid the reservation ($68,750) on March 14, 1862, five days after the battle. The *Monitor* cost an estimated $195,142.60, so the four partners had a net profit of $79,857.40 to divide. Besides his one-fourth share ($19,964.35), Ericsson received $1,000 for engineering services. His lasting reward has been a nation's gratitude, richly deserved.[65]

Other ironclads followed. On February 13, 1862, Congress authorized the secretary of the navy to construct as many as twenty ironclads and appropriated $10,000,000 for the purpose. A week later, the navy advertised for proposals and a month later Congress increased the appropriations. By the end of June, the North was building three casemates and twenty-four turreted ironclads, and the list soon grow rapidly. Yet not until a generation later did the United States build a cruising ironclad fleet.

## After the War

Late in April 1865, the War Department ordered its bureaus to cut expenditures to the lowest possible level "in view of an immediate reduction of forces in the field and garrison and the speedy termination of hostilities."[66] For example, the chief of ordnance was directed to stop buying weapons and ammunition as soon as possible. After Lee's surrender, Washington requested the cancellation of all unfilled war contracts.

The government disposed of the surplus stores at public auctions. The prices received were normally below the cost of the items being sold. For example, DuPont bought back much of the powder it had sold the government during the war for thirty-three cents a pound at only five cents per pound, less than the cost of producing new powder. Nevertheless, during the first year after the war, the government realized over $30 million, half of which came from the sale of surplus horses, mules, and oxen. At the close of hostilities, the Quartermaster Department was heavily in debt, and Meigs began using funds from the sale of surplus quartermaster property to pay off vouchers for supplies and services held by creditors against the department. By June 1866, the army did not need to use such funds for that purpose and so it then deposited the money in the treasury to the credit of the department.

As Jacques Gansler has stressed,[67] the Civil War marked a new era of war by an industrial society. Its new weapons, such as the ironclad, repeating

rifle, machine gun, and rifled artillery piece, were far more complex to build and use and took more skill and time to produce. Moreover, fewer companies could produce such sophisticated items. A company could not enter the mobilization "race" after it began. The well-entrenched, capital-intensive, high-technology "competition" like Colt, Remington, and Whitney and the complexity of the task was, more often than not, too much for a new firm to compete against. Thus, fewer companies could participate in a mobilization, which would cause it to take longer. World War I would prove this.

*Chapter 9*

# Demobilization and the Rise of Consumerism: 1865–1880

The nation's industrial strength grew mightily during this period but not as a military-industrial complex; the military aspect was distinctly missing. After the war, the military demobilized quickly. Firms which months before had more government business than they could handle now had idle plants, workers, and inventory.[1]

For some, the transition was relatively painless and even exciting as new opportunities opened. The wartime production of the clothing and shoe industries had so standardized the product fines and techniques that now they could easily mass produce items. They clearly had a ready civilian market, however, they needed an outlet beyond the local community. That outlet came in 1872 when the first mail order house in the country was opened in Chicago. Now, mass produced goods could be purchased from anywhere in the country and delivered by the stagecoaches, steamships, and railroads that government contracting had subsidized.

The mass production that resulted, however, could not have survived without a revolution in transportation that made swift, nationwide distribution possible. The government's systems of road and postal connections expanded; this opened up the hinterlands. The mass production techniques of the Civil War became useful to the commercial markets of the first department stores. In 1871, George Huntington Hartford did for distribution what Henry Ford later did for the factory: he advanced it to an entirely new stage by creating the world's first mammoth chain store system, the Great Atlantic and Pacific Tea Company.

Not enough attention has been paid to the role of government contracts in the explosion of consumerism that developed after the Civil War. The department stores, like Macy's; the mail order catalogs, like Sears and Montgomery Ward; and the chain stores, like the Great Atlantic and Pacific Tea Company could not have developed without government contracts. Government contracts had transformed the wealth creation process in this

country. In the eighteenth century, and indeed for hundreds of years before that, land had been the ticket to wealth. The "landed gentry" or the "propertied classes" were aptly named; their money flowed directly from the land. Merchants were considered little more than tradesmen and did not achieve real respectability until they had acquired land.

This transformation happened because most private contracts were relatively small matters. It was only the government, with its huge requirements, that enabled the amassing of wealth. Once Whitney had begun his mass production processes and Sam Colt had added his marketing techniques, the stage was set for these new techniques to be spread beyond armaments and to all manner of commercial goods. The Civil War imposed them on thousands of suppliers. After the war, the demand developed for supplies that could travel over the roads created by government contracts during the first half of the nineteenth century. Land was no longer the primary builder of wealth. Capital, in the form of factories or vehicles, much like Majors & Waddell had used, were now the prime ingredients. To amass the capital needed to fulfill the huge demand, a new business form had to be created: the corporation. Incorporation allowed the pooling of substantial assets to develop the money needed. There is a direct link from entrepreneurs like Whitney and Colt to Carnegie.

In 1800, there were only 335 corporations in the United States, most of them devoted to such quasi-public activities as building canals or managing turnpikes. The rise of mass production changed this. New technologies required giant pools of capital—more than a single individual, or even a small group, could provide. By 1901, the world's first billion dollar corporation—United States Steel—appeared on the scene.

Merchants became capitalists or industrialists. The wartime contracts of J. P. Morgan, Phillip Armour, Clement Studebaker, Cornelius Vanderbilt, the DuPonts, and Andrew Carnegie allowed them to amass fortunes that funded their enterprises for the remainder of the nineteenth century.

The gunmakers were not so fortunate.[2] Between 1865 and 1867, industry revenues fell nearly 87 percent. This evaporation of demand devastated the firearms industry. After the Civil War, the government again discontinued the semiofficial arsenal system that had developed after 1808, died in the 1850s, and reappeared during the Civil War. The system would not reappear until the eve of World War I. Although some companies received contracts

to make breechloaders, these orders could hardly sustain an industry that had been tooled to produce hundreds of thousands of weapons. Burdened with considerable excess capacity from the war, the arms industry urged Congress, in 1878, to buy more guns from private sources, arguing they were far more innovative and efficient than government arsenals. However, the army chief of ordnance rebutted these arguments, and the industry remained depressed.

Many firms adjusted to the postwar situation by returning to old pursuits, including making textiles, textile machinery, locomotives, boilers, machine tools, and mill machinery of all kinds. Others sought to apply the techniques used in arms making to develop new products, particularly sewing machines, typewriters, and bicycles. Less fortunate companies, unable to overcome the large debts and intensified competition, went bankrupt and liquidated their holdings. For example, the Spencer Repeating Rifle Company of Boston ceased operations in 1869 and the next year, sold its plant and machinery to the newly organized Winchester Repeating Arms Company of New Haven, Connecticut.

One profitable market was the export of gunmaking equipment, which for twenty years after the Civil War, helped sustain arms manufacturers and stabilize the American machine-tool industry. Although Remington, Winchester, and the Ames Manufacturing Company shared in this trade, the most lucrative contracts went to two former Colt employees, Pratt & Whitney of Hartford, Connecticut. Between 1871 and 1875, Pratt & Whitney shipped over $2 million worth of machinery to Europe, mostly to Germany for the production of Mauser rifles at the Royal Arsenals of Erfurt, Spandau, and Danzig.

America did buy some guns but only in small quantities to test new weapons, such as the product of the technological heir of Sam Colt, Richard Gordon Gatling. His Gatling gun was operated by a hand crank that rotated six barrels past the firing bed and spewed one hundred one-inch caliber rounds a minute. He had tried but failed to sell his guns to the Ordnance Department, and the war ended before he produced a genuinely effective weapon. On August 24, 1866, the conservative, cost-conscious Ordnance Department contracted for fifty one-inch and fifty .50 caliber model 1866 Gatling guns.[3]

A large order like that persuaded a desperate manufacturer to tool up to produce the Gatling gun. Shortly after the hundred-gun contract had been signed, the Cooper Fire Arms Manufacturing Company of Philadelphia transferred production of the Gatling to the Colt Armory in Hartford, Connecticut. With this move, the Gatling gun and its inventor secured the backing of a large established arms maker with ample manufacturing capacity and considerable influence in government circles. At the same time, the War Department obtained additional assurance that its contract would be fulfilled. The Colt Company gained the immediate financial boost of a large government contract when surplus weapons were flooding the domestic arms market, and it assumed control of the best model of a promising new type of weapon. Able to point to a sizable contract with the American army, salesmen began to make small but significant sales of the gun abroad.

Shortly after the end of the Civil War, the army adopted .50 caliber ammunition; in 1873 it switched to .45 caliber small arms, and then in 1892, it chose a new rifle, the .30 caliber Krag-Jorgensen. Gatling followed these changes in the caliber of the standard service rifle. In nineteen years, the bore diameter of the service rifle—and, therefore, the caliber of the Gatling gun—changed twice. According to Gatling, it cost his company $500,000 to replace equipment that changes in rifle caliber had rendered useless. At least thirteen new models of the Gatling gun appeared between 1870 and 1900. Frequent model changes meant short production runs and outmoded machinery, which kept the cost of the Gatling gun high.[4]

Despite its high cost, the Gatling remained the standard army machine gun until 1903. Made in Connecticut, the home state of Senator Joseph I, Hawley, chairman of the Senate Committee on Military Affairs, the Gatling had a considerable commercial edge over the British-made Maxim machine gun, its major competitor after 1885. This advantage became law in the Fortifications Appropriations Act of 1888, which specified that "all guns and materials purchased under the authority of this section shall be of American production and furnished by citizens of the United States."[5] Its domestic manufacture probably ensured that the Gatling remained the standard army machine gun until it clearly became obsolete.

Congress often used the contracting process to foster American production. The Naval Service Appropriations Act of 1865, the Act of July 13, 1866, and the Army Appropriation Act of 1876 mandated a preference for domestic products and American labor and material in public improvement

contracts.[6] These tepid steps in the use of contracts in socioeconomic programs would reach their height in the 1930s during the Great Depression.

Railroads made supply much easier. In June 1862, Congress had passed the "Act to Aid in the Construction of Railroad and Telegraph Line from the Missouri River to the Pacific Ocean and to Secure to the Government the Use of the Same for Postal, Military, and Other Purposes." For the financial aid and right of way the government provided, railroad companies had to give priority to transport of government mail, troops, and supplies. Between 1870 and 1885, the government allegedly saved over $139 million on the movement of mail, government freight, and troops. The building of the railroads saved the explosives industry from the fate of the firearms industry. Sales to the railroads permitted the industry to thrive and monopolize. The Gunpowder Trade Association of the United States, formed in 1872 by seven of the largest companies, immediately set a minimum price for powder. Independents who would not enter the association were forced to the wall by systematic underselling. Others were brought into line by purchase of so much of their stock that they could be controlled. This united front of contractors presaged the epic armor plate scandal at the turn of the century.

During this period, many of the contracts of the Army and the Interior Department were to supply the Indians. This is one of the sorriest chapters in the history of government contracting.[7]

Contractors were among the chief benefactors of the army's western presence. They also profited from the Indian agencies. Although many businessmen acted honestly, some were notoriously corrupt. Army and Interior Department officials complained that western merchants provoked trouble with Indians to attract more soldiers, government supply contracts, and money. In Arizona, for example, merchants, businessmen, and thieves within the infamous "Tucson ring" promoted Indian troubles and cooperated with dishonest Indian agents in providing substandard rations to reservation tribes, hoping to bring in the army with its lucrative government contracts. The frequency of such practices led many officers to blame contractors and traders for the continuing difficulties with Indians. Colonel Stewart Van Vliet, quartermaster of the Department of the Missouri, discounted reports of Indian depredations in 1873. "They are the same old stories gotten up by scoundrels who want to involve us in an Indian war in order to get their hands in the Treasury."[8]

During the civil war, as in any war, open market (negotiated) purchases predominated. But after the war, the preference for formal advertisement returned. Meigs emphasized anew that contracts be awarded to the lowest bidders. To promote this, the War Department issued General Order No. 97, on November 12, 1867, to establish "a more economical administration and a more uniform and systematic method of letting contracts."[9] Besides centralizing the authority for advertising and receiving proposals in the commanding generals and chief quartermasters for the military departments or districts, the order required that the advertisement occur a reasonable time before, so distant contractors could compete. Quartermasters tried to buy supplies locally, if the price was reasonable, considering the cost of transportation. This policy particularly applied to forage, lumber, and other products of the area in which the posts and depots were located. The Subsistence Department followed the same policy and tried to obtain supplies, such as fresh beef, flour, and other commodities, from producers near the points of consumption.

Despite the similarities, the departments varied in many of their clauses and other requirements. This department-by-department approach promoted too much confusion. So in 1878, Congress goaded the secretary of war to prescribe rules for the entire War Department on the preparation, submission, and opening of bids and for the submission of bonds to accompany the bids. The War Department then provided forms for advertisements, proposals, guarantees, contracts, bonds, and a "General Instruction for Bidders."

The 1889 regulations provided a compromise between formal advertising and open purchase. If an emergency did not permit giving ten days' notice for proposals, the contracting officer could contract by contacting principal dealers directly and giving as much notice as practicable. Only if ten days' notice were not possible was an open market purchase authorized. These 1889 regulations also required that bidders be provided with specifications, be permitted to examine samples, and, in general, be furnished with "any information needed to enable them to act understandably."[10] The regulations gave strict and specific guidelines for the submission of proposals: what information was to be inserted or attached, how to sign, and how to withdraw a proposal. They also gave an abbreviated form of contract.

Such regulations inexorably continued the process of formalizing the process and making it more uniform, first within the War Department and later government-wide.

One other development became permanent in this period. In 1855, Congress had created the U.S. Court of Claims to hear such matters as contractor claims. More and more, contractors availed themselves of this avenue of redress and sued the government. Since government contract law was not yet a distinct body of law, the courts subjected the government contract to the same rules as any other contract. As the U.S. Supreme Court stated in 1875 in *Cooke v. United States*[11] when the government "comes down from its position of sovereignty, and enters the domain of commerce, it submits itself to the same laws that govern individuals there."

*Chapter 10*

# Building the Fleet 1881–1898

"Manifest destiny" still lived and spread beyond America's borders as isolation became imperialism, especially in the form of the Spanish-American War. America's prowess did not come only by force of arms. It assumed a new role on the international scene as America became the recognized industrial power. Industrialists like Carnegie, Morgan, Rockefeller, and Ford ushered in the Age of Robber Barons and the birth of some of America's defense giants such as General Dynamics. The form of business changed. During the Revolution, the partnership predominated; now the corporation and the trust reigned supreme as the entrepreneurs amassed enormous wealth and power in this new age.

In 1907, Theodore Roosevelt sent the Great White Fleet around the world but that fleet did not arise overnight. It began in this period with the administrations of Chester A. Arthur and Grover Cleveland, presidents not well known as activists. Nevertheless, they saw the beginning of the modern military-industrial complex. Up to then, it existed in the form of the semi-official private armories from 1808 to the 1840s. The "complex" had then died out until it was resurrected during the surge of the Civil War. Now it returned permanently to produce items that had no civilian counterpart and could not be mass-produced quickly enough after hostilities had begun. Machines took on a new and ghastly force. Before, the weapons of war had changed gradually. Now, technology rewrote the tactics books by forcing consideration of aerial and underwater adversaries.

Developments like the airplane and submarine changed warfare forever and had to be engrafted onto military thought. They could not evolve. Surprisingly, they were originally thought to be primarily defensive tools: the submarine for defending harbors and the airplane for scouting. Although the airplane and submarine captured the nation's imagination, their contracting impact was small because it took a long time to convince the services that the airplane had military uses, civilian airlines were still a long way off, and the services only ordered a handful of submarines. Rather, the contracting symbol of this period is the battleship.

Battleships had been used in the Civil War but were perfected during this period; they dominated the procurement process. The controversy over buying the armor plate to protect the ships pitted such industrial giants as Andrew Carnegie and Charles Schwab against the government in some of the most headline-grabbing scandals of U.S. contracting history. It renewed, on an unprecedented scale, the question of whether the government should rely on contractors for needed items or build them itself.

Although industrial technology had facilitated warfare since Whitney, Hall, and North, the 1880s produced the first modern weapons system: the gigantic, expensive, steel-plated, steam-propelled, heavily armed warship. These ships required large sums of money, specialized facilities, materials, and manpower, as well as detailed and lengthy planning to synchronize their manufacture. They required a mobilization base.[1]

Even before Whitney and North, a skilled craftsman could produce a musket in a week, but battleships and airplanes required much more time and expensive machinery. The "militia" theory of industrial preparedness practiced in the Civil War could not produce battleships, the children of the *Monitor* and the *Merrimac*. These metal behemoths forced a new melding of industry and the military that often resembled a shotgun marriage. The needs of the United States Navy, like those of navies abroad, became central for stimulating industrial modernization. The navy, rather than the army, became the first service to require products more sophisticated than those normally produced by industry, such as rails and farm machinery. Congress' socioeconomic agenda also contributed to the growth of this base. In this period, Congress mandated that all American naval material be manufactured in the United States. Although this might add cost, it forced the development of the domestic industrial base required to support a large fleet.

After the Civil War, naval demobilization matched the army's. In 1865, the United States had the world's strongest navy; by 1881, hardly any serviceable ships remained—only pre-Civil War wooden, smooth-bore gun ships. The European navies now far surpassed the American navy, which had pioneered ironclad fighting ships. *The Army-Navy Journal* of August 14, 1869, complained that the navy feared machinery because it would give the crew of a man-of-war nothing to do.

Most private shipyards mainly served the civilian market, so the yards building naval ships shrank from sixty-one to seven. Only foreign demand for American-built ships kept America's shipbuilding capacity from vanishing. Jacques Gansler points out that from 1860–1900, foreign trade carried on American registered ships fell from a world percentage of 66.5 to 9.3. However, the demand for U.S.-built ships continued to be high, and the private yards stayed in business.[2] Once again, as in prior peacetimes, the government increased the public side of the defense industrial base. Between 1861 and 1889, the army added ten more arsenals to its inventory. The navy's shipyards expanded from five during the Civil War to a peacetime count of seven.

By the 1880s, the navy found itself with slow ships, poor guns, and underpowered engines. Admiral David Porter responded by creating the Naval Advisory Board, which began the renovation of the navy in 1881. The board recommended not only a considerable program in new construction but also a resuscitation of the country's industrial base. For example, new ships would be built of steel rather than of iron because the reputation and the material advantage of the United States demanded that the country take a bold and decided step to win back from Europe its former prestige as the best shipbuilders of the world.[3]

That clarion call convinced Congress to enlarge the navy and reduce American dependence on foreign steel for its defense needs.[4] The Naval Appropriations Act of 1882 authorized the navy to complete five ironclads, extensively repair its wooden warships, and use any leftover funds to build two steel cruisers as the board recommended. Moreover, Congress mandated a permanent Bureau of Naval Ordnance and $100,000 for development of steel rifled breechloading guns. Domestic steel had to be used for the ships, but was optional for the guns. The next year, the 1883 Authorizations Act authorized and funded three protected cruisers and a dispatch vessel.

President Chester A. Arthur's secretary of the navy, William E. Chandler, urged American steelmakers to build plants for the production of gun forgings and armor plate to fortify warships against cannon fire. Industry, however, was not interested. They simply did not believe that peacetime purchases would be large enough to justify the start-up expense. This was a watershed in military-industry relations. This was the last time that an entire major industry simply refused government business because it did not think it was worth the bother.

Industry's disinterest in armor and ordnance slowly surfaced as the principal roadblocks to the new navy. Progress came from the work of boards such as the joint Army-Navy Gun Foundry Board, established by the Naval Appropriations Act of 1883. The board considered how American industry could produce both armor plate and armor-piercing guns that would equal European products. After touring European armament factories, the board recommended that the government award large contracts to U.S. companies to stimulate their development of steels and forgings and that the government itself assemble the new materials into weapons at both the Naval Gun Factory and army arsenals.

Although the arsenals supported the army's need for weapons, the navy had always relied heavily on private shipbuilders from the days of Joshua Humphreys. The navy built some warships in its own yards before the Civil War, but most navy ships were built in private yards. So, when the new navy went to the bidding stage on July 2, 1883, eight of the country's shipbuilders responded.

The navy awarded all four warship contracts to John Roach of Chester, Pennsylvania. Roach had a disastrous time with the ABCD ships (so called from their names: *Atlanta*, *Boston*, *Charleston*, and *Dolphin*), and later ships, like the cruiser *Cincinnati*. Overruns; design changes; breakdowns during sea trials; the navy's increasing dissatisfaction with the results; and carping criticism from politicians, competitors, and the press—all the curses of modern procurement—accompanied the efforts to refurbish the navy. Late delivery of armor delayed all ships. Something had to be done about getting armor.

A change in administration brought Grover Cleveland to the White House in 1885. The new navy secretary, William C. Whitney, was more realistic than Chandler. He knew that no American steel company would spend several million dollars on a plant for armor or gun forgings to compete with foreign suppliers unless it received enough orders to justify the investment. He asked Congress to stop buying both armor and gun forgings abroad. Legislation in 1886 required American naval vessels to be made entirely from domestic materials. The law made it profitable for American shipbuilders to develop the most modern naval technologies. Whitney then grouped the navy's estimated requirements for several years into one large order. He believed that would encourage several American steel companies

to submit bids. Whitney insisted that if the steelmakers knew the navy had money available, they would come after it.

The money became available after Brazil acquired the British-built armored cruiser *Riachuelo*, which was considered capable of defeating the entire United States fleet. On August 6, 1886, Congress authorized the construction of the first American battleships, the *Maine* and the *Texas*. The navy pooled the orders for the two battleships with contracts for four Monitors and set them out for bids in one large contract.

In the fall of 1886, Andrew Carnegie ordered an armor plate mill to be built at Homestead, Pennsylvania, so he could bid by early 1887. He wrote Secretary Whitney: "You need not be afraid that you will, have to go abroad for armour plate. I am now fully satisfied that the mill we are building will. roll the heaviest sizes you will require, with the greatest care."[5] Because Carnegie and the heads of some other companies seemed interested and confident, Whitney assumed that armor plate would soon be produced domestically.

But problems arose. Carnegie's initial interest in obtaining the potentially lucrative contracts waned as he developed serious misgivings, and not just about production. He sharply disagreed with the navy over how to produce armor. The navy insisted on prescribing the manufacturing process, but Carnegie, the world's leading steelmaker, wanted his company to have the discretion to do whatever it believed necessary to produce armor of consistently high quality. Carnegie complained to Secretary Whitney about the navy's rigorous production specifications:

> Your "specifications" are the serious point, as our experience with Government officials of Army and Navy is that they are martinets only and insist upon technical points to an absurd degree. Practical men know that "tests" are necessarily approximate[,] no two can result alike—that we can give you plates equal to any made in the world is true but we believe "inspectors" abroad know that variations exist and allow for them. I do hope we shall have to deal with a practical experienced Inspector should we contract [6].

When the navy refused to allow more flexibility in production techniques, Carnegie refused to bid.

Carnegie was not alone. Most American steel producers remained indifferent to government contracts. Whitney issued a second circular on February 12,

1887, setting the minimum figure for successful bidders at three hundred tons of heavy steel per month. The government allowed companies to bid on either the gun forgings, or the armor contracts, although the navy preferred those who bid on both. By March 22, 1887, Whitney had spent a year conferring with steelmakers throughout the country, but only a handful bid.

Cambria Iron and financially troubled Midvale Steel bid solely on gun forgings; Cleveland Rolling Mills bid for armor alone; and only Bethlehem bid on both types of work. Bethlehem's bid on armor was the lowest, but Cambria underbid Bethlehem on gun forgings. Because of the dual bid, Whitney could have awarded the gun contract to Bethlehem anyway. But Cambria pressed for its lower bid. Whitney shrewdly threatened to award to Cambria unless Bethlehem lowered its forging bid, which it did by reducing its figure to Cambria's. Bethlehem and the navy finalized the $4 million contracts by June 1, 1887. Bethlehem had to start delivering armor in two-and-a-half years—December 1889. The company agreed to deliver 6,703 tons of armor and about 1,310 tons of gun forgings at prices ranging from $500 to $650 per ton. Whitney was delighted. The bid openings "caused a feeling of quite universal congratulation throughout the country," because "it marked a most important step in the progress toward national independence" from foreign steel and armor.[7]

But Bethlehem experienced cost overruns and delays in building its armor plant and had not even completed it by the delivery date for the armor. In January 1890, the navy granted a six-month extension, but the company still missed its deadline. In May, President Benjamin Harrison's secretary of the navy, Benjamin F. Tracy, investigated Bethlehem's progress and learned that the plant was only partly built. The company would need fifteen months more to complete it before it could begin to cast ingots and produce acceptable armor plates. Tracy granted Bethlehem another twelve to fifteen months to complete the plant.

Bethlehem still lagged behind. It had not yet delivered six hundred tons and, at the current rate, would need three more years to complete the contract. Writing to Bethlehem in October, Tracy warned:

> These promises like many others made by your company have not been kept, and now you ask me to extend your contract. This I cannot do. Any extension of your time must be connected with conditions with adequate penalties attached to be imposed in case of failure on your part.[8]

These delays stalled shipbuilding. Roach started the *Texas* in October 1888, but could not launch her until two years later. She and the *Maine* were not commissioned until 1895.

These delays also cost Bethlehem its position as the sole domestic producer of armor plate, because the navy desperately sought others to fill the gap. In 1890, when Secretary Tracy learned that Bethlehem could not deliver in 1891, he urged Carnegie to complete the plant he had begun in 1886. Carnegie again refused but relented only after President Harrison asked him to reconsider.[9] He then immediately received an armor plate contract. Congress recognized the urgency and did not object to the sole-source contract. The 1891 Appropriation Act, however, required that "no contract for the purchase of gun steel or armor for the navy shall hereafter be made until the subject matter of the same shall have been submitted to public competition by the Department by advertisement."

Meanwhile, the buildup for a "Blue Water Navy" received its philosophical basis from the American naval officer, Captain (later Admiral) Alfred Thayer Mahan. A 1859 graduate of the United States Naval Academy, Mahan became president of the Naval War College in Newport, Rhode Island, in 1886. There he indulged his interest in naval history and published in 1890, *The Influence of Seapower Upon History 1660–1783*. He argued that a nation's ability to control the seas is the true measure of its power. No nation ever became a great world power without a great navy. Navy Secretaries Tracy and Hilary Herbert were devotees of Mahan and great believers in the battleships he championed. It is impossible to calculate the book's effect, but it readily translated into appropriations. That year, Congress authorized the construction of three more battleships. In 1890, William Cramp & Sons received a contract for two of the ships: the *Indiana* and the *Massachusetts*. Congress specified that the third ship be built on the west coast.

To build those ships, the navy rigidly enforced its specifications and regulations on steel inspection, despite industry's constant pleas for relaxation. The navy had assigned resident inspectors to supervise the entire armor operation. Soon contractors tried to circumvent the system. In 1890, when Bethlehem failed to supply armor on time, the navy contracted with the Linden Steel Works of Linden, Pennsylvania, for protective deck plates for the *Maine* and the *Texas*. On July 1, a government inspector at the plant discovered that a counterfeit of his stamp had been used. He immediately

stopped inspecting, and the chief of ordnance began to investigate. Linden's president claimed that one employee had made the illegal stamp and the company disclaimed responsibility. The navy cleared the company and dropped the issue when the suspect disappeared and no evidence could be secured.

In another case, inspectors discovered that all twenty-nine steel castings from the Standard Steel Casting Company designed for the *Maine* and the *Cincinnati* had defects that had been concealed by smoothing over the neighboring steel. The firm's president vehemently denied wrongdoing and demanded a reexamination in front of company representatives. The reexamination confirmed the defects, but the president denied ever ordering such an act. A more serious scandal followed.

In September 1893, James H. Smith, a Pittsburgh attorney, notified the navy secretary that four of his clients, former Carnegie employees, could prove fraud in the manufacture of armor plate. The men would provide this information to the government through Smith in return for a reward. The new secretary was Hilary Abner Herbert, a lawyer, Confederate soldier, and Democratic congressman from Alabama from 1877 to 1893 before Grover Cleveland picked him for the Cabinet. When Secretary Herbert responded that he had no funds to buy information, the informants made another proposal. If their charges of fraud were substantiated, they would accept as their reward 40 percent of any penalties the company paid. After the attorney general approved such an arrangement and President Cleveland backed it, Herbert made a take-it-or-leave-it offer of 25 percent. The informants accepted.[10]

The four informants charged that the Carnegie company failed to temper armor evenly and properly. They alleged that the firm had plugged and concealed blow holes that would have caused inspectors to reject the plates. Furthermore, the firm had re-treated specific test plates without the knowledge of those inspectors to make them better than the entire original group.

Secretary Herbert appointed a three-man board of inquiry, headed by the chief of the Bureau of Naval Ordnance. The board quickly investigated, but did not tell the company of the accusations or allow it to reply or defend. After examinations of previously submitted plates substantiated the charges, the board recommended that the company be fined 15 percent of the price of

all armor sold to the government during the period that the frauds occurred: November 2, 1892, to September 16, 1893. Herbert agreed, then telegraphed the company that the navy planned to impose a fine. After hearing the charges and knowing that the company could appeal to the President, Henry Clay Frick, board chairman of Carnegie, began to draft a reply. The navy's charges did not totally surprise Frick; the attorney for the four informants had offered to sell their "evidence" to him before contacting Secretary Herbert.[11]

The press of the nation exploited this sensational news. In one cartoon, a trembling Carnegie wearing a kilt cowered behind a steel plate, while a naval officer pointed a cannon labeled "Investigation" at him. The caption read, "Hold on! Don't shoot. I made this plate."[12] Such public ridicule and how the charge had been handled infuriated Carnegie. He protested to President Cleveland. On the envelope of the letter, he wrote: "This is a personal letter to Mr. Cleveland not to the President and I ask the Secretary to hand it to him unopened."[13]

In the letter, he added "No one, not even Mr. Frick knows of this letter, it is between you and me alone—I keep no copy—." Carnegie asked Cleveland to appoint a new board of inquiry because he felt the original board had constituted nothing more than a kangaroo court. He complained that the secretary of the navy had acted as if he were the "Attorney for these informers." Herbert acted not from malice, Carnegie acknowledged, but his actions were "chargeable to over zeal. . . . He did not intend injustice—."[14]

> We have been accused, tried, found guilty and sentenced without ever having been heard—The vilest criminal has always the right to be heard in his defence—The Secretary of the navy even condemned us and after notifying Mr. Frick that he had approved the finding of the so-called Board (which was not a Board but only one man with two assistants upon whom he might call to aid him if necessary) and then allowing us to say what we had to offer in defence—monstrous this—After we had been sentenced we were asked to state our side of the case, not till then—But this is not the worst of it—
>
> The so-called Board which should have been our Judges were not allowed to judge. They were instructed practically what to find. The Secretary called them together only once I think-Instructed them as to the law, gave them the rule of damages, —gave them a long lecture as to the enormity of the offence . . . Instead of acting in the capacity of an Impartial Judge[.][15]

Carnegie also reminded Cleveland that the company had worked hard and well to fulfill the navy's needs:

> Four years, the first Contractor [Bethlehem] tried to make armor—had delivered none—ships stood on the stocks. In one year we delivered the best armor ever made and won three premiums. . . . Spent millions, subordinated every other branch of our business to the Government's needs, succeeded—and then upon the testimony of spies we are charged with irregularities and our men with fraud—I cannot stand this. . . . we must ask to be tried by a Court who will at least visit our Works, listen to explanations upon the ground, and see for themselves before they judge.[16]

A week later, Carnegie again complained to Cleveland about the harm inflicted by the "overzeal of an inexperienced Secretary who charges 'fraud' upon people (Mr. Schwab & others) quite as incapable of attempting to defraud the Govt as the Hon. Sec'y himself."[17]

Cleveland focused on whether the company had cheated the navy by delivering plates that were inferior to those it could have produced with greater care. In fact, only three plates had failed to meet the minimal standard of quality specified in the contract. The fine resulted not from the three substandard plates, which would simply be rejected, but because most of the armor was only 5 percent better than the quality specified in the contract; only a few of the plates were 20 percent better. Because the contract required that the company produce the best possible quality, for which it was paid bonuses, the issue was whether the company had produced plates of consistent excellence.

President Cleveland admitted that the technical intricacies involved were beyond him, but he stated nonetheless: "I am satisfied that a large portion of the armor supplied was not of the quality which would have been produced if all possible care and skill had been exercised in its construction." He concluded that under the terms of the contract, this constituted a default entitling the government to damages. Cleveland did not contradict the navy's conclusion, because it had shown "an honest desire to meet the case fairly." Nevertheless, considering "the indefiniteness of the proofs obtained," he reduced the fine from 15 percent to 10 percent ($140,484.94).[18]

Herbert sent a copy of Cleveland's letter, together with his own comments, to Frick. After praising the general quality of armor despite individual defects and fraud, Herbert explained that Carnegie Steel had been fined because it had represented the armor as prime quality, thus earning

government premiums. Herbert suggested that both the company and the navy might learn from this experience. He told Frick that the navy would "redouble its watchfulness" and would expect full cooperation from the company in preventing further abuses."[19] Herbert also settled the account with the informants by depositing $35,121.23 to their credit in a Pittsburgh bank.

The issue lingered, however, in a welter of claims. The Bureau of Naval Ordnance gathered more data to further prove that the Carnegie people had deliberately committed the fraud. At the same time, Carnegie and Frick claimed they were victims of unscrupulous employees and demanded that the government refund the fine. The informants argued that the government was covering up to protect the company. The House of Representatives authorized the Committee on Naval Affairs to investigate the matter. A special subcommittee investigated not only the question of armor quality, but a charge that Charles Schwab, superintendent of Homestead, had either authorized or condoned fraud.[20]

Schwab's defense was interesting. He attacked the competence and practices of the government inspectors. "You have never worked for a Government inspector. You have no idea of the loss of time involved in their requirements." Schwab simply did not want to deal with men he considered to be meddlesome, ignorant gnomes. Schwab's argument failed totally. Even if the subcommittee had accepted his arguments that the navy's specifications were arbitrarily rigid, that its inspectors were meddlesome and that the variations had been somehow for the navy's benefit, it still could not condone secretly violating the contract.[21]

The Committee on Naval Affairs unanimously affirmed the original findings of the secretary of the navy. After over nine hundred pages of testimony, it concluded that numerous breaches, if not crimes, had been perpetrated at Homestead. But by then, Herbert and others wearied of the whole matter, especially because Carnegie had removed Schwab as superintendent of the armor department at Homestead. Writing to the chairman of the Senate Naval Affairs Committee in January 1895, Herbert declared the issue settled as far as the navy was concerned. Congress also chose to drop the matter.

After the 1892–1893 scandal, Herbert reviewed the navy's armor procurements and concluded that the two American producers were really collaborators, not competitors; they submitted identical bids and divided the

orders. During the summer of 1895, Herbert discussed armor prices with representatives of Carnegie Steel and Bethlehem. He argued that they had already made enough profits to reimburse them for the cost of their plant and equipment, and therefore, their current prices were "exorbitant." These prices had to be reduced substantially.

The companies agreed to reduce their price from the prevailing $600 a ton by $59.40 per ton. Herbert considered this grossly inadequate. He then obtained authorization from Congress to investigate the cost of production and to determine what a fair profit would be. When he asked the companies to show him their cost data, they refused because "the Government had no right to pry into the secrets of [our] business affairs."[22]

Frustrated in his investigation and realizing that persuasion alone would not force the reduction, Secretary Herbert recommended to Congress a two-step approach: first, the current price of $600 a ton should be cut to $400; second, the government should threaten to build its own armor plant if bids exceeded $400. In 1895, three prominent senators—Eugene Hale, Republican of Maine; former Secretary of the Navy William E. Chandler, Republican of New Hampshire; and Herbert's fellow Southern, Democrat, Benjamin R. (Pitchfork Ben) Tillman of South Carolina—supported Herbert's proposal, but when support for a government armor plant was limited to a few senators, however powerful, Carnegie Steel had nothing to fear.

Then the navy learned that Bethlehem had agreed to sell armor to the Russians for $250 per ton (a later contract raised the price to $524, but that was not noticed). The difference between $250 for the Russians and $600 under American contracts of 1887, 1890, and 1893, appalled citizens and government officials. Congress' interest in armor prices as well as other problems in the naval-industrial relationship peaked. By December 1895, the Senate Naval Affairs Committee began to investigate not only armor prices, but also whether the navy had expedited patent applications for armor production processes and whether active duty naval officers had been illegally involved in contract or patent negotiations or other matters on behalf of industry.

Battleship and armor prices festered on the Hill. Andrew Carnegie testified before the Senate Naval Affairs Committee on February 8 and explained:

> If the Government of the United States would give us what the British Government gives its armor-making plants—steady work—we should be all right. If the Government would keep us in work 6,000 tons a year, it would be a highly profitable business; but as it is now, gentlemen, I assure you that many departments of our works are making more money and have made more money on the capital.[23]

He failed to sway his critics. Indeed, by the fall of 1896, Schwab, now in control of armor sales among his other responsibilities, had to spend a disproportionate amount of his energies on armor plate even though that represented only 2 percent of Carnegie Steel's total investment and less than 1 percent of the company's total tonnage output. Nevertheless, Carnegie had a $3,300,000 investment in a plant with only one customer, the navy, which increasingly suspected that it was being overcharged for armor. So Schwab not only had to negotiate sales to the navy but also reassure it that the prices charged by Carnegie Steel and its only competitor, the Bethlehem Iron Company, were reasonable.[24]

The Naval Appropriations Act of June 10, 1896, provided for three battleships, ten torpedo boats, two submarines and $4,371,454 for armor and armament. The armor price impasse surfaced in a clause requiring the secretary of the navy "to examine into the actual cost of armor plate and the price of the same" and report to Congress by the end of the year. No contract for the three battleships—the Alabama, Illinois, and Wisconsin—could be let until then. In addition, the Senate Naval Affairs Committee had discovered that naval procurement officers owned or had interests in some of the patents awarded for the processes used by the companies and that, just as with the railroads in the 1830s, naval officers often went on leaves of absence to work temporarily for navy contractors and then returned to active duty. So the new law prohibited active and retired naval officers from working for private firms having business with the government. "No man can well serve two masters," as some senators phrased it.[25]

Secretary of the Navy Herbert knew that only company records contained accurate statistics on manufacturing costs and price fixing. He contacted company officials and asked them to come to Washington with their records or assistants to supply the necessary information. Both companies again flatly refused to cooperate, despite the Secretary's warning that use of imperfect records might prejudice their case. He had to rely on secondary sources: corporate tax returns from the Pennsylvania auditor general, reports on imported materials received by Bethlehem and Carnegie from 1887 to

1893 from the secretary of the treasury, and data on labor and material costs for producing armor from former navy plant inspectors. Finally, Herbert went to Europe to determine foreign prices.

He alerted Paris and London naval attaches to his mission and asked them to gather information. He meant his trip to be secret, but Carnegie's people learned of it, and a company agent actually traveled on the same steamship with Herbert. The agent beat Herbert to his British and Continental contacts, so Herbert received only high price quotations and evasive answers.

Meanwhile, many angry senators and representatives backed a proposal that either the government set a ceiling on the price of armor or that it build and operate its own plant and quit depending on private companies. Carnegie disliked both alternatives but one or the other seemed likely after a navy board of inquiry claimed that the government could build its own plant and produce armor for substantially less per ton than Carnegie Steel and Bethlehem. Carnegie disagreed but he could not challenge the cost estimates of the navy board without publicly revealing his company's actual costs and profits—the former were higher and the latter lower than the navy's estimates. Carnegie traditionally did not disclose his costs and profits to any customer or potential competitor. It was, he insisted, "impossible for us to open the details of our private business to the eyes of our competitors, and to the world."[26]

He, therefore, decided to quit armor production and sell the navy the Homestead armor plant, much like Majors & Waddell had wanted the War Department to buy its freighting contracts in the late 1850s. In July 1896, Carnegie told his board of managers, "There is no use in mincing matters. Let us press the Government to take our works, which I think will settle the agitation. If they do conclude to take them, alright. Let us get out of it."[27]

This was a pure business decision. Such production "is not, and cannot be made a permanently satisfactory investment of capital. . . . We make about 150,000 tons of finished steel per month, & the two or three hundred tons of armor we make demand greater attention, give more trouble than all the 150,000 tons of steel. We shall be delighted if the Government will let us out of this armor business."[28] He was willing to sell the plant at cost, and he naively believed the government was morally obliged to buy it because he had originally agreed to produce armor at the request of the secretary of the navy. But neither the navy nor Congress would quickly decide to buy his

plant or to build its own; they believed that the alternatives required further investigation.

Meanwhile, relations deteriorated. In December 1896, a shipment of armor plate, which the navy had tested and accepted, was declared to be unsuitable. The armor had been produced in exact accordance with navy specifications, but naval officers demanded that the Carnegie Company replace them without charge. Carnegie was adamant: "We will not stand being called upon to stand any loss, either in money or in reputation in this matter."[29]

Despite festering disputes like that, most congressmen did not want the government to build its own armor plant and compete with private producers. Instead, they wanted the navy to set a maximum price: $300 per ton—a substantial slash from the $450 to $650 range of previous years. So, late in 1896, Congress appropriated funds for three more torpedo boats but added that the navy could pay no more than $300 a ton for armor. Because the government armor plant clause failed to pass, the legislation was toothless. When Herbert's successor advertised for more armor at $300 a ton, both Bethlehem and Carnegie simply refused to bid. Just as the Gun Foundry Board had feared years earlier, the manufacturers had established a united front to stymie the navy. Later, Bethlehem and Carnegie agreed to provide one hundred tons to complete battleships then under construction.

Eventually, to break the stalemate, Schwab, the new Secretary of the Navy John D. Long, and the president of Bethlehem agreed (subject to congressional approval) that the two companies would bid an average price of $400 a ton and divide the order equally between them. Congress now realized that no one would produce armor at $300 a ton, so an unacceptably low price would severely hamper the developing American navy. Congress then authorized the secretary of the navy to pay $400 a ton for armor for four new ships—$100 more per ton than the maximum price legislated.

Meanwhile, the navy had appointed a five-member board under Captain Charles O'Neil, chief of ordnance, to determine the cost of building a government armor plant. When the group questioned Schwab and Bethlehem's president about a selling price for their armor plants, they quoted twice the figure of $1.5 million that the earlier naval board had cited to Congress. Carnegie still wanted out of armor and offered the plant to Long at an apparent loss, for $2 million. He planned to show the country that this price was much below what the government would actually have to pay

to build a new facility. Thus, the navy could either buy steel from the industry at higher prices, or buy out the steel company's armor plant. The company would retain certain rights to steel and natural gas, and return a handsome profit.[30] Assistant Secretary Teddy Roosevelt told his friend Henry Cabot Lodge: "I am feeling rather blue over the armor business. I am afraid it will be difficult for us to get them to go on with the building up of the navy, and if they stop, I fear they will never begin again."[31] Instead, the Naval Appropriations Act of June 7, 1900, appropriated $4 million to buy the best armor at reasonable prices. Otherwise, Congress directed the navy to build an armor plate factory and appropriated $4 million to do so.

After the Spanish-American War and annexing Hawaii and occupying the Philippines, America needed warships. Captain O'Neil realized that only the existing producers could meet the navy's increased needs for armor, but neither would continue production unless they were offered a sufficient price. He believed that $545 a ton was "not out of the question," but he told Schwab that Congress would never agree to pay more than $475 a ton. The parties settled at $420 a ton at large enough quantities (37,000 tons), so the armor debacle quieted for about thirteen years. By the mid-1890s, American naval vessels were world class, and the country had ended its policy of passive defense. America had implemented Mahan's doctrine with new battleships whose 5,000-mile range truly marked the foundation of a "Blue Water Navy."[32]

Furthermore, the naval buildup helped create great shipyards, develop a pool of skilled labor, and improve America's gigantic steel industry. Benjamin Franklin Cooling, in his definitive work on this naval buildup, emphasized that firms like Bethlehem, Carnegie, and (after 1904) Midvale Steel, appear to have survived only because of military-related orders. Although they protested that they really did not need armor and ordnance contracts, they nevertheless readily accepted each new naval contract. Even Charles Schwab confessed to the Society of Naval Architects in New York that the ABCD ships had definitely formed the practical beginnings for the successful manufacture of structural steel in the United States. The steelman had admitted that all those inconvenient naval steel tests "were the real means of producing the quality of material now so universally used in the industry."[33]

One other important realization came with the panic of 1893 and the depression that followed. Government spending went on unabated while the

civilian market stalled. Industry realized that not only was government peacetime contracting potentially lucrative, despite the headaches, it was also somewhat countercyclical to the ups and downs of civilian business. This was vital to the true beginnings of the military-industrial complex.

Viewed from the perspective of government contracting, the armor plate scandals were of pivotal importance. They reflected not merely a test of wills between steelmen like Carnegie and Schwab on one side and the secretaries of the navy on the other; they also reflected a clash of philosophies and vision.

Previously, contractors had been relatively small enterprises. The typical business was run either by a sole proprietor, such as Eli Whitney, or by a partnership, such as Majors, Russell & Waddell. Those enterprises, even the relatively large Majors, Russell & Waddell, were dwarfed by their contracting partner, the government. Even during colonial days, the government represented the largest contractor any of the individual sole proprietors or partnerships had ever encountered. During the wars and during the freighting industry heydays of the 1850s, those contractors would do just about anything to get and keep a government contract. Recall how Majors, Russell & Waddell had risked and, in fact, experienced financial ruin solely to avoid having to say "no" to the government.

That relationship was changing as the country approached the twentieth century. The sole proprietorship and partnerships still existed, but the corporation began riding the crest of mass production and industrialization. Now, the steel industry was a gigantic enterprise. By 1901, through mergers, it would develop the first billion-dollar corporation in history. It approached the bargaining table with the government not as a supplicant begging for a contract, but as an equal who would take such a contract only if it were to its liking.

Indeed, in the 1880s, the steel industry simply was not interested in contracting with the U.S. Government. The demand for railroads, factories, and other buildings kept it sufficiently busy. Furthermore, it did not believe that the government would buy enough during peacetime to justify the tremendous expense of tooling and building an armor plate factory. The steel makers well remembered the feast or famine process of government contracting from war to peacetime. Like Henry Foxall around the turn of the nineteenth century, they did not wish to be at the whim of future government

contracts once they had built such a factory. It took serious and constant persuasion by the secretary of the navy and the president himself to convince them to take a contract.

After contract award, however, the steelmakers continued to assert their independence. They did not hesitate to refuse or ignore government requests that they believed were too burdensome, and they did not hesitate to ignore the requirements of government inspectors.

Once having built the plant, however, as Henry Foxall had predicted, they were stuck with it. Unless the government agreed to buy the plant from them, which the government steadfastly refused to do, they either had to absorb the enormous loss or continue to contract with the government. This is a dilemma that exists today. Many of today's contractors like General Dynamics, Grumman, or Northrup are so devoted to government contracting that their very survival depends on the award of more government business.

However, the imposition of government regulations, inspections, and quality standards imposed a uniformity on the steel industry much like Colonel Bomford had imposed on the arms industry in the 1820s and 1830s. It primed that industry to produce the high level of quality and quantity demanded for skyscrapers, automobiles, trucks, and tanks that would be coming within a generation.

The scandal also demonstrated what had become painfully obvious to Robert Morris in the waning days of the American Revolution. A system that is predicated on competition can fail disastrously once the major "competitors" join forces against the government in setting what many suspected were outrageously high prices. A substantial cadre of critics developed on Capitol Hill and throughout the nation who felt government contracts required the strictest of safeguards to avoid raids upon the Treasury. These critics recalled the suspicion and mistrust caused by the Indian Trust Fund scandal.

*Chapter 11*

# The Spanish-American War

One of the products of the naval buildup was the battleship *Maine*. On the evening of February 15, 1898, three years after her construction-delayed commissioning, she lay at anchor in Havana Harbor. Suddenly an explosion ripped her apart and killed 266 of her over 354 officers and men.

The Spanish-American War became America's first overseas war. Before it, the Mexican War had tested America's ability not only to procure but to transport the essentials of war. The Spanish-American War, however, was not a true test since it ended so quickly and the army had to travel only to Cuba. It is important because it served as a warm-up for World War I.

Theoretically, the United States was in terrific shape for a war. In 1890, the United States had surpassed Great Britain in the production of pig iron and steel. While the navy was developing its "Blue Water Navy," the army had improved its small arms capability by adopting the Danish-developed Krag-Jorgenson rifle. Actually, the War Department had approved the rifle in 1892, but a nationalistic upsurge in Congress delayed production for two years to give American developers another chance to devise a better gun. Fourteen more models had been tested but failed.

As in the Mexican War, the bluster had outpaced the supply. During the two years of steadily mounting tensions between the United States and Spain, the nation made practically no plans for a mobilization. Stockpiles of equipment were virtually nonexistent at the outbreak of the war. Thus, again, the United States had to play a frantic game of catch-up as the explosion of the *Maine* fired the starting gun for the frenetic procurement race.

In early March, anticipating the horde of recruits, the quartermaster general directed government manufacturing depots to speed production and authorized the purchase of additional tentage material which the army critically needed.[1] Clearly, government manufacture alone would not suffice for wartime needs. Therefore, on March 26, the quartermaster general directed the depots at New York, Philadelphia, St. Louis, and Chicago to

survey the market to find out what tentage and clothing items could be bought immediately and how quickly more supplies could be produced.

In April, the Philadelphia Depot advertised and invited proposals for such army textiles as kersey and flannel, and for blankets, forage, caps, leggings, ponchos, summer underwear, and shoes.[2] The depot also invited proposals for a large number of blouses, flannel shirts, and trousers to be made from material that it had on hand. In mid-April, the depot asked manufacturers for estimates of prices, quantities, and delivery dates for certain essential items but prepared no implementing plans based on those tentative procurement studies. By April 25, the quartermaster general authorized the depot to invite proposals for more than $3 million of clothing and tentage. On that date, two months after John Roach's creation, the *Maine*, blew up in Havana harbor, the United States declared war on Spain.

Congress appropriated enough funds to buy supplies and equipment including three battleships, one of which was to be named the *Maine*. Money could not buy time, however, and it could not buy material that was unavailable. For example, cotton twill or duck for summer uniforms could not be obtained until after the Santiago Campaign ended. The government tried to relieve the conditions at state camps by authorizing local purchases, but again the lack of planning meant that often the needed items were not available, especially in the rapidly escalating quantities required. To speed deliveries, the War Department was authorized to procure ordnance items and supplies without advertising, as in other military actions around the turn of the century, such as the Philippine Insurrection (1899–1902) and the Boxer Rebellion (1900). The War Department pressed manufacturers and let contracts at a furious rate but, as always, the army expanded far faster than the ability to equip it.

The troops arrived before the supplies. In the spring and summer of 1898, thousands of enthusiastic volunteers poured into camps newly established in the South so the soldiers could become accustomed to a semitropical climate. Besides badly prepared food, unbelievably poor sanitary conditions, and inadequate medical facilities, the camps lacked such basic items as underwear, socks, and shoes. Units often arrived in camps without even outmoded weapons, let alone modern ones. Items were shipped without bills of lading; when boxcars arrived in Tampa and Chickamauga for shipment, no one knew what was inside. Red tape and poor management in the War

Department's supply bureaus, the Ordnance Department possibly excepted, delayed correction of some of the worst deficiencies.

Fortunately, Spain was equally disorganized—as a result, the Cubans succeeded in their rebellion.

This was the first war in which the army was not supplied with beef on the hoof as its source of fresh meat. The new packing companies, such as Armour and Swift, delivered in refrigerated cars the fresh meat issued to the troops. Regimental commissaries drew directly from the cars on orders of the depot commissaries; these orders had been deposited with the representatives of the packing companies.

The most sensational scandal of the war arose on December 21, 1898. The commanding general of the army, politically ambitious Major General Nelson A. Miles, testified before the Dodge Commission which was investigating the conduct of the war. Miles charged that canned, fresh beef was furnished to the troops "under pretense of experiment."[3] He alleged it was really beef pulp from which the beef extract had been boiled out. He also charged that the refrigerated beef furnished to the troops in Cuba, Puerto Rico, Tampa, Chickamauga, and Jacksonville was "embalmed," or treated with chemicals to preserve it. He contended that such beef had spread sickness among the troops. Miles' charges reflected the personal and professional animosity between him and the supply bureaus.

The packing companies immediately demanded to appear before the Dodge Commission to refute these spectacular charges. The commission had been sitting nearly three months before such charges arose. "Stranger and more inexcusable and more unsoldierly still," according to Secretary of War Alger, was the fact that, during all those months, "General Miles had never come forward with this pretended knowledge of facts which, if they existed, should have been made known to the Secretary of War, for the protection of the army."

The commission inspected the camps, sent samples of beef in the commissaries to the Department of Agriculture for analysis, took testimony, and could find no evidence that meat had been treated with chemicals to preserve it. Large shipments contained both refrigerated and canned beef and often did arrive in an unsavory condition, but no "embalming" was found. The commissary general's blunt and direct denial and the testimony

of many other witnesses convinced the Dodge Commission that General Miles' charges were unfounded. The Court of Inquiry, which the War Department convened early in 1899 to investigate these allegations, came to the same conclusion. Both commissions labeled General Miles' charges unwarranted and untrue, but the legend persists that embalmed beef was furnished to the troops in the Spanish-American War.

Considering where they started, the military services had a remarkable procurement record—much better, in fact, than in a similar period of unpreparedness at the start of the Civil War.[4] As in 1861, the government had to buy whatever was available on the market to meet immediate needs. Although much of the clothing fell below army standards, still no "shoddy" surfaced. Industrialization had progressed enormously in the past thirty years, and production was now more rapid than in 1861. Col. Amos S. Kimball, depot quartermaster at New York, proudly reported that "100,000 uniforms, consisting of blouses and trousers, were manufactured and ready for delivery in less than 2 weeks."[5] Within a period of three and one-half months, the department fully equipped an army of 275,000 and maintained its stock of supplies. The Quartermaster Department bought more than a half-million shirts and trousers from May 1 to August 15, 1898. Contracts for shoes, which had totaled 27,950 pairs in the preceding year, rose to 782,303 pairs in just three and one-half months. In fact, the situation went so well, comparatively speaking, that it may have created a false sense of security that the debacle of World War I would sweep away.

*Chapter 12*

# Contracting Enters the Twentieth Century: 1900–1914

After the Spanish-American War, Congress reemphasized competitive bids, stating that the lowest-priced bid should be accepted. The main story in government contracting continued to be the navy build-up.

The navy spread around its shipbuilding contracts for reasons of industrial capacity, politics, and geography. The wider the naval construction funds spread, the more popular the expansion of the fleet became. In 1892, for example, the Iowa Iron Works won the contract for the torpedo boat *Ericsson*, named after the inventor of the *Monitor*. The secretary of the navy characterized this award as the beginning of the contribution by the midwestern states to the "new" navy. Congressmen from these states had traditionally opposed naval construction because it favored firms on the coasts. Boats for service on the West Coast had to be built there, despite higher costs. One company exemplified the build-up, the Bath Iron Works (BIW).

On November 28, 1884, the Hyde family had organized BIW in Bath, Maine.[1] In 1890, in its first order from the U.S. Navy, the company bid successfully on two gunboats, the *Machias* and the *Castine*, at $318,500 each. Both were hybrids: steam vessels square-rigged on the foremast with fore-and-aft sails on the main. Sails still were a security blanket for the navy since old seamen did not entirely trust steam engines. Contracts for two more gunboats, the *Newport* and the *Vicksburg*, came to BIW on November 6, 1895, still requiring the supplementary sail arrangement. It was well into the 1900s before the victory of steam over sail became complete.

In the 1890s, the world's navies had approximately 1,215 torpedo boats either completed or under construction.[2] The U.S. Navy also favored this new type of vessel and had built some. In the late nineties, BIW got a contract to build two. Because the navy wanted the boats to equal any being built by other navies, it imposed a penalty of $10,000 per knot for speed deficiency. Several years went into the design and construction of these

pioneering boats, which cost $235,000 each. The *Dahlgren* was launched on December 21, 1899, the *Craven* on February 22, 1900. No forfeits were necessary, since the boats exceeded their contract speed by a good margin.

In February 1901, the navy awarded contracts for five battleships. One contract went to BIW to build the *Georgia*. Two went to the Fore River Shipbuilding Company, at Quincy, Massachusetts; and one each went to Moran Brothers at Seattle, Washington, and Newport News Shipbuilding and Dry Dock Company in Virginia. The four sister ships of the *Georgia* were the *Virginia*, the *Rhode Island*, the *New Jersey*, and the *Nebraska*.[3]

Because of all the problems that Roach had experienced building the first battleship, in 1902 Congress authorized the construction of one battleship in a navy yard; later, government yards received more orders for large ships. By mixing private and government yards, Congress intended to lower costs and speed up shipbuilding through competition. In many of these multi-ship arrangements, the navy used its lead-and-follow system, which it had been using since 1794. In essence, the lead yard designed and built the first ship; the follow yards then used the design and experience of the lead yard to construct the "follow ships." This arrangement avoided much duplication, particularly in producing the thousands of drawings required to design a modern ship. On the other hand, since no two yards had precisely the same layout or the same equipment, the follow yard could not blindly accept the design drawings and procedures of the lead yard.

Next, BIW received orders for three more torpedo boats: *Bagley*, *Barney*, and *Biddle*, all slightly larger than the *Dahlgren* and *Craven* but of the same general design. The torpedo boat, although recently introduced, was already on the way out, superseded by the torpedo boat destroyer, designed to counter the torpedo boat yet carry its basic weapon, the Whitehead torpedo. The *Bagley*, *Barney*, and *Biddle* were the last torpedo boats the navy authorized until the PT mosquito boats of World War II.

In 1905, BIW received a contract from the navy to build the scout cruiser *Chester* for $1,688,000. The contract for the *Chester's* two sister ships, the *Salem* and *Birmingham*, went to the Fore River Shipbuilding Company. The *Birmingham* became the first ship from which an airplane would fly.

The *Chester* inaugurated a new era in the propulsion of American naval vessels. She was the first ship equipped with reaction-type steam turbines.

The president of BIW exulted: "The turbine is the engine of the future!" Except for the torpedo boats, the *Chester* was the fastest ship in the navy.[4]

By then, Bath had become known as the leading specialist in destroyers, the progeny of the torpedo boats. When the Bath Iron Works received an order to build two destroyers late in 1912, the *Army & Navy Register* commented: "This is a little surprising since the Bath bid was the highest; but the award is based on the fact that the Bath Iron Works has gained a reputation as the builder of destroyers."[5]

Despite all the developments in protecting and propelling these new craft, the efforts to adopt better communications in the form of radio was moving incredibly slowly, as Susan Douglas has recounted.[6]

Although its Bureau of Equipment endorsed the project, the navy refused to buy radios from their inventor, Guglielmo Marconi, rejecting his terms as too expensive and restrictive. The dispute reflected misunderstandings on both sides about the needs of, and constraints upon, the other party.

Marconi demanded royalties. Under his terms, the navy would buy not less than twenty sets for $10,000 and agree to pay a $10,000 annual royalty. The royalty would be reduced if the navy bought more sets. The Bureau of Equipment did not have enough money to pay Marconi's price, and laws arising from the 1820 reaction to the Johnson Brothers fiasco prevented the department from obligating funds beyond the current fiscal year.

The navy sought radios from other sources but obstructed its own efforts by putting more risks and burdens on the fledgling radio companies. The equipment had to be guaranteed to signal over a certain distance under all conditions, and failure to give such a guarantee meant elimination from consideration. The winning wireless company then had to "bond" its apparatus. It paid a security deposit that would be forfeited if the apparatus failed. Lee De Forest, who won a contract to erect four high-powered stations in the Caribbean, had to guarantee that the stations could maintain communication "at all times and under all atmospheric conditions" over a distance of one thousand miles. He had to put up a bond of over $16,000 and complete all four stations within six months. These were very stringent requirements to impose on a small company building radio stations far away from its base of operations and sources of supply.[7]

Furthermore, the companies despised the navy's unabashed patent stealing: knowingly buying, and even urging the manufacture of, pirated goods. If an inventor would not reduce his prices, the navy got a competitor to copy the invention and supply it cheaper. Radio pioneer Reginald Fessenden, a colleague of Thomas Edison, showed the navy his new receiver, the "electrolytic detector," in 1904. Fessenden's assistant wrote that naval officials were "highly pleased with the results, we having done very much better than any other system tested by the Navy." Indeed, by 1905, the electrolytic detector had become the navy's standard receiver. But the navy considered Fessenden's prices too high. The secretary of the navy told Fessenden that his prices allowed the navy to be "relieved of any moral obligation" to honor Fessenden's patents, so it had De Forest and Telefunken supply copies of the receivers. This outraged Fessenden. He won an infringement suit against De Forest, but the secretary of the navy said this was not "conclusive." Fessenden won three more consecutive decisions, and he filed an injunction and contempt of court citation against both De Forest and Telefunken before the navy stopped buying pirated electrolytic detectors from Fessenden's competitors. For over two years, he complained to the bureau and even demanded the secretary's impeachment.

By 1906, Fessenden refused to deal any further with the government. "If we do not communicate any more of our inventions to the government, the government cannot steal them."[8] (Fessenden, fortunately, changed his mind and, in 1912, joined the Submarine Signal Company. He later perfected the devices that were the forerunners of sonar.) Fessenden's threats against the navy were empty; at that time, the government could not be sued for using patents without permission. In fact, the navy's policy was to acquire equipment "independently of patents."[9] In 1910, partly as a result of Fessenden's lobbying, Congress finally authorized the owners of patents used by the government without permission to sue in the Court of Claims.

The most glaring example of the distance between the vision of the shore command and the hidebound views of the fleet occurred in 1907. The "Great White Fleet," composed of sixteen of the new battleships and deriving its name from the fleet's dazzling white hulls, prepared to embark on its famous cruise around the world. The navy had ordered twenty-six sets of De Forest's radiotelephones. These transmitted and received speech, not dots and dashes, so the commanding officers could talk directly to each other without going through wireless operators. But Admiral Robley ("Fighting

Bob") Evans, the commander-in-chief of the Great White Fleet, like General Ripley during the Civil War, wanted nothing to do with these devices. Shortly after the fleet set sail, he ordered the crews to dismantle and stow the apparatus. Just as with sails, old habits die hard.[10]

While all this was going on, one of the modern defense giants had its beginning. General Dynamics started as a little firm called the Electric Boat Company which, in 1900, sold the U.S. Navy its first workable submarine: an ungainly, 53-foot vessel designed by an Irish schoolteacher and tinkerer, John Holland.

Robert Fulton had developed a submarine, the *Nautilus*, and underwater torpedoes that he tried unsuccessfully to sell to France and Britain. Shortly after returning to America in the autumn of 1806, he tried to sell torpedoes to the U.S. Government. After four years, he persuaded President James Madison and Congress to appropriate $5,000 to test his torpedoes. However, the trials held later that year proved inconclusive, and Fulton returned to building commercial steamboats, with which he had been notably more successful. Fulton and others were unable to solve some basic problems in submarine design. Where they failed, John Holland succeeded.

Holland had emigrated to New Jersey and spent decades developing and promoting his underwater warship. He designed his vessels with two different motors for two different operations: an internal combustion engine for surface cruising, and electrical motors powered by storage batteries for undersea operations. Holland's design and operating principles became the standard for submarines that would be used in two world wars.[11]

The father of one of Holland's pupils in Paterson, New Jersey, saw Holland's submarine designs and suggested that he send them to his friend, George M. Robeson, the secretary of the navy. Holland mailed detailed plans for his submarine to Robeson in February 1875, thus beginning General Dynamics' relationship with the navy.[12] Initially, his ideas met with stiff resistance; the senior admirals wanted no part of the comically awkward vessels. Holland surmised that the admirals did not like submarines because they had no deck to strut on. There was a more fundamental reason, however. In a service bound by centuries of honor, the submarine was a renegade. Its modus operandi was the sneak attack, the sudden submerged fatal blow at an opponent who could not even see its assassin. It just seemed so un-American!

If the navy was not interested, the Fenians were. This group of anti-British fanatics wanted to use Holland's boats to sink British shipping. They gathered one day at Coney Island to watch Holland demonstrate his model. When the miniature submarine performed successfully, they agreed to fund construction of the full-size submarine. Although the Fenians never realized their dream, their $60,000 payment buoyed Holland until the navy changed its mind.

By 1887, the navy's attitude toward submarines began to change. The chief of ordnance wanted to find the best design for an experimental submarine, and he urged William C. Whitney, President Grover Cleveland's secretary of the navy, to authorize a competition. Congress had not appropriated any funds to build such a sub, but a design competition would be an important first step.

In 1888, thirteen years after Holland had sent his original drawings to Washington, the navy sought bids for the design of a steel submarine. The bidders had to design a sub that could reach fifteen knots on the surface and eight knots underwater; remain submerged for two hours; maneuver in a circle no more than four times its own length; withstand water pressure to depths of 150 feet; and fire torpedoes armed with 100-pound explosive charges. Holland complained about all these specifications, asking whether the Navy would next require that the boat climb a tree. Despite his complaints, Holland's design was the one selected by the navy for its first submarine.[13]

Unfortunately, the private shipyard that had agreed to build Holland's submarine and to guarantee its performance suddenly backed out. The navy decided to hold a second competition the following year, with precisely the same performance requirements. Again, Holland's design won, but President Cleveland's first term in office expired before Holland received his design contract. The new administration of President Benjamin Harrison had different views on navy spending. Secretary Tracy, a disciple of Mahan, diverted all available funds to build surface ships; besides, Tracy was just starting his disputes with the armor producers.[14]

In March 1893, Congress appropriated $200,000 to reopen the submarine design competition when the Cleveland administration returned to the White House. On April 1, the navy announced performance requirements for the sub, which were the same as those five years earlier.

Holland wanted to enter this third design competition, but he needed money. He explained his situation to Elihu Frost, a New York lawyer, one afternoon over lunch in a New York restaurant. "I know I can win the competition and build the boat for the government," Holland predicted. "But I need to raise some money to pay for fees and other expenses in preparing the drawings." Frost asked how much Holland needed. "I need exactly $347.19," declared the inventor. The precision intrigued Frost. "What do you need the nineteen cents for?" "To buy a certain kind of ruler I need for drawing my plans," explained Holland. "If you have figured it out as closely as all that," replied Frost, "I'll take a chance and lend you the money."[15]

In April 1898, Theodore Roosevelt, then assistant secretary of the navy, recommended that the navy buy Holland's boat. "Evidently she has great possibilities in her for harbor defense," Roosevelt wrote to his boss, Navy Secretary John D. Long. "Sometimes she doesn't work perfectly, but often she does, and I don't think in the present emergency we can afford to let her slip." The navy, however, postponed a decision to buy Holland's submarine and established a board to evaluate its performance during trials in New York Harbor.[16]

In March 1895, nearly seven years after it announced the first design competition, the navy awarded a $200,000 contract to the Holland Torpedo Boat Company to build a submarine. A jubilant Frost signed the contract and returned it to the navy the day he received it.[17]

When the Spanish-American War began within a month, Holland's company held a press conference in its New York City office and boldly announced:

> If the government will transport the boat from the Erie Basin [in Brooklyn], where it now is, to some point near the entrance to the [Cuban] harbor of Santiago, and a crew can be secured to man the boat, Mr. Holland will undertake the job of sinking the Spanish fleet, if it be still in Santiago Harbor, commanding the boat in person. If his offer be accepted, and he is successful in his undertaking, he win expect the government to buy his boat.[18]

A newspaper cartoonist depicted Holland in his submarine steaming toward the Spanish fleet with the caption "What Me Worry?" Not surprisingly, the navy rejected the offer.

In 1899, a new company, the Electric Boat Company, acquired the assets of the Holland Torpedo Boat Company and soon emerged as the dominant force in American submarines. To break the logjam with the navy, the company engineered a public relations stunt almost as bold as that of the Pony Express forty years before. The company took the sub on a thirty-nine-day journey from its base in New York, down the east coast to the Navy Department in Washington, D.C. The company fashioned an elaborate parade by lashing the submarine on pontoons and floating it past admiring crowds all along the route.

The stunt worked. In March 1900, the *Holland VI*, as it was called, underwent official trials and unofficial exhibitions on the Potomac River. The company's printed programs, handed out to the enthusiastic crowds, proclaimed the vessel "The Monster War Fish," "Uncle Sam's Devil of the Deep," and "The Naval 'Hell Diver.' " The next month, the navy bought the *Holland VI* for $150,000. It had four torpedo tubes and carried a crew of seven. Within five months, the navy ordered six similar subs to be delivered within the next three years.[19] Five years later, on August 26, 1905, President Theodore Roosevelt slipped away from his home at Sagamore Hill and spent three hours aboard one of Electric Boat's earliest subs. The President's underwater exploits made front-page news.

Two less spectacular, but no less important developments, occurred in 1900. The army bought and began using electric-powered motor cars for noncombatant use, and the Postal Service began using self-propelled road vehicles to collect mail.

## Contracting Becomes Centralized

The Dockery Commission, named after its chairman, Representative Dockery of Missouri, transformed government contracting. The commission, composed of three members each from the Senate and House, was established on March 3, 1893, to scrutinize government purchasing. It decried a lack of central control over the procurement process as the prime evil. For example, of 1,500 varieties of paper manufactured in the United States, the government bought 1,315. Congress, acting on the commission's recommendation, amended Revised Statute 3709 by requiring one bid-opening day for all civilian departments and agencies in Washington. A newly created three-member Board of Awards, composed of assistant secretaries of the Treasury and Interior Department, as well as an assistant

postmaster general, would examine and compare the submitted proposals and then recommend that the respective agency accept or reject them. The War and Navy Departments were not required to use this new procedure, but did use the board for their personnel in Washington. Although the board operated during the Spanish-American War, it did not play an important role.

The Board of Awards system did not work well because the board advised but could not compel. So, in 1905, President Theodore Roosevelt, appointed another commission—the Keep Commission, named after its chairman, an assistant secretary of the treasury—to study the entire purchasing problem. Condemning the woeful lack of standardization of both products and purchasing methods, the commission recommended the creation of a General Supply Committee to impose standardization and central control. While Congress deliberated, the Board of Awards acted in June 1908 and appointed a committee to create a General Schedule of Supplies, a catalogue from which other agencies could order. This committee, a predecessor of the modern General Services Administration, was composed of twenty-three members from the various executive departments and agencies. In late 1908, the committee separated supplies into seventeen different categories, formulated a general schedule, and—like the Keep Commission—suggested the creation of a General Supply Committee consisting of fourteen representatives of the various departments and agencies.

The new committee, still created only administratively, met on January 22, 1909. It issued a General Schedule, solicited bids, and recommended, with the approval of the Board of Awards, that the secretaries honor the contracts executed by it for fiscal year 1910. President William Howard Taft, in Executive Order 1071 issued May 13, 1909, formally created the General Supply Committee to systematize the purchasing of supplies needed by two or more departments. Faced with this fait accompli, Congress statutorily validated it in 1910 by requiring that the treasury secretary advertise and contract for all fuel, ice, stationery, and other miscellaneous supplies for the executive departments, including the War and Navy Departments, unless public exigencies required immediate delivery. Thus, the Treasury Department, almost ninety years after the extinction of the Office of the Purveyor of Public Supplies, reentered the general procurement process. In the interim, its procurement involvement had consisted of promulgating procurement regulations (less than two pages) for its internal bureaus.

Executive Order 1071 was actually the third executive order, as it is known today, to deal with government contracts. The first, Executive Order 325A, issued on May 18, 1905, prohibited the use of convict labor on government contracts. This late date does not reflect a lack of Presidential involvement. It demonstrates the late development of a formally stylized executive order. Earlier presidential directives, such as Lincoln's to Ripley on which weapons to buy, were first oral, then formalized over the signature of a cabinet officer—or they resulted from a presidential scrawl of "approved" on a subordinate's recommendation. As we shall see, during the presidency of Franklin Roosevelt, the executive order became the chief instrument of presidential involvement in government contracts. However, Executive Order 325A was not the first time such formalized involvement was tried.

In 1890, labor leaders asked President Harrison to require government contractors to observe an eight-hour day. The President sought the attorney general's advice. That officer opined that such an executive order would be invalid because it would conflict with the statute requiring award to the lowest responsible bidder. Only Congress, therefore, could grant the requested relief. Sixteen years later, Teddy Roosevelt disagreed. Executive Order 504, issued on September 16, 1906, prohibited work on construction contracts in excess of eight hours per day. Congress later adopted that rule by statute, and it remained in place until the nation, preparing for World War II, scrapped it during the mobilization.

The General Supply Committee replaced the Board of Awards. The new committee would aid the Treasury secretary by drafting the annual schedule of supplies and specifications and by opening and considering the bids. The committee had to prepare and submit to the secretary by February 1 of each year a schedule and specifications of supplies covered by general supply contracts from which department heads could buy for their personnel outside of Washington. The committee first met in the summer of 1910, and admirably standardized procedures and purchases over the next several years. It promulgated standard forms that the bidder could sign and submit, a standard contract, and a standard bond. This began the standardization of government-wide contract documents and restricted the discretion of individual contracting officers.

To accompany these standard forms, the Treasury Department promulgated Department Circular No. 3, "Regulations Relating to the Making of Contracts for Miscellaneous Supplies," on January 4, 1913. To enforce more

uniformity, the Treasury Department issued Department Circular No. 46 on May 14, 1915, "Regulations Relating to the Enforcement of Contracts for Miscellaneous Supplies," which specified procedures for dealing with defaulted or delinquent contractors. Most treasury circulars during this period dispensed specific information regarding the General Supply Schedule. Others dealt with topics such as the need for prompt payments within thirty days of receipt of the supplies to avoid serious embarrassment to business concerns or the need for inspection before acceptance and payment. Only 1,200 mimeographed copies of the circulars were printed.

Problems still remained. The committee and the treasury secretary recommended more exclusive control, but the First World War engulfed the system before these recommendations could be adopted.

## The Birth of Aviation

Ironically, while the navy was building its battleships, the army was funding the development of the instrument that made them obsolete: the airplane.

During the Spanish-American War, the army became interested in developing a flying machine and, in December 1898, contracted with Dr. Samuel Langley. Langley, the secretary of the Smithsonian Institution and a former professor of physics and astronomy at the University of Pittsburgh, had studied aerodynamics for years and had read papers on the subject to scientific conclaves. However, scholarship did not guarantee success. Langley failed to deliver a plane under his $50,000 contract. He tried twice to launch an airplane from a barge in the Potomac River. During the first attempt in October 1903, the plane sank in the river. At the second, on December 8, 1903, the plane was destroyed during the launching attempt itself. This second failure convinced the army not to spend any more money on Langley's contract to produce an airplane.[20]

Ironically, Wilbur and Orville Wright's success came just nine days later, when they made four successful flights off Kill Devil Hill, near Kitty Hawk, North Carolina. The Washington Post headline of December 19, 1903, "Soared Like an Eagle," announced the beginning of manned flight in a heavier-than-air machine.[21]

Early in 1905, the Wright brothers offered the machine to the army.[22] To their chagrin, the army, which had only bought its first motor cars three

years before and was still smarting from the Langley fiasco, was not interested. The offer was rejected without an examination.

While corresponding with the British War Office, which initially showed some interest, the Wrights continued to try to persuade the army to buy a flying machine. In October 1905, confident in the performance of the modified 1905 machine, the Wrights again approached the War Department. They stressed that they offered a completed machine. They even asked what the army would like the airplane to do and how it would test that performance, so they could establish a price and time for delivery. They also asked whether the government, if it bought a machine, would like an exclusive contract or whether the brothers could sell to other governments or to commercial buyers for "public exhibitions."

Again, the army spurned the offer. The War Department Board of Ordnance and Fortification explained in its minutes that it "does not care to formulate any requirements for the performance of a flying-machine or take any further action on the subject until the machine is produced which by actual operation is shown to produce horizontal flight and to carry an operator." The board, with historic shortsightedness, announced, ". . . the device must have been brought to the stage of practical operation without expense to the United States."[23]

Just as Lincoln had done in the Civil War, Teddy Roosevelt had to get the army interested.[24] In 1907, a note from Roosevelt to the army sparked a formal request to the Wright brothers to make a proposal. In May 1907, the Wrights formally offered to sell a flying machine to the government for $100,000. The Ordnance Board promptly responded that it did not have $100,000. Wilbur Wright met with the chief signal officer of the army and the Ordnance Board in the late fall of 1907, and the army, obviously based on these briefings, began preparing a specification in anticipation of an invitation for bids, which it issued on December 23, 1907. Among other things, it required bidders to post a certified check equal to 10 percent of the bid to ensure award.

Although the army wanted an operating airplane and not a contract to design an aircraft, unbelievably forty-one bidders claimed they could deliver a flying machine.[25] Thirty-eight of the bidders had little to lose, since they did not post the required deposit. Of the three bidders who had submitted deposits, the Wrights were the highest bidders at $25,000. The wisdom of

advertising for competitive bids was confirmed since, when they thought they were going to be a sole source, they had quoted $100,000 as their price. The low bidder, J. F. Scott, proposed to build the craft and deliver it for $1,000, and the second low bidder, A. M. Herring, came in close to the Wrights with a $20,000 bid. The bidding pattern perplexed the army; it had intended to award the Wright brothers the contract.

The chief signal officer and Secretary of War William Howard Taft decided to accept all three bids, but the army had only $35,000 to buy airplanes.[26] Secretary Taft suggested that President Theodore Roosevelt had some uncommitted funds, which he could use at his discretion. The chief signal officer personally called upon President Roosevelt, who said that the whole idea sounded "bully" to him and agreed to commit sufficient funds to award all three contracts. It turned out to be unnecessary. The low bidder, Scott, withdrew his bid. Herring had intended to subcontract with the Wright brothers, and since they were not interested, he too withdrew. The army accepted the Wright brothers' bid on February 8, 1908—only nine days after the initial bids.

The contract was only three pages long and stated essentially three things: the army wanted to buy an airplane; it must fly; and the army would pay an extra $2,500 for every mile it flew over forty miles per hour up to a maximum bonus of $10,000.

That was not the only airship the War Department bought in 1908. The success of Thomas Baldwin's dirigibles led to a contract with the War Department to build an airship that would reach twenty miles per hour plus a two-hour endurance for the engine. At tests that summer at Fort Myer, in Arlington County across the Potomac River from Washington, D.C., Baldwin was the pilot and Glenn Curtiss the engineer. This dirigible became the U.S. Army Signal Corps Dirigible No. 1.[27]

The Wrights delivered a plane to the army on August 28, 1908. The army tested the plane during September 1908 from the Fort Myer parade ground, the smallest field from which the Wrights had ever flown. Over a two-week period, beginning on September 3, the Wright airplane flew several times, on at least three occasions for periods of at least one hour. The press covered the flights extensively, and several thousand spectators watched the tests. Donald Douglas, later founder of Douglas Aircraft, was among them.

During the test on September 17, 1908, tragedy struck. After only a few minutes in the air, the plane developed mechanical problems, went into a 75-foot dive and crashed, killing Lt. Thomas Selfridge, the army observer aboard, and sending Orville Wright to the hospital for six weeks. This crash suspended the 1908 test program until the next year.

The Wright brothers delivered a modified and updated airplane to Fort Myer in June 1909, and testing began anew. On July 30, Orville Wright satisfied the endurance requirement of one hour sustained flight while carrying a passenger. He passed the speed test the same day over a course from Fort Myer south and west to the present location of the Masonic Memorial in Alexandria, at 42.58 miles per hour. Since they had surpassed the guaranteed speed by approximately 2.5 miles per hour, in accordance with the contract's incentive provisions, they had earned an additional 20 percent, or $5,000 above the basic contract price of $25,000. The army formally accepted the Wright airplane as satisfying the contract on August 2, 1909.

Not far behind was Glenn Curtiss, another aircraft pioneer, who concentrated his sales efforts on the navy. In the summer of 1910, Curtiss tried to persuade the navy that the airplane could be a useful weapon. Although the battleship was supreme, the navy wondered if the airplane could develop into a practical vehicle for use with the fleet. Although navy and army officers visited the Curtiss camp, no purchase order followed.[28]

In June 1910, Curtiss first staged a mock bombing attack against a dummy warship. The demonstration did not convince Secretary of the Navy George von Lengerke Meyer to order the first navy aircraft. He demanded proof that an aircraft could be launched and retrieved from a ship-of-the-line without impairing its combat efficiency. Having produced a successful hydroaeroplane, Curtiss planned to prove its worth by demonstrating how the navy could use it. On November 14, 1910, Eugene Ely flew a Curtiss Golden Flyer from a wooden deck mounted on the USS *Birmingham* to shore at Hampton Roads, Virginia—the site, forty-eight years before, of the *Monitor-Merrimac* duel. This marked the first time that an aircraft had flown from a ship and, ironically, presaged the end of the battleships that the ironclads had spawned.[29]

The cycle was completed on January 18, 1911. Ely, who would die in a crash later that year, landed the Golden Flyer on a platform mounted on the afterdeck of the USS *Pennsylvania* in San Francisco Harbor, and took off

again. The airplane was halted by hooks mounted on the aircraft that engaged wires stretched across the platform on the *Pennsylvania*. The arresting wires were kept on the deck with sandbags. The seeds for modern carrier aviation were sown with these pioneering flights.[30] On February 17, 1911, Curtiss conducted a test in San Diego Harbor, rising from the water, alighting on the water, and arriving alongside the *Pennsylvania*. The airplane and pilot were lifted aboard by a standard boat crane and placed on deck. Curtiss was invited to tea and then he flew off again.[31]

The navy could not ignore these demonstrations. Curtiss received an order for an amphibious seaplane, eventually designated the A.1 (U.S. Navy airplane No. 1). A clause in the early contracts required the builder of each plane to train a pilot and a mechanic for it. So, on December 23, 1910, Lieutenant T. G. Ellyson was ordered to report to the Curtiss camp at San Diego; six months later, on June 27, 1911, Lieutenant John Towers reported to the Curtiss flying school at Hammondsport. Ellyson became naval aviator No. 1. Soon, the navy ordered three more planes. Two were land planes, one by the Wrights and one by Curtiss, while the third, also by Curtiss, was his new "Triad" amphibian.[32]

While the army's first airplane had come from the Wrights, the second ship ordered for the Signal Corps was a version of the Curtiss Golden Flyer. In 1911, Curtiss delivered to the army three more biplanes, which were designed and intended for the army encamped at the Texas-Mexican border.

Curtiss and the Wrights had a competitor in 1909. A young automobile mechanic and salesman, Glenn L. Martin, founded an airplane company that would soon be a major seller of military planes and would grow into Martin Marietta.

In 1911, Lieutenant Riley E. Scott began experimenting with airplanes in an offensive role. With Lieutenant T. Dewitt Milling, he practiced aerial bombing at College Park, Maryland, and invented the world's first bomb sight.[33] Meanwhile, the army's Isaac Newton Lewis, an 1884 graduate of West Point, produced a machine gun that weighed only 25 pounds and fired 750 rounds a minutes. In June 1912, he persuaded two army aviators at College Park to mount a gun on a Wright aircraft and make straight passes at a cheesecloth target. They reduced it to shreds.[34]

## The Navy Versus the Steel Industry

Critics were never comfortable with the price of privately produced armor, especially since they distrusted the cozy and cooperative nature of the supposedly competitive steel barons arrayed against the government. They speculated that the government could produce armor for only $250 per ton. Yet, when the navy opened bids for armor for the battleship Arizona in late August 1913, all the steel companies bid $454. Outraged, secretary of the navy Josephus Daniels felt this proved collusion. He publicly rejected the bids in order to secure lower prices. Daniels called Midvale, Carnegie, and Bethlehem representatives to Washington and excoriated them despite their claims of innocence and coincidence, not collusion. Daniels told them to think about it overnight and return the next day without "another coincidence." The next days' session produced the same results.[35]

Daniels readvertised for Arizona armor. At the bid opening on October 14, all three firms had reduced their bids. Daniels chose to award the whole contract to Midvale, only to learn that firm could not complete the job on time. Daniels got lower prices, but once again the big companies had split the main armor order and had realized a handsome profit. Daniels grumbled to reporters, "I consider the fight only just begun." Actually, the navy saved $600,000, since smaller firms like Carbon Steel undercut the "Big Three" on items such as armor bolts.[36]

The secretary adamantly opposed paying more for armor plate, especially since Congress had never abandoned the idea of a government armor plant. The steelmen, either amazingly arrogant or oblivious to Congress' probable response to their throwing down the gauntlet, then threatened to raise the price of armor $200 per ton if Congress voted for an armor plant. Public opinion erupted in favor of the government facility and the Manufacturers Record declared on February 7, 1914, that the steelmen's threat was "one of the most unfortunate statements ever issued in this country by any great business organization dealing with the Government." Newspaper editors across the country agreed, and urged the government to build a plant to prove that robber barons could not threaten and exploit the United States. Senator Tillman promised to immediately introduce a bill authorizing government seizure of all munitions plants in the event of war or even the threat of war.[37]

Critics accused the armor moguls of overcharging the government. They resurrected the armor plate scandal of 1893, reminding President Wilson that Carnegie Steel Company had furnished bad armor before. On April 9, Wilson ordered Secretary Daniels to investigate the new charges.[38]

Regardless of whether the prices were high or low, the persistently identical bids on armor contracts enraged Daniels. He could not understand "how identical bids could be arrived at if there is no combination, conspiracy, or collusion existing between them whereby prices are fixed." After examining the problem, however, he realized the reason:

> The Navy Department, in considering bids for armor and for gun steel, has, wherever the bids of the several companies differed, made a division of award to the several bidders on the condition that the material should be furnished at the price named by the lowest bidder. Both Congress and the Navy Department have, therefore, in a manner fixed the prices of these articles and this fact may explain the identity of bids submitted by the several firms engaged in the business.[39]

Considering the navy's policy, the armor producers bid perfectly rationally. When a firm underbids its competitors, it wants to obtain the entire order. Instead of the lowest bidder receiving the entire contract, however, the navy divided the lower-priced order equally among all bidders. So, the companies saw no reason to underbid each other. The armor makers knew that if one of them bid lower, they would all simply decrease their profits without getting any additional business. So, they all simply bid a mutually acceptable price. Actually, this was not unique to the steel industry. In 1890, the army inspector general complained that the sealed bidding process often forced the government to pay the higher prices fixed by trusts because anyone offering a lower price would be penalized by the trusts. He asked Congress to allow the army to depart from advertisement if they could find cheaper ways of procurement.

However rational the steelmen's behavior, Secretary Daniels resolved to stop it. He could award the entire order to the lowest bidder on a "winner take all" basis. However, if one firm consistently won, its rivals might abandon armor production entirely, leaving the navy dependent upon a sole source. If the nation then went to war, it could not get all the armor it needed. The rival firms would no longer have the resources to make armor.

Daniels believed that only one alternative existed. He told Wilson:

> If . . . it shall appear on further investigation that there is a combination, conspiracy, or collusion amongst the steel manufacturers to such an extent that the government can not secure steel products at a reasonable price and on bids which are actually competitive, I am inclined to believe that the only method by which the Government can compel actual competition will be by establishing its own facilities for the manufacture of armor plate, gun forgings, and other steel products.[40]

The Daniels proposal received tremendous support. Hundreds of cities throughout the country submitted proposals, each arguing why it, and only it, had the ideal site for the government plant. Even one of Schwab's oldest and closest friends, Joseph G. Butler, Jr., president of the Chamber of Commerce of Youngstown, Ohio, joined the chorus and pleaded to build the plant in his city. One newspaper captured the mood, "Homer dead had not one-tenth as many cities claiming him as a native son and honored citizen as there are asking that the Government locate the armor plate plant [in the site that they suggest] . . . Every place, from Dan to Beersheba, thinks it is peculiarly situated. . . ."[41]

On May 28, 1913, Senator Tillman introduced a resolution, later adopted, directing the secretary of the navy to determine how much and how long it would take to build an armor plant, and how much a ton of armor produced by such a plant would cost. One hundred years after Callendar Irvine tried to bring all weapon production "in house," the whole issue reignited.

The Bureau of Ordnance concluded that a plant with a 10,000-ton capacity would cost $8,446,000, and could produce a ton of armor for $314. Since it then paid $454 per ton, the government could save $140 per ton—on 10,000 tons, $1,400,000 annually. Subtracting interest charges on the money used to build the plant produced a net saving of $1,061,360.[42]

Meanwhile, Daniels battled the armor-magnates who, in 1914, submitted identical bids of $454 a ton. He rejected the bids, and called for new ones. Midvale Steel then bid the lowest, $400 a ton, and won the entire order. By this "winner take all" approach, Daniels had thwarted collusive bidding and restored price competition. He could have continued this practice, but he did not—since he pinned his hopes on a government plant.[43]

In February 1916, at the Tillman committee hearings on the armor plant bill, Bethlehem and Midvale witnesses tried to stop the bill. They offered to show their cost and profit data in confidence to Daniels, and even to guarantee a

lower price for the next five years. Tillman and his committee would not be deterred from creating the government's own armor plant. They castigated the "greedy and hoggish" armor producers and rejected their offers as too little, too late.[44] The armor plate scandals merely added to the distrust created by the Indian Trust Fund scandal to deepen the public's and Congress' impression that contractors could not be trusted.

In mid-March, the Senate passed the Armor Plant bill by a fifty-eight to twenty-three vote. By then, Charles Schwab had left Carnegie to become president of Bethlehem Steel. He began a massive public relations blitz to beat the armor bill in the House. On March 25, 1916, Bethlehem sent to each member of Congress the first of twelve statements arguing against the government armor plant. Schwab did not focus on Congress alone. Through a series of eye-catching ads in 3,257 daffy and weekly newspapers throughout the country, as well as millions of flyers, he tried to inflame the public against the bill:

> SUPPOSE THIS WAS YOUR BUSINESS! If the Government had asked you to invest your money in a plant to supply Government needs; and after the plant was built, and had become useful for no other purpose, the Government built a plant of its own, making your plant useless and your investment valueless—would that seem fair?
>
> This is precisely what Congress is planning for the Government to do with reference to our investment of $7,000,000 in an armor plant.[45]

To avoid a government armor plant, Bethlehem promised to "manufacture armor plate for the Government of the United States at the actual cost of operation plus such charges for overhead expenses, interest, and depreciation as the Federal Trade Commission may fix. We will do this for such period as the Government may designate."[46]

On April 6, the House Committee, by a vote of fifteen to six, recommended adoption of the armor plant bill, but Schwab's campaign stalled it in the full House. Tillman was apoplectic: "Schwab with his hundred millions is bombarding everybody in the House and Senate too, day by day, with special pleadings and lying proclamations against its passage."[47] Schwab merely delayed the inevitable. On June 2, the House passed the armor plant bill by a wide margin. Congress appropriated $11 million to build the government's armor plant on a large tract of land in South Charleston, West Virginia. World War I forced a halt in construction in 1917, when the costs

of labor, machinery, and raw materials had skyrocketed. The $11 million was not enough. Construction resumed when the war ended but the final cost exceeded the original estimate by several million dollars. In 1921, after producing the first armor plates at a cost nearly double the price per ton charged by private producers, the plant closed quietly but ignominiously.[48] Once again, Callendar Irvine's vision of the government as producer failed.

*Chapter 13*

# The Mexican Border Campaign

Several times in early 1916, Pancho Villa crossed the border to raid in New Mexico.[1] Only hours before Newton Baker became secretary of war on March 9, 1916, Villa and fifteen hundred of his men attacked the town of Columbus, New Mexico, the home of the 13th U.S. Calvary regiment, fifty miles west of El Paso. They killed nine American civilians and eight soldiers. On March 10, Baker directed Brigadier General John J. Pershing to lead a force of twelve thousand soldiers to protect American lives and property and to eliminate Villa as a threat.

Just as the Mexican War seventy years earlier had served as a training ground for contracts and logistics for the Civil War, the Mexican border campaign served the same function for the rapidly approaching World War I. But the campaign was too short, involved too few troops, and the warfare too mobile and light to really invigorate and jump-start a wartime economy.

The two most important developments to come out of this expedition were the use of those two stalwarts of the twentieth century: the automobile and the airplane. Actually, the army had bought its first gasoline automobiles—Dodges—late in 1915. True to its traditions and mania for uniformity, the army repainted them olive and sent them to the troubled border area between Mexico and the United States. After the 1916 Columbus raid, the army demanded cars and trucks for communication along with command vehicles for transportation to supplement horses.

Within five days, the Quartermaster Corps bought trucks, hired qualified drivers (still scarce) at the factories, and dispatched trucks and operators by special trains to Columbus. By June 30, 1916, the corps had purchased 588 motor trucks, 57 motor tank trucks, 10 motor machine-shop trucks, 6 motor wrecking trucks, 75 automobiles, 61 motorcycles, and 8 tractors for repairing roads, plus miscellaneous road machinery, repair parts, and equipment—all for use on the Mexican border.[2]

In April 1917, Pershing led his men and three Dodge touring cars across the southwestern desert into the border region. There were no roads; the cars proceeded over the open terrain, along with horses. *The Century Magazine* correspondent with the expedition wrote, "Over the desert stretch, and by nature of the desert dust they themselves camouflaged, three automobiles swayed and lurched and banged in low gear, belching steam from their radiators, grinding their way through the sand."[3]

By the middle of May, Pershing's forces were within a few miles of the bandits' headquarters on the big San Miguel de Rubis ranch, near the town of Chihuahua, two hundred miles south of El Paso. The bandits had so protected their headquarters, a ranch building, that several thrusts by crack cavalry units failed to capture it.

Pershing decided a surprise attack was the only quick way to rout them, so he introduced a daring new tactic. For the first time, the army used motorcars in a cavalry operation and drove them against an armed enemy exactly as horses, camels, and elephants have been used since antiquity. At dawn on May 14, fifteen heavily armed men climbed into three Dodge touring cars and carried out the first motorized charge under combat conditions in the history of the U.S. Army.

The approach to the bandit headquarters lay across open country. During the last mile, the officer-in-charge ordered the army drivers to race across the sandy ground. The three Dodges, driven in tight formation, roared toward the fortified ranch house at forty miles an hour. The Americans were within a few hundred yards before the bandit guards realized they were under attack. The stunned bandits, half-clad, ran out the doors and jumped from windows trying to escape. The Americans killed Colonel Julio Cardenas, leader of the rebels, and two of his aides, and captured or dispersed the other bandits. The Americans suffered no casualties. Pershing's young lieutenant in command of the dawn attack stated in his report, "We couldn't have done it with horses. The motorcar is the modern war horse."[4] The lieutenant was George S. Patton, Jr.

Pershing was so impressed with the ruggedness and performance of the cars that he immediately ordered 250 more Dodge cars. His entire staff used them. In less than a year, the United States entered World War I and General Pershing commanded the American Expeditionary Force in Europe. In France, one of the drivers of the Dodge was Lieutenant Edward

Rickenbacker, the famed racing car driver who became America's first hero in the air and later ran Eastern Airlines.

On July 1, 1915, shortly after it was organized, the First Aero Squadron at Fort Sill, Oklahoma, received the Jenny (a modified Curtiss JN-2s) and went to Brownsville, Texas, for border patrol duties. In March, the squadron was ordered to Columbus, New Mexico, with six JN-2s to serve with Pershing's punitive expedition. The Jenny was the first American plane to go to war.[5] The squadron flew to New Mexico under the command of Major Benjamin D. Foulois. Poor weather, the rugged terrain of northern Mexico, and Villa's knowledge of the area forced the squadron to perform scouting duties during the expedition. It flew the first reconnaissance into Mexico on March 16 and the last thirteen months later.

Unfortunately, the Jenny proved itself unequal to operations in the rugged Mexican country. In a report covering the operations from March 15 to August 15, Major Foulois wrote that pilots were "constantly exposed to personal risk and suffering due to the inadequacy of the planes. Pilots often were forced to land in the desert and hostile country. In almost every case the planes were destroyed or abandoned."[6] Although disappointing as a scout in such terrain, the lethality of the airplane as a weapon had already been proven in the skies over Europe where it had become the centerpiece of modern war.

*Chapter 14*

# Industrial Mobilization for World War I

World War I occasioned the greatest mobilization since the Civil War, with the difference that Europe looked to the U.S. for its supply of arms. Orders from the European combatants, beginning in 1914, helped prime America's industry for war. Not even these orders and the mini-mobilization for the Mexican Expedition of 1916, however, were enough to prepare American industry to mobilize for the modern implements of war. Despite its head start, the record of American production was a monumental disappointment. The supplies that reached the front were a trickle that would have grown into a flood had the war lasted longer. The disappointment was more intense because the war saw America's first planned industrial mobilization. Congress had granted President Woodrow Wilson unprecedented power and even authorized the nation's first use of an economic dictator, Bernard Baruch. Previously, people like Robert Morris, Tench Coxe, Callendar Irvine, and Montgomery Meigs had wielded great power but nothing like this. Baruch controlled everything from railroads to fuel to raw materials. Yet it was not enough. The modern implements of war could not be produced so readily.

This war saw the clash of new technology with old culture. For example, Barbara Tuchman recounts the story of the European general who, believing firepower was merely a passing fad, sent cavalry with sabres drawn to attack machine gun emplacements.[1] The carnage was appalling. Tanks, mustard gas, and airplanes dealt a ghastly blow to any remnants of the idea of warfare as chivalrous. Developing and fielding improved weapons became a life-and-death race. Industrial mobilization and regulation subsumed the American economy.

The Europeans had been fighting since 1914; the United States did not enter the fray until April 6, 1917. The American government had purchased a few weapons, but essential companies had already started expanding their production capabilities by selling to the combatants. Munitions manufacturers, such as the DuPont Company, had been especially busy, supplying many explosives to the European belligerents almost from the

outbreak of war late in the summer of 1914. By February 1915, the value of DuPont's allied contracts already exceeded $59 million. The automobile makers had not been directly involved before the United States entered the war, but through English and French branches, the Ford Motor Company supplied at least seventy-five hundred vehicles for war use. The French government bought four thousand Model-Ts for use on the Western Front. In both England and France, Fords to be used as ambulances were made with special bodies. Such foreign purchases helped pull the American economy out of a recession.

The bloodbath on the Continent compelled planning, and for the first time, the nation planned for full industrial mobilization. If the Union had prepared this well before the Civil War, that war might have been drastically shortened.

The German U-boat sinking of the liner *Lusitania* on May 7, 1915, ushered in a drive for preparedness. The Statement of a Proper Military Policy for the United States, prepared in 1915, stressed the importance of economic resources. It recommended stockpiling essential supplies to equip all recruits. To supplement the statement, an Army War College study, "Mobilization of Industries and Utilization of the Commercial and Industrial Resources of the Country for War Purposes in Emergency," made four recommendations:

1. That the president be empowered to place an order with any firm for any product usually produced or capable of being produced by such firm.

2. That the contractor be required to comply with all such orders and give them precedence over all other orders and contracts.

3. That the price be fair and include a reasonable profit.

4. That a nonpolitical board on mobilization of industries essential for military preparedness be created.[2]

The study recognized that for this war, the government could not concern itself solely with output, i.e., the number of planes, guns, and ships needed. Since production does not begin in the factory, it had to concern itself equally with input, i.e., controlling the labor, raw materials, financing, and

transportation needed to produce the flood of finished products modern war devours that was essential.

On December 10, 1915, the army chief of staff told the secretary of war that a board of the highest army officers "is unanimously and emphatically of the opinion that the Government ought not to establish a monopoly in the production of any of its war material, and ought not to manufacture its own war material to the exclusion of patronage of private manufacturers capable of aiding it." Thus the army, unlike the navy with its new armor plant, planned to get its supplies from contractors. It would operate its own factories only to establish standards, understand production costs, ensure quality, and qualify its officers as experts in the production process. Such government factories would manufacture only military material, such as small arms, artillery, and ammunition. This policy required considerable cooperation between the army and industry, but the memorandum did not even raise this issue nor suggest how to accomplish it.[3]

Critics had worried about such liaisons as early as 1908 when talk began about a new Council of Public Defense to coordinate industrial production and transportation with military needs. But government leaders, businessmen, prominent civilian experts, and soldiers really did not begin to think seriously about coordinating national defense until the creation of the Naval Consulting Board during the "preparedness campaign" in October 1915.

The Naval Consulting Board was composed of eminent scientists and inventors under the chairmanship of Charles Edison. Howard E. Coffin, a member of the board, epitomized how the board saw its role: ". . . twentieth century warfare demands that the blood of the soldier must be mingled with from three to five parts of sweat of the men, the factories, mills, mines, and fields of the nation in arms." That outlook caused the Naval Consulting Board, in 1916, to establish an Industrial Preparedness Committee to gauge industrial capacity to produce war materiel. The committee gathered data for some eighteen thousand industrial plants and made a broad inventory of facilities for manufacturing munitions. This industrial inventory tried to list, describe, and classify all the country's important industrial establishments, but the data were not well chosen or analyzed and appear not to have been very useful.[4]

By 1916, opinions on wartime production and the control of economic mobilization split three ways. The business community and civilian management experts believed that an independent agency should control the supply side of any war effort. William F. Willoughby suggested in the May 1916 *New Republic* that a "Department of Public Defense" should be created and organized along functional lines, with its business aspects completely separate from its war-making functions. The army disputed the wisdom and even the possibility of such a division of authority. Not surprisingly, it argued that the War Department should control procurement and supply. A third view, supported by those determined to "take the profit out of war" and concerned about the threat of a "military-industrial alliance," revived Callendar Irvine's proposal to place all munitions production in public hands-in other words, to nationalize the munitions industry as the nation had tried to do with the armor industry.[5]

Early in 1916, Army Chief of Staff General Leonard Wood and former Secretary of War Elihu Root incorporated the various plans into a bill. Secretary of War Newton D. Baker and the president, in collaboration with General Enoch H. Crowder, Judge Advocate General of the army, then finalized the bill and sent it to Congress. The various preparedness efforts culminated in the passage of two landmark statutes in the summer of 1916.[6]

The National Defense Act of 1916, "the most comprehensive piece of military legislation ever passed by Congress," incorporated almost word for word the recommendations of the Army War College study. The law authorized the president "in time of war or when war is imminent" to place orders that would "take precedence over all other orders and contracts." If the owner of the supply facility refused to fill such orders "at a reasonable price as determined by the Secretary of War," the president could take immediate possession of any such plant and manufacture the required products, and the owner would be "deemed guilty of a felony." This eliminated the danger of a reoccurrence of what happened in the War of 1812 when clothing manufacturers refused to sell to the military because they received higher prices on the civilian market. The act also directed the secretary of war to inventory all actual or potential munitions plants in the country and to prepare a plan "for transforming each such plant into an ammunition factory."[7]

Under the act, the secretary of war could procure gauges, tools, dies, jigs, fixtures, and other manufacturing aids, including specifications and

drawings, without formal advertising. The act authorized the president to have plants built and operated by the government for manufacturing nitrate. Finally, it authorized the president to appoint a Board on Mobilization of Industries Essential for Military Preparedness. These extraordinarily sweeping powers contained ample authority to mobilize industry."[8]

Although desired, this would be a major change for the army which, in 1878, had defeated an industry plea for more business. Unlike the navy, the army had no compelling need for large, private industrial capacity. Since the Civil War, it had relied upon its own resources in peacetime and bought only special items from civilian producers, barely trying to coordinate its potential emergency demands with them. The Office of the Quartermaster General, for example, manufactured uniforms at its Philadelphia depot but bought wagons and horses on the open market. Although the Ordnance Board relied on Colt, Remington, and Smith & Wesson for certain small arms, it maintained a substantial production capacity in its arsenal system. Until the middle 1880s, it contracted for gunpowder and artillery tubes but made its gun carriages and limbers "in house." After 1890, however, it reduced its reliance on private manufacturers by developing a modest capability to produce tubes and smokeless powder in its own plants.

Chief of Ordnance Brigadier General William B. Crozier protested Congress' continued insistence that government arsenals manufacture practically all ordnance material unless private concerns could compete on price, a condition he felt was rarely realizable. He pointed out that this policy would delay expansion of manufacturing capacity that would be needed in any future emergency. The National Defense Act of 1916 recognized the wisdom of placing orders for special tooling with private manufacturers willing to accept orders. But this provision and the lifting of the requirement for competitive bidding were so late and restricted that they did not truly aid the mobilization of industry. The number of American manufacturers who had undertaken large orders for munitions for European governments was reassuring, but it was recognized that plants set up to make foreign models could not immediately produce American arms and ammunition.[9]

As Robert Higgs has shown, an extraordinary grant of power was inconspicuously tucked away in the Army Appropriations Act of August 29, 1916. Between paragraphs authorizing small expenditures to replace a bridge in Kansas and buy horses, the act authorized the president, in time of

war, to seize any system of transportation and use it, to the exclusion of all other traffic, for the transfer or transportation of troops, war material, and equipment, or for any other purposes connected with the emergency. Sixteen months later, the government used this provision to take over the nation's privately owned railroads.[10]

The act also established a Council of National Defense consisting of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor and an advisory commission of not more than seven persons knowledgeable about industries, public utilities, and natural resources. The Council of National Defense was to investigate and make recommendations "for the coordination of industries and resources for the national security and welfare." This seemingly powerless council and its advisory commission nominated by it and appointed by the president evolved into the War Industries Board that dominated much of the economy in 1918.[11]

The Naval Appropriations Act of 1916 became a focus of the air mobilization effort. Proponents declared that money would stimulate private firms and cited Secretary Whitney's appeal to Congress in 1886 for a new steel armored navy. Whitney had insisted that if the steel-makers knew the navy had money available they would "come after it." The makers of aircraft needed this encouragement, said congressional proponents, and no time must be lost because the country was weak in battle-cruisers and in aircraft, but in a year, it could do much to produce aircraft and little to produce cruisers.

In 1916, the navy ordered 664 aircraft from Curtiss, 250 from the Standard Aircraft Corporation, and 200 more from other firms. The Gallaudet Aircraft Corporation manufactured sixty, the fledgling Boeing Airplane Company twenty-five, and the corporation headed by the Loughead brothers (the company name was later changed to Lockheed) built two.

Finally, in 1916, Congress voted $12 million for machine gun procurement, but the War Department did not spend the money until 1917 because a board had difficulty in deciding which weapon best suited the army. However, the approach of war forced the adoption of weapons offered by the country's most prolific gun designer, John M. Browning. The army accepted his thirty-caliber machine gun and automatic rifle, known as the BAR, and his fifty-caliber machine gun.[12]

All these new laws could not solve the main problem with government procurement, which was the same problem as in the Revolution: government agents competing against each other for supplies. In the War Department, for example, five (later eight) separate agencies such as the Office of the Quartermaster General (the largest, by far), the Office of the Chief of Ordnance, and the Office of the Chief Signal Officer bought the necessary supplies. These agencies not only bought different types of the same supplies but competed with each other, often to ludicrous extremes. Secretary of War Baker recounted how he once went into the basement of the War Department and found the corridors stacked floor to ceiling with typewriters belonging to the Adjutant General. That officer explained, "I bought every available typewriter in the United States. If I had not bought them, the Surgeon General would have; or if the Surgeon General had not bought them, the Navy Department would have got them or the Treasury Department."

To avoid such comically insane and debilitating competition, the Council of National Defense coordinated industries and resources for national security. The secretary of war, ex officio chairman of the Council of National Defense, presided over the developing economic mobilization machinery. The council, however, dealt with general policy decisions only; the advisory commission did the real work.

Congress directed the Council of National Defense to make recommendations to the president and cabinet officials on how best to accomplish the following: (1) the positioning of railroads to expedite the concentration of troops and supplies to points of defense; (2) the coordination of military, industrial, and commercial needs in the location of extensive highways and branch lines of railroads; (3) the use of waterways; (4) the mobilization of military and naval resources for defense; (5) the increase of domestic production of articles and materials essential during the interruption of foreign commerce; (6) the development of seagoing transportation; (7) compilation of data on the amounts, location, method, and means of production and the availability of military supplies; (8) the release of information to producers and manufacturers regarding the class of supplies needed by the military and other services of the government; and (9) everything else connected with the immediate concentration and utilization of the resources of the nation.

The army knew it would need the cooperation of the business community to make large purchases. In February 1917, the quartermaster general proposed that boards of award, composed of depot officers and one or more businessmen to be designated by the Council of National Defense, be established at quartermaster purchasing depots. These businessmen were not to have any connection with any firm that would likely submit proposals on quartermaster contracts but would be qualified to advise the depot purchasing officer and the board of awards, who would examine bids and award contracts.[13]

The Council of National Defense implemented a similar-plan. Secretary of War Baker wrote to the president of the U.S. Chamber of Commerce and asked him to appoint a small committee in each city in which the Quartermaster Corps had a purchasing depot. The committee would advise and help the local quartermaster make unusually large purchases on short notice.

The Chamber of Commerce hurriedly organized such advisory committees at six major purchasing depots in Boston, New York, Philadelphia, Chicago, St. Louis, and San Francisco, where bids were to be opened early in March. Later, it provided for advisory committees at other depots. The service of these committees varied. Some depot quartermasters never used them; others, such as those at New York and San Francisco, relied heavily on their help. The advisory committees primarily linked government and industry and convinced manufacturers who were wary of the government's business methods to accept contracts. As the Council of National Defense gradually centralized quartermaster purchases in Washington, the depot quartermasters' power to award contracts decreased as well as the need for advisory committees.

Rules at the start of the war provided that the government advertise for competitive bids, use complete specifications, and award the contract to the lowest bidder who could fulfill the terms. There were, however, certain exceptions. A contract already properly made might be increased without further competition and, if previous advertising had produced no bids, the government could negotiate directly with a manufacturer who was the sole source of supply.

Several other legal safeguards, some dating back to the Van Wyck Committee during the Civil War, were intended to protect the government.

Contracts for over five hundred dollars that would not be completed within sixty days had to be written and signed by the parties, thus eliminating the confusion caused by Stanton's wartime interpretation of RS 3744 fifty years before. The contracting officer had to attach a sworn statement that the contract had been made without any benefit to himself or any corrupt advantage to the contractor or to any other person. In short, the entire national procurement scheme, both military and civilian, changed drastically as a result of the war.

*Chapter 15*

# The War Begins

Congress declared war on April 6, 1917. The next day, the quartermaster general asked permission to buy by negotiation whenever an emergency existed. On April 8, 1917, Secretary of War Baker met with the various bureau chiefs (quartermaster general, chief of ordnance, etc.), the Council of National Defense, and its Advisory Commission. They decided that the system of competitive bidding would harm the war effort and the economy in general as the services raced for supplies. So, on April 12, 1917, Secretary Baker ordered that, for the duration of the emergency, contracts for all army supplies, equipment, and fortifications could be made without advertising for bids. He also directed the supply chiefs to inform the General Munitions Board, a committee of the Council of National Defense, of projected supply requirements so the board could coordinate purchases with the navy and other departments.[1] The Navy Department took similar action. Thus, as in all wars, the nation abandoned the luxury of the competitive bid process.

## The Initial Chaos and Corrective Actions

All the prewar coordination planning immediately fell apart. The army and navy bureaus awarded thousands of contracts, without any coordination at all, within weeks after America entered the war. The ordnance and quartermaster departments competed frantically with each other for scarce labor, plants, and material. Within three months of the declaration of war, the army had placed more than 60,000 orders. By the end of 1917, all this frantic buying caused confusion and industrial constipation. Because of production bottlenecks, not a single American-made 75-millimeter field gun or 155-millimeter howitzer—the main artillery weapons—reached the front. The early competition among the supply departments for materials, supplies, facilities, fuel, labor, and transportation led to the market chaos that typified America's mobilizations. In July 1918, purchases of supplies, contract awards, and issuance of orders for both the Office of Quartermaster General and the Ordnance Corps were consolidated under a Director of Purchase, Storage, and Traffic. The Medical and Engineer Corps also used this procedure, except for highly technical supplies.

Two committees of the Council of National Defense dominated the early days of the war: the General Munitions Board and the Committee on Supplies. The General Munitions Board, consisting of seventeen army and navy officers and seven civilians, coordinated the purchase of munitions for the army and navy, helped in buying materials, and assigned priorities to war orders. Although there was some overlap, the Committee on Supplies performed the same function in the procurement of clothing, equipment, and subsistence. Indeed, that committee virtually preempted the various departments' operations under a later order of Secretary Baker.

The General Munitions Board was far weaker since it could review and coordinate only such purchasing activities as the bureau chiefs had time to bring to its attention. Most contracts were placed without the board's review. Because of this, President Wilson created the War Industries Board on July 28, 1917, to replace the General Munitions Board. This new board had more authority but still lacked essential overall control to curtail the chaos. Nevertheless, Congress feared that the Council of National Defense had usurped too much power and was not using it wisely.[2]

Early in the war, the secretary of war approved a list of articles prepared by the Council of National Defense that were to be bought exclusively through the council. The list included woolens, cottons, knit goods, leather, and shoes. The quartermaster general estimated the needed yardage and then asked the Committee on Supplies where, with whom, and at what price the department should make the necessary contracts. At first, the purchasing quartermaster at the Philadelphia Depot executed such contracts, but this arrangement soon proved too cumbersome. He and his assistants were moved into the Washington office of the Committee on Supplies. There, according to the vice-chairman of that committee, "he was attached to us to sign and validate the contracts" and "generally O.K.'d everything that we O.K.'d."[3]

Technically, as long as a quartermaster officer met with the committee and signed the contract, the Committee on Supplies itself did not purchase cloth. The quartermaster general argued that the purchasing quartermaster still retained responsibility. Having the assistance of the Council of National Defense in procurement, he maintained, was "one of the most prudent steps" taken by the War Department. Since companies were not eager to enter into contracts, the council had to induce manufacturers to take government

business, and the Quartermaster Corps did not have enough personnel for the job.

Nevertheless, critics charged that such actions of the council reduced the contracting officers to nothing more than "a rubber stamp." Although clothing was the principal industry involved, the criticism touched all the council's activities and prompted a hearing by the Senate Committee on Military Affairs. Critics contended that the council "absorbed constitutional functions belonging to regular departments of the government"; that it transferred the power to negotiate contracts and prices to advisory commodity or trade committees so that only nominal responsibility remained with the legally liable contracting officers; and that it evolved into a plan under which "representatives of interested industries acted on committees which both sold [to] and bought from the government in the same act." The council, however, had merely filled a vacuum left by the lack of coordination in the pre-war supply bureau system. It assumed the role of a coordinating agency.

The Committee on Supplies' contract procedures particularly aroused congressional ire. The committee allocated awards among the mills, according to capacity, and argued that this method had to be used wherever demand exceeded capacity. It avoided overloading any one plant, while still allowing industry to sell in the lucrative civilian market. The committee used two contract types. A cost-plus contract was used for woolens, cottons, and knit goods. The committee considered all labor and material costs, overhead expenses, and plant investment in arriving at actual cost, and allowed a 10 percent profit, which it considered reasonable. Otherwise, the committee used a firm-fixed-price contract based on competitive bidding. Since there were enough shoe manufacturers to fill army requirements, the committee used competitive bidding in awarding contracts for shoes and leather.

Defenders of the Council of National Defense admitted that the organization was never ideal but argued that, during an emergency, one could not quibble over technicalities. The administrative machinery worked, they maintained, and did not abuse the council's trust in the men chosen to operate it. The Committee on Supplies handled contracts aggregating approximately $800 million in the nine months of its existence. Its work ended when the War Department's reorganization in 1918 provided for coordination of the supply bureaus. The army's Clothing and Equipment Division abandoned the allocation method and contracted on a competitive basis for textiles,

clothing, and equipment. Finally, when the council was not considered strong enough, a War Industries Board was created.

The council was one of many issues that caused many members of Congress to condemn Wilson's management of the industrial mobilization. The crisis in the winter of 1917–1918 emboldened them to propose sweeping reorganization proposals. Early in 1918, Senator George Chamberlain of Oregon, chairman of the Committee on Military Affairs, introduced a bill to create a new department modeled after the British ministry of munitions. Three civilians would head the new department, which would control all aspects of war mobilization, including the procurement functions so jealously guarded by the army and the navy. Recognizing that the plan would strip him of authority, Wilson resisted it.[4]

To thwart Chamberlain's challenge and quiet the critics, Wilson submitted a bill authorizing him to rearrange and strengthen the agencies without Congress' case-by-case approval. Senator Lee Overman of North Carolina introduced the bill early in February. After a spirited debate in which one senator argued that the bill would make Wilson a king in everything but name, it became law on May 20, 1918.

Using his new powers, Wilson reorganized the mobilization apparatus. His most important step was to separate the War Industries Board (WIB) from the Council of National Defense, giving it substantial power. The WIB had been "a clearing house rather than a directorate;" it now became "a sort of inspector-general of the other war agencies" directly responsible to him.[5] Bernard Baruch, who had headed one of the old board's committees, became its new chairman and America's industrial dictator with the masterful assurance lent by Wilson's backing.

While Baruch "should act as the general eye of all supply departments in the field of industry," Wilson told him to "let alone what is being successfully done and interfere as little as possible with the normal processes of purchase and delivery in the several departments."[6] So, the army, the navy, the Emergency Fleet Corporation, the Railroad Administration, and all the other governmental agencies contracting for goods and services would keep their procurement powers, but for the rest of the war this board acted as a funnel through which purchase requests had to pass.

The WIB always tried to convince contractors to comply voluntarily with its decisions. It would appeal, if necessary, to the companies' patriotism and stress how unfair it was for some at home to profit—even profiteer—while American soldiers fought and died.[7] It could often impose irresistible pressure by having the Railroad Administration deny transportation services, the Fuel Administration withhold fuel, or the War Trade Board prohibit international trade. Finally, it could ask the War Department or another authorized agency to commandeer the company's property. In fact, the military authorities so often commandeered plants that the WIB often had to restrain rather than request this ultimate sanction. The War Department alone made 510 requisitions of goods and issued 996 compulsory production orders.

The contracting effort obviously required contractors to invest huge sums in start-up costs. The government helped with advance payments and other arrangements that involved "carrying" contractors for considerable periods. In April 1918, President Wilson created the War Credits Board and the War Finance Corporation, which eventually took over the whole financial problem. Actually, one of the greatest incentives to the mobilization had been adopted on August 22, 1911, during the navy buildup. Congress allowed the navy "to make partial payments from time to time during the progress of the work done under all navy contracts, but not in excess of the work already done."[8] These progress payments enabled more small contractors to take government contracts.

## Setting Prices

Contract pricing was a continuous process of give and take. A separate committee within the WIB, directly responsible to the president, had the unpleasant task of fixing prices. The committee was headed by Robert S. Brookings, a retired lumber merchant. It could not set prices unilaterally; instead its dollar-a-year men tried to agree voluntarily with selected industrialists, mostly producers of metals, chemicals, construction materials, textiles, and leather goods. The steel industry again proved especially troublesome. In the face of soaring steel prices, the secretary of war directed that all further contracts for steel contain a provision that the price would be adjusted to that agreed upon by government officials. The manufacturers refused to accept orders under these conditions, and ordnance work was therefore delayed. In early July 1917, President Wilson told Secretary Baker

that he would nationalize the steel industry and set prices by presidential edict unless the manufacturers agreed to sell steel to the government at "reasonable prices."[9]

The steel barons met in Washington on July 11, 1917, with members of the WIB and opposed any plan to stabilize prices on government orders. The steelmen did not oppose the principle of price controls, but feared they would be caught in a "profit squeeze": selling prices would be fixed, but the cots of labor and raw materials, which were not subject to controls, would rise. The meeting ended inconlusively.[10]

Within two months, however, the men representing the steel industry offered to establish and adhere to a schedule or prices based on "average costs" and a "fair return" to the companies. Still smarting from the defeat over the armor plant, they knew that nationalization was a strong possibility as an alternative to controls. In September, after a heated session, the WIB and representatives of the steel industry reached an agreement. Instead of adopting industry's program, the government forced what the steelmen had feared: an arrangement in which the steel prices were fixed but the costs of production continued to rise. The cost of producing rails rose from $23.02 a gross ton in 1916 to $32.18 in mid-1917, and to $40.78 in early 1918. For the same period, the cost of producing steel plates rose from $30.95 to $44.33 to $53.43.

The war thus brought the steel companies more business but at a lower rate of profit. In 1917, Bethlehem earned nearly as much as it had in 1916 but on a much greater sales volume. Although Charles Schwab criticized government control of steel prices, he nonetheless believed that the agreement with the WIB had averted the totally unpalatable alternative of nationalization.

On May 27, 1918, President Wilson warned a joint session of Congress about the heavy war profiteering going on: "There is such a profiteering now, and the information with regard to it is available and indisputable." One month later, the Federal Trade Commission (FTC) published a brief report entitled "Profiteering," containing evidence of "inordinate greed and barefaced fraud," deceptive accounting practices, artificial price inflation, and huge profits taken by basic industries such as steel, oil, and gas. The FTC also exposed the extraordinary salaries and bonuses paid to corporate officers of war suppliers. For example, the American Metal Company, in

1917, paid salaries and bonuses of over $135,000 to four of its officers, to another more than $200,000, and yet to another more than $350,000. The contrast with the soldier's $1.25 per day pay appalled the average citizen.[11]

### *Food*

By the summer of 1917, the government realized how scarce certain food commodities would become, so it implemented an allocation system for contracts. The Council of National Defense, working through the National Canners Association, filled the needs of the army and navy without unduly raising the price paid by civilians. It secured quotas of such articles as canned peas, corn, beans, tomatoes, and fruits by allotment to all the canners of the country.[12]

When the Food Administration was organized in August, it continued to make such allotments. Items such as flour, sugar, all canned vegetables, canned and evaporated fruits, salmon, sardines, canned milk, and fresh beef were in such great demand that control of their sale and distribution became necessary. On October 8, 1917, the President placed twenty principal food items under the control of the Food Administration. The military services then obtained items on the allocated purchase list through the Food Administration. It allotted the amount to the producers of the commodity in questions, dividing the business among them in proportion to their capacity. After the allotment had been made, the individual service bought the items under terms and at prices decided upon by the Food Purchase Board. The Food Administration handled about 40 percent of all food requirements for the army.

### *The Priority System*

American industry had never been organized and controlled as it was under the War Industries Board. "The most important instrument of control," Baruch declared, "was the power to determine priority—the power to determine who gets what and when." The "vitals" of the board were its fifty-seven (as of November 11, 1918) commodity sections, which functioned as miniature WIBs for particular commodities. The members of each section (plus members from the army and navy) were experts in the particular industry. The Purchase, Storage, and Traffic Division developed a priorities system within the army. This division set up a series of army commodity committees, made up of representatives from the interested supply bureaus,

to parallel the commodity sections of the WIB. The chairman of each of these committees served as a member of the corresponding commodity section of the WIB, where he represented the army as a whole.[13]

Thus, a system evolved that classified the orders according to different degrees of importance; graded industries, and even certain plants within an industry, according to their relative importance in the war effort, and, finally, imposed a scheme of automatic classifications under which certain classes of orders required no priority certificates. In the army, for example, a priorities committee within each supply bureau settled questions of preference within the bureau, then the requests went to the army priorities officer in the Purchase, Traffic and Storage Division to resolve conflicts among bureaus, after which the requests went to the Priorities Committee of the WIB. By the end of the war almost all the industries concerned were operating under priority schedules closely correlated with the army program, under the auspices of the WIB.

### *Railroad Problems*

The government's mad rush to mobilize only exacerbated the railroad problems. The draft snatched skilled and unskilled railroad workers, and contractors lured others away with higher wages. Companies in the Northeast received most of the government's business, so the region's already heavily congested railroad traffic was snarled even further. Moreover, when the military commandeered many Atlantic coastal vessels for shipments to Europe, this diverted still more traffic onto the railroads. The military authorities issued transportation priorities so cavalierly that they further complicated an already chaotic situation.[14]

To break the logjam, the government used the authority granted by the Army Appropriations Act of 1916, seizing the railroads by proclamation on December 26, 1917. William McAdoo, secretary of the treasury and director general of railways from 1917–1919, explained, "Neither the President nor anybody else in the Administration wanted to take them over. It was done as an imperative war measure."[15]

In the Federal Control Act of March 21, 1918, Congress promised to pay the railroad owners an annual rent equal to each company's average net operating income during the three years ending June 30, 1917. Many thought this was too generous but the payment spiraled downward in real

value. Wartime inflation raised the Consumer Price Index 56 percent between 1917 and 1920.

### *Contracting Adapts to War*

During the war, the War Department alone entered into some thirty thousand contracts worth more than $7.5 billion.

At the behest of the attorney general, all contracts contained a clause requiring a contractor to disclaim the employment of any third party, who, for a fee, (normally five percent) promised to obtain the contract. Just as they had during the Civil War, these "five percenters" descended upon Washington to interpose themselves between departments and the market. The War Department also adopted the policy that purchases through jobbers should be made only rarely.

The most common irregularities were probably the informal procurement orders, sometimes oral, sometimes without the required clauses or signed by a subordinate officer for the authorized contracting officer. When the comptroller of the treasury ruled that contracts so signed were unenforceable, mass confusion resulted because four thousand of some twenty-seven thousand War Department contracts at the time of the armistice were said to have been "proxy signed." A special act of Congress was needed to permit payment to the contractors.

A further complication was that, in the army alone, each of the six supply branches had devised or adapted its own contracts, with the result that some four hundred different forms had been used to let War Department contracts.

In peacetime, the government normally used the lump-sum or fixed-price contract. The Quartermaster Corps, the Engineer Corps, and the Medical Corps continued this practice throughout the war for most purchases. This type of contract, however, had serious disadvantages for major projects or new products involving unknown costs, frequent changes in specifications, and other conditions. It lacked provision for price escalation or variation to meet unpredictable changes in the costs of materials and labor. This caused the use of the cost-plus-a-percentage-of-cost type of contract seen so often during the Revolution.

Early in April 1917, the General Munitions Board of the Council of National Defense realized that the government vitally needed to build cantonments, enlarge its arsenals, and expand manufacturing concerns engaged in producing war materials. A group of civilian experts, formed into the Committee on Emergency Construction, began to study the problem.

In the spring of 1917, some two hundred builders and contractors met in Washington with the General Munitions Board to discuss the gigantic task of building new camps and cantonments. They concluded that the best way to do the job would be with contracts allowing for payment of costs plus a percentage of costs as profit. Such contracts were known in private industry, and the navy had used them before the war, but cost contracting on such a vast scale had not been proposed since the eighteenth century. The General Munitions Board accepted the principle and recommended approval, which was given in turn by the Advisory Commission, the full Council of National Defense, and the president. Cost-plus-percentage contracts were never used without a maximum fee.

While the cost-plus principle overcame the disadvantages of the lump-sum contract, everyone realized the opportunities for waste and extravagance. The cost-plus contract encouraged carelessness and padding—for the higher the costs, the higher the profits. After this form of contract had been used for construction work for several months, the War Department called a committee of leading engineers, architects, contractors, and businessmen to study the various types of contracts and recommend the one best suited to the conditions. The committee unanimously recommended the use of a cost-plus contract—with a fixed fee.

The government could make changes in this kind of contract, substitute materials wherever desirable, furnish materials at will, pay the contractors' costs as they were incurred, and automatically acquire all surplus materials. None of these were possible under an ordinary lump-sum contract.

Another type of contract closely related to the cost-plus was the agency contract in which a reliable firm acted as agent for the government in building or operating a plant. The government paid all the bills, and the agent received a fee for its service, either a percentage of the costs or a fixed fee.

The Aircraft Board first hit upon what was called the "bogey price" contract. Under this form, any manufacturer was assured a 15-percent profit on his work and might, if he saved on costs and still met specifications, add to this a bonus representing one quarter of the sum he saved. Solutions such as this first use of incentive contracts were generally applied throughout the whole procurement program.[16] This arrangement often had good results and, in some cases, savings resulting from lower costs were divided three ways—among the contractor, the workers, and the government. As we shall discuss later, one contract like this caused a twenty-year litigation between the wars that symbolized the animosity of some toward the arms merchants.

Since a major problem in the cost contracts was controlling the costs, the government representative had complete control of the contractor's expenditures. Firms accepting such contracts were expected to keep a completely separate set of records pertaining to their government work, including daily time reports on each workman; and to give government inspectors and auditors access at all times to all places where materials were received, stored, used, processed, and shipped, and to all records pertaining to them. An attempt in June 1917 to apply price redetermination, however, resulted in serious delays for ordnance.

### *Aircraft*

When the war began, the military did not consider the airplane an important offensive weapon. At the beginning of the war, pilots fired at one another with pistols and dropped fluted darts intended to pierce the helmets of the troops below. Soon the airplane's lethality drastically increased.[17] Actually, the conversion had begun before the war with Scott's bombsight and Lewis' machine gun. By the time the United States entered the conflict, the plane had become a decisive weapon. The allies desperately needed more powerful planes, in great quantity. The infant aircraft industry alone could not support the incredible demand. The automakers and the government had to build planes.

It is inaccurate to speak of an "American aircraft industry" before World War I. Even as late as 1914, only forty-nine aircraft were produced annually. The small combined civil and military demand for its products did not allow the industry to expand. From 1903 to 1926, the aircraft industry had difficulty surviving, except during World War I when production expanded almost unbelievably to 14,020 aircraft in 1918, and domestic and foreign

expenditures on the American aircraft industry approximated $350 million. When the war ended and the demand for military aircraft shrank, the industry underwent a severe contraction.[18]

The war, for the first time, illustrated the lightning speed of technological developments in the new aircraft industry. Bernard Brodie noted that "a single advance in fighter performance could bring one side or the other virtual domination of the skies." When introduced in the spring of 1916, for example, the De Havilland DH-2 easily outclassed the Fokker E-IV Eindecker fighter that had overwhelmed allied aircraft the year before. By the fall of 1916, however, the DH-2 had succumbed to the German Albatros D-III.[19]

Many aerial pioneers were active during the war. Orville Wright was vice president and consulting engineer for the new Dayton Wright Company, which Edward A. Deeds and Charles F. Kettering (the inventor of the electric starter) had organized. In 1916, the Wright Martin Company was formed through a merger of the original Wright Company, the Simplex Automobile Company, and the Glenn L. Martin Company.[20] Glenn L. Martin would soon organize his own company, which eventually became Martin Marietta. Glenn H. Curtiss was still with the company that he had founded. Future giants were building their reputations, among them William E. Boeing and the Loughead brothers building planes for the navy, and Reuben Fleet distinguishing himself as an army pilot.

In May 1917, at the urging of Charles D. Walcott, secretary of the Smithsonian Institution and chairman of the National Advisory Committee for Aeronautics, the Council of National Defense established the Aircraft Production Board. The board was headed by Howard E. Coffin of the Hudson Motor Car Company. Walcott wanted the board to consider the mass production of aircraft and to cooperate with the army and navy and other departments. He also suggested that the army and navy jointly determine specifications and methods of inspection for all aircraft for the two services.[21]

Congress gave the Aircraft Production Board legislative standing on October 1, 1917, and empowered it to supervise and direct the purchase and production of aircraft and parts, including purchase, lease, or construction of plants, but it could only recommend contract awards and their distribution. Every contract had to be made by the departments. Eventually, however, the

Aircraft Production Board received more authority, especially after Baruch's board absorbed the general functions of the Council of National Defense. With Baruch's backing, the Aircraft Production Board stimulated the building program by curtailing the sale of foreign planes and motors to the United States. In virtually all matters of aircraft procurement, the Aircraft Production Board soon had the last word.

Four months after the war began, the fledgling aircraft industry could not fulfill both the army and navy demands for aircraft. Secretary of the Navy Josephus Daniels, who had just won the battle for a government armor plant, convinced Congress to authorize the establishment of a Naval Aircraft Factory on July 27, 1917, for $1 million. On August 10, ground was broken at League Island, a forty-acre lot in the Philadelphia Naval Yard. It was America's first and only government owned aircraft factory. The first mechanic was hired on October 1, and the manufacture of the first flying boat began on October 17. On November 28, just 114 days after the award of the contract for the building, the entire plant was completed at a cost of about $3,750,000.

Although the factory could produce aircraft, events forced a change. To harness the full national capacity, a plan for subcontracts evolved. Yacht builders, woodworking and metal-working plants, and even piano makers produced various parts of the flying boats for assembly at the Naval Aircraft Factory. The factory expanded to become an assembly rather than a manufacturing plant.

When the United States entered the war, Edward Deeds of Dayton Wright went to Washington to become a dollar-a-year member of the Aircraft Production Board. The board received $640 million and planned to deliver fifty thousand planes to France within a year. Then Deeds, appointed a colonel and put in charge of all aircraft procurement, decided that America should concentrate on a single engine.[22]

J. G. Vincent, Packard's chief engineer, had anticipated this need and for three years had been developing such an engine. Soon after war began, Alvan Macauley, Packard's president, offered to the government the designs for the only immediately useful airplane motor. Packard also offered to produce one hundred motors without a contract, so that airplane engines could be available quickly. Macauley urged the government to contract with

other firms, who would be given the right to produce the motor without reference to the Packard name.

The Packard offer caused the government to call together representatives of the hard-pressed British and French air forces, along with American participants, including Vincent. Late in May 1917, civilian designers huddled in the Willard Hotel in Washington, D.C., and in five days produced the basic design. On June 4, Great Britain, France, and the United States agreed to give the American motorcar industry the responsibility for building a new airplane motor able to win air supremacy for the allies.[23]

The conference had refined the Packard motor, originally designed as a racing car engine and rigorously tested on race tracks. Clearly an automobile engine—eight cylinders, water-cooled, with Delco battery ignition—the conferees converted it to a twelve-cylinder engine like the British Rolls. The revamped engine passed the test and was named "Liberty." Deeds was assigned to mass produce it. Remarkable developments followed quickly. Packard began work on the 100 motors it had offered to make without a contract. On July 4, exactly one month after the program had been approved, the first Liberty engine started at the Packard plant. This became America's greatest contribution to aviation in World War I. By Armistice Day, Packard and others had made 20,478 Liberty's, and perhaps half had been shipped to Europe for installation in planes that saw front-line service.

Curtiss Aircraft had developed the Curtiss Model JN, the immortal Jenny, used in the Mexican Expedition. Its imperfect design could kill a careless pilot, but no other airplane so affected the future course of American aviation—or was produced in greater numbers during the First World War. The English, the Canadians, the army, and the navy all used it. By the war's end, more than 10,000 of the little trainers had been delivered.[24]

The British, however, also needed long-range patrol planes. They initially ordered two of the Curtiss Americas in August and received them in November. With the Rolls-Royce engines, the aircraft was redesignated the H-12 and became the first American airplane to go into combat in the First World War. On May 14, 1917, an H-12 overtook and destroyed a German Zeppelin with its two Lewis.30-caliber machine guns. Three days later, another H-12 became the first airplane ever to sink a submarine.[25]

The Loughead F-1 first flew on March 28, 1918; it soon flew to North Island, San Diego, for three months of navy flight and structural trials. The navy did not buy the flying boat but was sufficiently impressed with the Loughead team to sign a contract with the company to produce two Curtiss HS-2L single-engined flying boats. The two machines were completed before the end of the war. However, the company lost between $4,000 and $5,000 on this $90,000 contract, the value of which had been calculated on the estimated cost plus a 12-1/2 percent fee. It had tried to improve the Curtiss design, notably by bullet-proofing its 141-US-gallon (534-litre) fuel tanks. In July 1918, the Loughead Aircraft Manufacturing Company had also received a navy contract to produce fifty scouts, but this contract was canceled before it completed a single airplane.

During the twenty months of the war, the army received from American manufacturers 13,894 airplanes and 41,953 aircraft engines, including spare parts for both planes and motors. From those companies that could be classified as part of the aircraft industry, the army received 9,742 airplanes and 14,765 engines. Although most of the $640 million received by the Aircraft Production Board was spent, nothing like the planned fifty thousand American-made planes reached the American Expeditionary Force. In fact, only 248 American-made war planes ever flew at the front.

The mammoth mid-1917 appropriations for military planes was soon followed by mounting dissatisfaction with the progress made in producing aircraft. The discontent erupted into heated controversy when Gutzon Borglum, an aviationist who later sculpted Mount Rushmore, wrote to the New York Times revealing the conclusions of an investigation he had made with the cooperation of President Wilson. Borglum accused "a group of American junkers" of being guilty of "corralling of contracts" and of criminal neglect and indifference toward meeting any real manufacturing output. These business interests had succeeded in duping a gullible army leadership.[26]

President Wilson appointed Snowden H. Marshall, a prominent New York lawyer, to head an investigating committee. The investigation produced no smoking gun, as Marshall explained in a speech after the war:

> I think I will be violating no confidence at all if I say that every member of our committee, after going up and down and all over the country, and looking at all of the people and discussing things with the manufacturers, and with the Signal Corps, and with everybody concerned, unanimously

> formed the opinion that there was no truth whatever in the false and libelous charges that had been made against the body of the people who were working on this; but that we had been in contact with an able, a patriotic, and an honest body of men who were striving under great handicaps to accomplish a great good for their country.[27]

The attacks continued after the Marshall investigation. To prevent aircraft production from becoming a political liability, President Wilson asked his former political opponent, Charles Evans Hughes, a former justice of the Supreme Court, to investigate all charges.[28] At the same time a subcommittee of the Senate Military Affairs Committee began an investigation. Justice Hughes finished his investigation and made a thorough report about two weeks before the armistice. The two groups made similar findings that waste and delay abounded and called for administrative reorganization.

Hughes recommended the prosecution of three army officers for violating conflict-of-interest statutes. Because "reprehensible" evidence indicated that Edward A. Deeds, the head of the aircraft program, had leaked official information to a former business colleague in Dayton Wright and given misleading information about the course of the program's progress, he recommended that Deeds be court-martialed. Although Secretary of War Baker appointed a review board that exonerated him, Deeds left Washington under a cloud. Nevertheless, because the surplus Liberty's and the De Havilland DH-4 observation planes finally produced by the Dayton Wright Company became the standard equipment used by the Post Office Department to pioneer airmail service, Deeds helped shape scheduled flying in America.[29]

### *Automobiles*

America's entry into the war showcased the power of the newly developed American mechanized system of manufacturing: the Whitney system of standardization combined with Henry Ford's fully mechanized and moving assembly line. Car makers like Packard, Ford, Hudson, Studebaker, Nash, and many others quickly engaged in war work, but General Motors lagged behind. William C. Durant had recently regained control of the company and was consolidating his position. He initially opposed accepting any government war contracts. His attitude cost General Motors the services of Henry and Wilfred Leland, who were determined to place their great talents at the immediate disposal of the government.

The day after war was declared, Wilfred Leland, a devoted anglophile who headed Cadillac, asked Durant to allow a new Cadillac factory to produce airplane engines. Durant refused: "This is not our war and I will not permit any GM plant to do work for the government."[30]

On June 18, Leland and his brother Henry resigned from Cadillac, the organization they had created. Durant recanted but could not convince them to stay. They left General Motors on July 3, 1917. At a farewell dinner, Henry Leland stated:

> The Cadillac has been dearer to me than any other one thing in the world except my home, but there has arisen now a claim on my loyalty that is nearer and dearer still. I do not believe the people of this country realize the monumental nature of their task. The time is coming though when this realization will be forced upon us. The world's greatest need at this moment is America; and America's paramount need now is to provide means for mastery of the air.[31]

Six weeks later, without waiting for a government contract, the Lelands incorporated a company to build 6,000 Liberty aircraft engines. Henry named the new company the Lincoln Motor Company, in honor of Abraham Lincoln, the first president he had voted for in 1864. Along with friends, the Lelands invested their own fortune in erecting a new plant on a fifty-acre piece of prairie, on Warren Avenue in Detroit, where 6,500 Liberty motors were eventually produced.

Henry Leland personified the evolving contract system for making arms, which had started in 1808, and its diffusion of knowledge throughout society. He had made Union breechloaders at the Springfield Armory during the Civil War. When the war ended, he went to Hartford and began working at Colt's armory, the home of Colt revolvers. On July 1, 1872, Leland began an eighteen-year association with the Brown and Sharp Company of Providence, Rhode Island, the foremost machine tool maker in the country. When he came to the automobile industry, he introduced the precision engineering he had learned making interchangeable weapons. In September 1920, he and his brother produced the first Lincoln automobile, a rival to their earlier Cadillac, as America's first luxury car.

The Lelands were not the only ones producing Liberty motors. Packard produced 6,000; Ford, 5,000; Nordyke & Maremon, 3,000; and later Buick and Cadillac, 2,000. Nor was the Liberty airplane engine the only work done

on aircraft by motorcar men. The government asked Charles F. Kettering and his engineers at Dayton to develop a small plane able to carry bombs behind enemy lines and drop them at a predetermined point. They were producing such airplanes by the end of the war. Before effective anti-aircraft guns existed, the little pilotless weapon could have been decisive had the war continued.

Before long, Durant changed his mind about accepting war contracts. Durant had help in making his decision.[32] Early in June 1918, Bernard M. Baruch, chairman of the War Industries Board, focused his attention on the automobile industry and fumed that two out of three automobiles and trucks built in America in this second year of the war were sold domestically for pleasure use. While truck production for the military had soared more than tenfold since the war began, Baruch meant to curtail the use of steel alloys for frivolities. Sure of Wilson's backing, and armed with the power to allocate raw materials to sixty industries, he issued the order. The Detroit manufacturers, including Durant, protested the cutbacks. While the manufacturers sat in Baruch's office listening, Baruch telephoned the railroad administrator and suspended train service to their plants. Next he called the secretary of war and asked that the army seize the car companies' stockpiles of steel. After he began his third call, Durant stopped him and said, "I quit." The others agreed.

Baruch's stoppage order was delayed when the governor of Michigan pointed out that such a move would bankrupt the state. The WIB finally decided that the automobile industry could claim half the steel tonnage used during the last half of 1917 for the last six months of 1918. By the year's end, automobile production had fallen 45 percent, to 943,000 vehicles.

Durant's hesitancy resulted in a relatively limited contribution by General Motors to the war effort. Cadillac produced 2,350 staff cars for the army, which were regular V-8 Cadillac cars painted army olive. Cadillac also made more than one thousand artillery tractor engines, using a heavy Cadillac V-8 motor as a power unit. The Jackson-Church-Wilcox Division produced trench mortar shells, reaching a rate of twenty thousand rounds per day by the time the war ended.

Ford's contribution was more substantial. Two days after President Wilson ended American diplomatic relations with Germany, the once pacifist Henry Ford declared that he would place the Ford Motor Company "at the disposal

of the United States government and will operate it without one cent of profit." Getting rich on the national war effort would, he said, be "like taking blood money."[33]

Ford's first war contract from the United States government was for two thousand chassis to be equipped as ambulances. Early in the war, the Ford Motor Company also made 820,000 steel helmets and followed that with ammunition boxes, armor plating, airplane engines, tractors, gas masks, and the Ford tractor, the "Fordson," which was the first successful light tractor in either England or the United States. Food shortages in England made tractors urgent, and the Ford Motor Company produced seven thousand tractors for the British and a similar number for national use by July 1918. It produced 130 tractors a day during the last months of the war.[34]

Henry Ford proposed encasing the Model T in metal for use as a minitank. He also developed for the army a small two-man tank and a larger three-man tank. Only the smaller tank reached production. Ford was not the only one interested in tanks. Early in 1918, the army ordered 4,440 Six-Ton tanks (which actually weighed eight tons) at $11,500 apiece from three contractors: the Van Dorn Iron Works, the Maxwell Motor Company, and the C. L. Best Tractor Company. In October, the first tank was delivered. At the war's end in November, sixty-four tanks had been completed, and ten had arrived in France, although none had been used in combat. By the end of December, 209 tanks had been finished and 289 more were being assembled. At that rate, the American tank force would have made a sizable contribution to the planned spring offensive of 1919. The United States continued tank production through 1919, using up the components on hand, and built 950 tanks. They were to be the only tanks produced for the U.S. Army, except for a few experimental models, between 1919 and 1936.[35]

In its most famous wartime effort, the Ford Motor Company contracted for $46 million dollars to build a 200-ton, 204-foot long submarine chaser called the "Eagle."[36] To make the eighteen-acre plant Ford had built for Eagle production fully operational, the river near the plant needed deepening and the marshes needed draining. As part of the Eagle boat contract, the government agreed to pay for this. Some members of Congress grumbled about the taxpayers paying $3.5 million to set Henry Ford up in another business and create a shipyard in the middle of some Dearborn meadows. But the navy's own shipyards were overwhelmed with war work, and it was suggested, though not promised, that Ford would buy back the plant when

the war ended. The factory employed eight thousand workers at the peak of effort. The plant's first building was erected in February 1918, the first keel was laid May 7, and the first Eagle boat launched July 10.

"An Eagle a Day Keeps the Kaiser Away," cheered banners brandished by Ford workers. "Warships While You Wait," exclaimed the New York Times. But when the war ended in November 1918, Eagle boat production had not been quite as spectacular as the carmaker had boasted. In fact, of the 112 boats ordered, only seven had been completed, only one was actually in commission, and that one was still undergoing preliminary sea trials when the war ended. Ford blamed the vessel's naval designers, who had changed specifications several times and had hampered production considerably. But Ford's engineers had found it harder to adapt their motorcar production techniques to shipbuilding than they had anticipated. They did not hit their stride until after the war was over, and the company finally delivered sixty Eagle boats to the navy. As we shall see, this late production was a problem affecting the entire industrial effort.

Perhaps the Dodge brothers contributed the most, however.[37] The French 75 and 155 cannons formed the backbone of the allied ground attack. The war had lasted so long and destroyed so many of these guns that an acute shortage had developed. The English and French could mold the huge cannon barrels and build the running gear, but they could not produce the vital firing mechanisms. These had always been made by handcraftsmen, who could not make enough of the complicated and delicate recoil firing components to keep allied armies supplied with the French 75s.

The need became so desperate that the famed French general, Marshal Joseph Joffre, led a delegation to Washington to discuss the matter with Secretary of War Baker. Baker asked a number of American firms, including the Dodge brothers, to tackle the assignment. Baker called John Dodge to Washington to meet with him and Joffre. Dodge declared that if the government would give Dodge management full control and an accurate set of blueprints, they could mass-produce the delicate recoil mechanisms. Joffre did not believe the firming mechanisms could be mass-produced, and the discussion grew quite heated. "Do you want these things or don't you?" Dodge shouted at Baker. "But this is not a mass-production task," Baker insisted. "The hell it isn't," Dodge retorted. "Look here, Mr. Dodge," Baker said, "I am not accustomed to being spoken to in that kind of language." "The war would be a hell of a lot better off if you were," yelled Dodge. "Do

you want us to do this job or don't you?" Baker swallowed his bruised feelings and accepted Dodge's proposal.[38]

Without waiting for a contract, John Dodge telephoned his brother Horace in Detroit to start the project. He added that he would arrive in Detroit the next day with the blueprints, but that Horace should start planning the factory at once. On Monday, two days later, the water and sewer lines were staked out on the Dodge's eighteen-acre tract of open land on Elliott Street. On Tuesday, the Detroit Terminal Railway was building a spur line onto the property. Carloads of building materials were already enroute to the plant site. Within a week a former unplowed field swarmed with steam shovels, cement mixers, cranes, switch engines, and workmen. One month later, eleven acres of concrete floor had been poured. Despite an unusually cold winter, eighteen hundred workers completed the big plant at a cost of $10 million.

During the construction, Dodge engineers and machinists prepared to mass-produce the cannon components. They designed and built 129 special machines to produce the parts. By late February, the machines were rolling into the factory. On March 1, 1918, Horace Dodge gave the signal to energize the colossal operation and begin turning out the firing mechanisms. Only four months had passed since Baker and Joffre had given the job to John Dodge.

French military engineers tested the Dodge cannon recoil units by firing them in French 75 and 155 cannons. They worked perfectly. The firing mechanisms were rushed to Europe. Some of the big guns were already in place with allied armies awaiting the Dodge firing components that would make them operational. After the war, the French Government awarded the Legion of Honor to John Dodge and his eight thousand workers.

In eighteen months, the carmakers with no experience in armaments were mass-producing weapons and equipment for use on land, on sea, and in the air. Nash Motor Company became the country's truck builder and made 11,494 trucks under one army contract. The contribution of the automobile industry is somewhat ironic. While the conflict was the first war in which motorized equipment was important, it was essentially a war fought with horses.

The Studebaker Corporation at South Bend, Indiana, demonstrated this irony. On the day the United States declared war, Albert R. Erskine, president of Studebaker, telegraphed President Wilson: "Studebaker factories . . . are at the disposal of the Government. Any orders given us will receive preference and cleared right away." Studebaker had been one of the country's major builders of horse-drawn equipment but, just before the war, the company had closed the last of its wagon and carriage business. With the United States and its allies waging war with horses, Studebaker returned to making harness, heavy wagons, water carts, and horse-drawn ambulances. This was similar to the Mexican War effort seventy years earlier when businesses had to convert back to producing wagons. Within one month after the United States entered the war, Studebaker had made a 50 percent conversion to war work. Within a year, Studebaker's entire factory was producing war materials.[39]

### Munitions

The munitions industry had a different wartime experience. The DuPont Corporation received an estimated $1.011 billion in military contracts, and its powder propelled about 40 percent of the artillery shells fired on the Western Front. DuPont's early sales to England and France would later lead in the 1930s to the widely held belief that munitions manufacturers had caused the war.

As early as 1916, members of Congress and the administration believed that DuPont and other munitions manufacturers were profiting too much from the war. In the summer of 1916, Congress translated hostility to the DuPonts and the others into a bill, popularly known as the "Munitions Tax," which placed a special surcharge on the sales of "gunpowder and other explosives." In a virtual replay of the activities of his ancestor Lammot DuPont during the Civil War, Pierre DuPont complained to the chairman of the House Ways and Means Committee that "the Bill discriminates against the manufacturers of explosives, singling out their industry for drastic treatment amounting to penalization, while others engaged in the manufacture of munitions of war and making equal or greater profits are permitted to go free."[40] Then he listed some military sales to Europe, including trucks and automobiles valued at $142 million, aircraft worth $7.8 million, and woolen goods worth $70 million on which the tax would not apply, plus profits from the sale of guns, tanks, submarine parts, and food. Such arguments did not stop the enactment, but succeeded at least in

changing the base on which the tax was levied—from 8 percent of the gross income from munitions sales to a flat rate of 12.5 percent of net profits. Congress made the tax retroactive to include profits for all of 1916. This particularly enraged Pierre. He argued that any such measure should apply to future transactions so corporations could adjust prices to reflect the tax.

That was not DuPont's only dispute with the government. Six months after the United States entered the war, the government asked DuPont to submit a proposal for building government plants. DuPont's capacity, which in 1917 was close to fifty-four times that of 1914, could not meet the government's needs. Within five days, DuPont submitted its proposal: $90 million for construction, $187 million more for operating expenses.[41]

Robert S. Brookings of the War Industries Board studied the proposal and declared it outrageous. According to Brookings, the plan would net DuPont a profit of 15 percent or $13.5 million on construction, and $30 million on the operation of the plants—a total of $43.5 million. Brookings immediately warned Secretary of War Baker, who branded the DuPonts "a species of outlaws."[42] The final contract, however, contained a profit ceiling of $2 million, far below the original profit calculated by Brookings. This estimate fell far short of final costs. It also proved to be a source of national scandal.

According to the contract, DuPont would build five plants: two in Virginia, one in Wisconsin, one in Pennsylvania, and one in Tennessee. For the last, Old Hickory, DuPont only charged a fee of $1 on the cost-plus-fixed-fee contract. DuPont estimated its cost at $75 million when ground was broken in March. By the beginning of operation in July, the cost had risen to $90 million. When it was later sold by the government, however, its value was placed at only $3.5 million. That disparity figured prominently in congressional hearings after the war.

### *Construction*

The use of cost-plus contracts in construction was not confined to DuPont. The Cantonment Division had the responsibility for building the new camps and cantonments, including new munitions plants, air fields, proving grounds, port terminals, supply depots, hospitals, and the expansion of existing facilities. It faced a daunting task. On April 6, 1917, the army had housing for about 124,000 officers and men, which barely met the needs of the Regular Army alone. More housing had to be built to house the rapidly

expanding Regular Army, the National Guard, and the men drafted into the National Army.[43]

On May 7, 1917, the general staff ordered the building of thirty-two cantonments, quarters, suitable for training a million men, to shelter the conscripts who would arrive in September, in just sixteen weeks. On June 11, the first contracts were let. By June 13, work began on the first cantonment at Camp Devens, Massachusetts. The following day, construction began at Camp Travis, Texas, and at Camp Dix, New Jersey. By September 4, some 287,000 recruits were housed. At year's end, a million men were in training.

For the camps to be ready by September 1, no delays could occur. However, some sites were not even selected until June. Because work had to begin before completed plans and specifications were available, the ordinary method of advertising for bids and awarding contracts to the lowest bidders could not be followed. Since no traditional form of government contract met this situation, the Council of National Defense used the newly approved one, which provided that work should be done on a cost-plus basis with a graded scale of percentages decreasing from 10 percent to 6 percent, on the cost of the work as the total cost increased. The contract, which limited each cantonment contractor to a maximum fee of $250,000, became known as the "cost-plus with sliding scale and fixed maximum fee" plan. The army controlled the cost of materials and the labor wages. As in the Revolution, critics condemned this type of contract, but officials testified that no contractor received fees higher than 6 percent; the actual amount varied between 2 and 3 percent.

To expedite the construction, the Cantonment Division and the General Munitions Board kept everything as standardized and as simple as possible. The Quartermaster Corps had some blueprints ready at the beginning of the war; these developed into detailed plans for each type of building. Most important, the contractors were doing what they did in peacetime—that is, building—so no learning period was needed.

By the end of 1917, shelter had been prepared for about 1.5 million men. The construction of the National Army cantonments and the National Guard camps in less than six months constituted one of the great achievements of the mobilization effort.

## *Ships*

On October 28, 1916, less than six months before America entered World War I, the navy opened bids for four battleships and twenty destroyers. The size of modern battleships had outgrown Bath Iron Works' capacity, but destroyers had become its forte. Bath offered to build two destroyers within twenty-two months, with the then unprecedented guaranteed speed of 35 knots, at a cost of $1,185,000 for one, $1,160,000 for each of three, or $1,150,000 for each of four. It received contracts for four and, later, nine more, but a great many of these ships never saw war service. They were completed too late—in 1919, 1920, and 1921. This proved a common problem in America's war effort.[44]

Bath's efforts were part of the navy's formidable shipbuilding program. The scarcity of shipyards limited the number of new ships that could be built in 1917. The naval buildup had helped, but the demands of a world war far exceeded capacity. Since the 1880s, the navy had contracted most of its shipbuilding to private companies. The navy's own shipyards, therefore, were not prepared for the war's huge shipbuilding requirements and were quickly overwhelmed. The private yards were working substantially at capacity, so the nation had to build more shipyards. It needed from six to 10 million deadweight tons per year to allow a safe margin, but the best shipbuilding year (1916) had produced less than 300,000 deadweight tons of new ships. To increase capability, the navy paid for some forty-five additions to private shipbuilding yards and built its own (government) industrial facilities at a cost of $71 million.[45]

The mass-production techniques of Whitney and Ford revolutionized the shipbuilding industry by using the assembly line to fabricate ships with interchangeable parts. To meet the challenge, an entirely new shipbuilding industry had to be created on an undreamed-of scale, it started slowly, befitting the magnitude and radical nature of the program.

The U.S. Shipping Board ran ship procurement in consultation with the War and Navy Departments, determining the quantity, type, and tonnage of troop and cargo ships needed for the war. But it delegated the work of providing these ships—that is, placing contracts and meeting delivery schedules—to the board's subsidiary agency, the Emergency Fleet Corporation (EFC).

The EFC built new shipyards and helped refurbish and enlarge old ones. It contracted with private corporations to build and operate three large shipyards to turn out fabricated steel ships and had contracts with over 100 other shipyards. Building the shipyards alone was a tremendous undertaking. The largest shipyard built was the Hog Island Yard at Philadelphia, but it came late. The Hog Island construction contract was signed September 13, 1917; the first keel was laid February 12, 1918; and the first ship was launched August 5, 1918. Ironically, the EFC was then headed by Charles Schwab, of the armor plate scandals. It is interesting how this quintessential defense contractor acted when he switched to the other side of the negotiating table.

Schwab contracted only with companies of proven competence. He did not encourage the formation of new shipbuilding companies, and he rejected the applications of ambitious amateurs who offered to go into shipbuilding with the financial backing of the government.[46] So, had he been in charge in 1798, he would not have awarded contracts to all those would-be arms makers. He would have saved the government's money from going to contractors who later failed, but he would also have missed the opportunity to start Eli Whitney on his mass-production techniques.

Schwab also distrusted cost contracts, which had been approved for shipbuilding, since builders received the full cost of labor and materials plus a percentage of that amount as profit. With no financial risk, they had no incentive to insist upon speed or efficiency from their workers, or prompt delivery of materials. The government paid the added costs, and the builders' profit increased as costs increased. Early in his new job, Schwab learned of abuses in shipyards under contract with the EFC. For example, at the shipyard at Newington, New Hampshire, workmen were told not to work too hard, a carpenter spent nearly an entire workday planing a twenty-foot piece of wood, and a foreman sarcastically told one capable worker that he must not try to build the ship alone. Schwab's eyewitness claimed that on several occasions one or two hundred men sat idle for two hours at a time because production was so uncoordinated and haphazard.[47]

To Schwab, the "cost-plus" system invited inefficiency. Within a month of taking over the EFC, he ended the system and tied profits to cost-cutting. On May 15, 1918, Schwab announced that from then on shipyard owners would work only under lump-sum contracts, which required them to obtain their own materials without government assistance. This plan relieved the

government of the need to supervise shipyard work and placed sole responsibility on the shipbuilders to prevent the waste of manpower or materials. To circumvent any risk that inefficient shipyards would cut corners on safety or quality specifications, all ships were to be inspected three times before issuance of insurance: first by personnel from the EFC, then by the American Bureau of Shipping, and finally by agents of Lloyd's of London.

Schwab asserted that the shipyard owners approved his new plan and that he "had no difficulty whatever" in placing contracts. "I made one price for everybody, which price I am told will not only be profitable but satisfactory to all. . ." Schwab expected that an efficiently operated shipyard could net about $37,500 in profit for building one submarine. So, when Schwab received reports of shipyard inefficiency, he replied that the new lump-sum plan was safeguarding the taxpayers' interests. Senator Warren G. Harding complained to Schwab that there had been costly delays at shipyards in the Great Lakes area. Schwab reassured Harding, "All of the ships being built on the Lakes are at a fixed price. If there is any inefficiency or any inefficient labor or management on the part of the shipbuilders, the loss falls upon the company and not the Government."[48]

By June 1918, two months after Schwab took charge of EFC, the number of keels laid and ships delivered increased dramatically. By the fall of 1918, contracts were regularly completed on or ahead of schedule. Secretary of Navy Daniels and President Wilson were elated, and Daniels said, "I told him I've forgiven him all his sins."[49]

After the war, The New York American, a Hearst newspaper, devoted a half-page editorial to recounting and extolling Schwab's wartime service. The editor told Schwab that the tribute had been personally ordered by William Randolph Hearst, the publisher who, two decades before, had devoted a full page to denouncing Schwab's "juvenile egotism" and calling him "only a competent clerk."[50]

Schwab was very similar to Robert Morris. He performed yeoman service to the nation at critical times but met more than his share of controversy, especially during the armor plate scandals. Also like Morris, he became one of the country's richest men yet died penniless after speculation caused his downfall.

The Shipping Board went far afield to secure merchant ship tonnage. Contracts in April and May 1918 provided for the purchase of fifteen Japanese vessels, either completed or nearing completion, totaling approximately 128,000 deadweight tons. These were to be delivered between June and December 1918. The first vessel built in Japan for the Shipping Board was delivered June 13, 1918; by October 1, nine vessels of 72,990 deadweight tons built in Japanese yards had been delivered and paid for.

Other contracts for ships to be built in Japan were signed in May 1918 to guarantee procurement by the United States of about half of all Japanese ships built in 1919. A contract was also concluded on July 10, 1918, between the Shipping Board and a company in Shanghai owned and operated by the Chinese Government to build four steel vessels of 10,000 deadweight tons each. Although none of these vessels were delivered before the Armistice, these orders indicate the global nature of the Shipping Board's contracting activities.

### Labor Standards

Mobilization increased the use of contracts to advance socioeconomic interests. The army's plans for sixteen cantonments comprised the largest building program ever undertaken by the government. Wartime demands meant that Secretary of War Baker could not tolerate any delay in this program due to labor disputes. So, on June 19, 1917, he and the president of the American Federation of Labor, Samuel Gompers, signed an informal agreement that a Cantonment Adjustment Commission would determine wages, hours, and working conditions for these projects. The agreement provided that the commission would "use the union scales of wages, hours, and conditions in force on June 1, 1917, in the locality where such cantonment was situated." Thus, wage determinations for the construction contracts were based on the prevailing wages where the work was performed.[51]

Also, during World War I, the National Harness and Saddlery Adjustment Commission set labor standards in contracts for harnesses and saddles. In contrast to the Cantonment Adjustment Commission, the National Harness and Saddlery Commission set nationwide wage rates for all contractors making harness and saddlery. Thus, the government set local wage rates for construction contracts and national wage rates for manufacturing.

The army used a different technique to buy clothing. As the need for uniforms increased, contracts went to firms that forced people to work in sweatshop conditions. To preclude the possibility that uniforms would transfer contagious germs to military personnel and to ensure prompt delivery of uniforms, the government created the Board of Control for Labor Standards in Army Clothing. The board conducted preliminary inspections and qualified only those contractors who maintained satisfactory working conditions, complied with state labor laws, and maintained proper protection against fire.

Although these programs were used primarily to ensure the effective and efficient conduct of war, with socioeconomic goals as a side line, they forecast legislation to combat economic ills during the Depression. Government procurement became widely recognized as a means to promote economic and social welfare.

## Results

The first army purchase abroad occurred as soon as General Pershing's staff arrived in London. The quartermaster bought a few boxes of carbon paper for the necessary clerical work.

That humorous start heralded a serious and disheartening problem. Despite all the efforts of the government and industry, the results were miserable. When 1st Division units began sailing for France in June 1917, they left without steel helmets. Arrangements had to be made to obtain the necessary helmets in Great Britain.[52] Only toward the end of the war did the United States, under the broad direction of the WIB, succeed in establishing the information, organizations, policies, and procedures necessary for economic mobilization. The unexpected announcement of the armistice in November 1918 saw American troops in France largely equipped and supported by the allies. By the end of the war, the government had equipped less than half its fighting troops. It failed to capitalize on the learning opportunities presented by the Mexican Expedition, the allied war orders placed with U.S. industry prior to American entry into the war, and the government's own detailed planning for its entry into the war.

The American Expeditionary Force desperately needed tanks, yet not a single American tank reached the front, despite Pershing's pleas. He complained about the dire and ironic shortage: "It seems strange that, with

American genius for manufacturing from iron and steel, we should find ourselves after a year and a half of war almost completely without those mechanical contrivances which had exercised such a great influence on the western front in reducing infantry losses."[53]

He had to beg from the British and French. The army bought from the French 3,175 millimeter guns; 1,200 heavy howitzers; 9,600 hutchkis machine guns; 40,000 chauchet automatic rifles; and millions of artillery shells, mortar rounds, and hand grenades. The American army had become a scavenger. Despite Ordnance's efforts, less than 3 percent of the contracts for artillery or ammunition made before mid-December 1917 had been delivered by the end of the war.[54]

David Lloyd George, England's wartime prime minister, echoed Pershing's complaint.

> It is one of the inexplicable paradoxes of history, that the greatest machine-producing nation on earth failed to turn out the mechanism of war after 18 months of sweating and toiling and hustling. . . . There were no braver or more fearless men in any army, but the organization at home and behind the lines was not worthy of the reputation which American business men have deservedly won for smartness, promptitude and efficiency.[55]

Bernard Baruch in a letter to President Wilson explained:

> When fighting ceased, war production in the United States was reaching its peak. Every unit of the vast machinery was keyed up to high speed. There is no doubt but that knowledge of this fact contributed materially to Germany's sudden realization of the hopelessness of her position.[56]

Baruch was right. The Germans knew the big production was coming. The classic tribute to America's industrial mobilization achievement in World War I is the eloquently exaggerated but frequently cited statement of the German Chief of Staff, Field Marshal Paul von Hindenburg:

> Her brilliant, if pitiless, war industry had entered the service of patriotism and had not failed it. Under the compulsion of military necessity a ruthless autocracy was at work and rightly, even in this land at the portals of which the Statue of Liberty flashes its blinding light across the seas. They understood war.[57]

Other more lasting results occurred, however, and served as peaks of triumph among the crevices of failure. The war had changed the aircraft

industry from a "sailcloth, sticks, and string" enterprise into an industry primed for expansion.[58] Furthermore, the French government in 1918 had asked for 4,500 American pilots and planes. That generated the first massive expansion of air installations in U.S. history. Since the army had fewer than 200 airplanes and only a few major flying fields, it had to add twenty-four new flying fields to train 1,000 men each month and develop rigid requirements for landing areas and weather conditions favorable to winter flying. A three-year lease with an option to buy was the contractual basis for site acquisition, and annual rents ranged from one dollar at Eberts Field, Lonoke, Arkansas, to $20,000 at Wilbur Wright Field, Dayton, Ohio.

The Construction Division usually contracted with local people, who often started work merely on the strength of a letter indicating that a contract was being prepared. Fields such as Wilbur Wright in Ohio and Chanute in Illinois were selected and built so fast that the installations were ready to receive the first aviation training classes in July 1917. Fifteen such fields were in use by December 1917.[59]

The war multiplied the number and transmitting capacities of naval radio stations as the navy contracted for towers, buildings, and other related facilities. Radio towers six hundred feet high were built at Cavite, Pearl Harbor, and San Diego, California. Similar naval facilities were built at Cayey, Puerto Rico, in 1917 and on Greenbury Point across the Severn River from Annapolis in 1918.

Because of the great demand for radio, American companies such as General Electric, Western Electric, De Forest, and AT&T, now were awash with contracts, especially since a major rival, the German company Telefunken, was no longer competing. The government's patent moratorium allowed all suppliers to use the best components, no matter who owned the patent, since the government guaranteed to protect all suppliers against infringement claims. The government also encouraged the inventors not to be oversensitive to the relatively free use of their products during the national emergency. The inventors and radio companies could then concentrate less on marketing and litigation and more on research and development. As a result, significant advances in continuous wave technology were achieved. Civilian-military cooperation produced apparatus more ideally suited to the navy's special needs.[60]

During the war, the navy controlled the design, purchase, installation, and upkeep of all governmental radio except the army's. This centralization enforced standardization of apparatus, the navy's long-sought goal, and better control over suppliers' quality, quantity, and rate of production. Like clothing manufacturers at the end of the Civil War, by November 1918, the American radio companies were technically strong and confident and ready to embark on new commercial ventures that government sponsorship had made possible.[61]

The Army Superior Board of Contract Review, composed of the senior purchasing officials of the army, increased contracting uniformity. The board had responsibility for the form and policy of contracts and contracting methods. On September 7, 1918, the War Department issued Supply Circular No. 88, which contained a standard form contract. Section 15 was a clause entitled "Adjustment of Claims and Disputes," which provided for the secretary or a board designated by him to resolve "any claims, doubts, or disputes which may arise under this contract."[62]

The War Department created the Board of Contract Adjustment on November 6, 1918, by General Order No. 103, "to hear and determine all claims, doubts or disputes" arising from War Department contracts. The board had not begun to function when the war ended on November 11, 1918. Consequently, once operational, it was inundated with contract termination claims. Two years later, it became the Appeal Section of the War Department Claims Board. It expired in 1922 when war claims were finally completed.

The war had profoundly affected substantive procurement law, especially in the areas of contract types, disputes, and termination for convenience. These substantive changes were a fitting accompaniment to the extensive procedural changes between the wars. Memories of the First World War colored the interwar period. The memory of the American army begging for allied supplies haunted the military, creating a mania to be better prepared for the next war. The memory of suffering soldiers haunted others, who were sickened and infuriated by the idea that DuPont and Bethlehem and hundreds of other firms and individuals made millions. They vowed to prevent such profiteering in the next war. The distrust, political maneuvering, and antagonism between these two groups—virtually a blood feud—marked the interwar period.

*Chapter 16*

# The Interwar Period

Describing the story of government contracts during the interwar period is similar to announcing the activities in a three-ring circus. Simply too much is going on for orderly depictions.

During this period, critics pilloried government contractors not merely as crooks but as murderers who had engineered our entry into World War I for their own profit. This widespread and virulent belief stymied the services in their drive to prepare the nation better for the next war. The services had learned the bleak and uncompromising lesson of America's attempted mobilization. Quick mobilizations had ended with the "Splendid Little War" with Spain; modern war required either the luxury of a lengthy prewar mobilization or an industrial base primed for quick action.

Therefore, during the interwar period, a tug-of-war raged between those trying to tighten the controls on government contracts and those trying to ease the reins to allow greater discretion to build the mobilization base and prepare the best possible equipment for war. That tension made contracting particularly difficult because never before did the technology of war change so fast. Improved aircraft leap-frogged over revolutionary designs introduced just a few months before. Traditional concepts of competitive bidding straitjacketed the ability of the services to keep pace.

Moreover, the contracting picture during this time was shaped by the stock market crash in October 1929 and what followed. During the Great Depression, Congress layered the procurement process with numerous statutes whose purposes were totally different from the timely delivery of acceptable goods and services. Then more than ever, what was produced was not as important as how it was produced. Were the workers paid decent wages to labor on American-made materials? Public works projects took on new meaning as the nation built great dams and other projects as much to alleviate unemployment as to provide electricity.

Adding to the confusion and tension were the profound changes that occurred in both the military and civilian procurement structure. The nation

tinkered, dismantled, and rearranged the process in its continuing quest to produce an efficient, fair, and reasonably priced contract system.

Between the Mexican War and the Civil War, one image symbolized government contracting: a team of horses pulling a stagecoach or a freight wagon. During World War I and between World Wars I and II, the airplane became the symbol because now it dominated procurement. The federal government remained virtually the sole customer of industry, but the customer had a warlike as well as a peaceful intent.

As the army and navy sought to expand and modernize their air fleets, they continued to develop the airplane as an instrument of war. This presented new challenges to the procurement system, which, for the first time, confronted a technology that changed faster than contracting could keep up with. Meanwhile, the airplane also showed its peaceful use as it began to carry the mail. The Post Office used the plane to deliver the mail by soaring over the same routes that stagecoaches and jackass mail had traveled seventy years before. The airmail contracts spawned the airlines that traverse the globe today.

## Airmail

The airmail story begins before the war ended. President Woodrow Wilson and his postmaster general, Albert Sidney Burleson, a former Democratic congressman from Texas, sought to use an airmail service to develop commercial aviation. The point man for the project was Otto Praeger, the second assistant postmaster general in charge of mail transportation, whose only aeronautical qualification was that he had been a spectator during the experimental flights of the Wright brothers at Fort Myer in 1909.

The Post Office's opportunity came when the Alaska Engineering Commission wrote that promoters could start an airmail service in the territory if a government contract would help subsidize the costs. Meanwhile, entrepreneurs in Massachusetts were planning an airmail service between New Bedford and Nantucket. Praeger and Burleson took advantage of these ventures to inaugurate an airmail service, even though the Post Office did not have funds to pay airmail contractors. On February 12, 1916, the Post Office formally advertised for bids to carry airmail on seven routes in Alaska and one in Massachusetts, but the advertisement contained an escape clause that permitted the government to reject all bids. To obtain the

necessary money, Burleson wrote to Senator John H. Bankhead, the Alabama Democrat who chaired the Post Office Committee, and asked the Senate to add $50,000 to the House-passed postal appropriation bill to contract for airmail. Bankhead's committee reported the amendment favorably, and in July Congress passed it without debate. The Post Office now had funds but no bidders. When it opened bids on May 12, only one bidder responded and was rejected because it had not posted a bond. The promoters had backed out, fearing that no aircraft could cope with the severe winters of Massachusetts, let alone Alaska.[1]

Praeger then asked three aircraft manufacturers to operate a mail service from Washington to New York. Curtiss showed no interest because of its large war contracts. L. W. F. Engineering merely suggested that the Post Office borrow six aircraft from the Signal Corps. The Standard Aero Corporation, however, submitted a detailed plan that required five aircraft with 150 horsepower (HP) engines, five pilots, and two mechanics. Aircraft ($68,000), spare parts, pilots, mechanics, hangars, and repair shops for the first month of operation would cost $82,198.50. Later months of service would cost $3,973.75 each. Aircraft could be ready seven weeks after the order. Hiring qualified aviators would be more difficult, and Standard suggested that the Post Office borrow pilots from the army.[2]

On February 12, 1918, the Post Office called for bids to supply five aircraft for a Washington-to-New York mail route. Tailored to Standard's earlier proposal, the bid specifications required airplanes that could carry three hundred pounds of mail at least two hundred miles at a maximum speed of one hundred miles per hour (MPH). Bids were due in ten days, and aircraft had to be delivered no later than April 25. The Post Office stressed that the new mail route was not an experiment: "Once established, it is to remain a permanent service."[3]

Praeger probably assumed that Standard was a safe, if not a sure, bet to win the contract that mirrored its plan, but a wild card came up. As bids were being opened on February 22, Colonel Edward Deeds appeared with a startling offer: the army would fly the mail with military airplanes and pilots. The Army Expeditionary Force had recently cabled and asked that pilots receive additional cross-country flying experience. The Aviation Section of the Signal Corps decided that carrying the mail would be perfect. This solved Praeger's funding problems and any difficulty he might have had in acquiring pilots during a war.[4]

Praeger and Deeds agreed on terms by March 1. The War Department would control and operate all mail flights for one year and would provide enough aircraft, pilots, mechanics, and spare parts for a dependable daily trip each way. The Post Office would provide airfields, hangars, repair shops, clerical personnel, ground transportation, gasoline, and lubricants. After Congress appropriated $100,000 for the service, Secretary of War Baker publicly announced on May 3, 1918, that on May 15, the army would start the world's first regular airmail service from Washington to Philadelphia to New York City. The timing stunned the Air Service. In twelve days, it had to assemble its pilots, buy and modify its aircraft, select landing sites in the three cities, coordinate logistics, and organize an impressive inaugural ceremony.[5]

Colonel Henry "Hap" Arnold, the legendary Air Corps officer who as a five-star general led the Air Corps during World War II, recommended Major Reuben Fleet to head the airmail program. On May 6, Secretary of War Baker summoned Fleet to discuss the project. Fleet bluntly suggested postponing the service's inauguration so the army would have more time to obtain modified Curtiss aircraft with enlarged fuel tanks. Baker called Postmaster General Burleson. "Burleson went into a rage over the suggestion for deferment, stating he had already announced to the press that an Army Aerial Mail Service would get started on 15 May," Fleet later wrote. "It had to start then, even if war work suffered."[6]

Major Fleet had no choice. He used a phone in Baker's office to tell one of his subordinates in the Air Service that he needed six planes from the Curtiss Aeroplane and Motor Company on Long Island immediately. Major General George O. Squier, chief Signal Corps officer, promptly issued the necessary orders for the specially modified planes. The Jenny normally had a nineteen-gallon fuel tank enabling it to fly about ninety miles at about 65 MPH. For this unique mission, however, Curtiss removed the seat and controls from the front cockpit and used the extra space to store fuel, oil, and a special mail hopper. The six modified planes had to be delivered to the army airfield in Mineola within the unbelievably short time of eight days. Curtiss accepted the order by phone only if the "rush" project could take precedence over its other war production work. Major General Squier also arranged for pilots, mechanics, and an officer-in-charge. All personnel and equipment had to be in place by May 15, he emphasized.[7]

Curtiss delivered early. On May 12, three days before they had to begin operations, the pilots and airplanes first came together. Three days later, an army lieutenant took off from Washington as Alexander Graham Bell, Admiral Robert Peary, Navy Secretary Josesphus Daniels, and his thirty-six year old assistant, Franklin Delano Roosevelt, looked on. The service started on time but with more than its share of embarrassments and tragedies, both public and private. Forced landings occurred every 1,373 miles and the eight-year history of the government, both the army and the Post Office, flying the mail has been described as "pretty much a suicide club."[8] Nevertheless, the mail was being carried through the air in the best traditions of Chorpenning and Woodward.

Within a few months, however, the Air Service concluded that air mail was more trouble than it was worth as a training vehicle. The service and Secretary of War Baker wanted to shift this burden back to the Post Office. After Baker wrote to Burleson, proposing the transfer, Burleson agreed that the Post Office would take over the task. Subordinates worked out the details for the War Department to shift operation of the airmail service to the Post Office, effective August 12, 1918. With his main task ended, Major Reuben Fleet remained in the army and became a contracting officer, negotiating with private aircraft companies. He quit in 1922 to join the commercial aircraft industry and founded a company that would become part of General Dynamics.

To prepare for the operation, Praeger had first asked air mail pilots to suggest the "ideal mail plane"; then he consulted aeronautical engineers and aircraft manufacturers. He chose a plane with two or more engines that could carry at least fifteen hundred pounds of mail at 90–100 MPH, for at least six hours, at a minimum ceiling of fifteen hundred feet. Thirteen airplane manufacturers responded to the formal advertisement for bids, which would be opened on June 2, with delivery within six months of award. After accepting three bids, the Post Office was ready to fly.

Meanwhile, Bill Boeing entered the airmail business. Boeing had begun building aircraft before World War I and in July 1916 he put up $100,000 and organized a manufacturing company. The second plane he built (with certain improvements) was the Model C, which first flew just before America entered World War 1. The Model C passed the navy tests, and Boeing's company turned out fifty trainers for the navy before the war ended.

After the war, the company survived on small orders from the army and navy until Eddie Hubbard, an early test pilot, convinced the Post Office that Seattle and Victoria, British Columbia, needed an airmail service linking them to expedite letters bound to and from the Orient by steamship. Although the Post Office could not provide such services without an international agreement, the U.S. and Canadian governments could pay a private operator for the work. Hubbard and Boeing made the first trip on March 3, 1919, in a Model C. Later, the new B-1 (an open-cockpit flying boat) with Hubbard and Boeing alternating at the controls, flew eighty-four miles on the first international contract airmail service. The Post Office paid Hubbard $200 per round trip (with a maximum of twelve trips per month).[9]

In 1920, Congress authorized the Post Office to contract for air mail with private individuals or companies "at a cost not greater than the same service by rail," with funds from the appropriations for railroad mail. In September 1920, the Post Office awarded contracts for three routes to Alfred W. Lawson, the sole bidder. Lawson agreed to operate, for one year, between Pittsburgh and St. Louis for $147,000, New York and Atlanta for $300,000, and New York and Chicago via Pittsburgh for $236,000. Lawson knew that he could not make money from the contracts alone, but he hoped to profit by combining mail and passenger service. Within a year, Lawson had to agree to cancellation, without penalty, of the contracts for two of the three routes.[10]

Lawson and Hubbard were not the only contractors. The Florida-West Indies Company sought a contract for one trip daily, except Sunday, from Key West to Havana, beginning October 15, 1920. It hoped that the stability implied by a mail contract would attract capital. On August 25, 1920, supported by Praeger, the airline received a one-year contract, which Postmaster General Burleson called an "important forward step in improving postal communication with our Latin American neighbor." Florida-West Indies would receive $20,000 for carrying up to five hundred pounds of regular mail per day, plus $1.68 per pound for letters bearing special airmail postage.[11]

Merrill K. Riddick secured a contract in April 1923 to carry mail eighty miles from New Orleans to Pilottown, a quarantine station at the tip of the Mississippi Delta that handled steamers on Latin American routes. American commercial aviation comprised small unconnected ventures like Hubbard's, Lawson's, and Riddick's, however, because post office personnel carried the bulk of the mail.

Actually, the Republican administrations preferred to have contractors carry the mail, but most contractors, like the steel men in 1880, were not interested until Congress changed the rate structure and made it more profitable. Congress rejected several attempts to change rates because a revised rate structure smacked of a subsidy, which Congress disliked. In December 1921, Halver Steenerson, Republican from Minnesota and chairman of the House Post Office Committee, introduced a bill allowing the Post Office to charge six cents an ounce for airmail (three times the first class rate for mail) so that the contractor could receive the surcharge (four cents).

Second Assistant Postmaster General Shaughnessy testified that he approved the bill "in principle" as a "step in the right direction, along the lines that the Post Office Department would like to see developed because we feel that sooner or later the department should give up the operation of the Air Mail Service." He stressed that the Post Office had started the airmail service to prove the practicality of commercial aviation. "This work has been done," Shaughnessy concluded, "and the time has arrived for the necessary constructive legislation to make it possible for private interests to get started." However, Shaughnessy emphasized that a fair rate of compensation would be difficult to determine under the formula and suggested a pound-per-mile structure. The Post Office had first tried to collect extra postage in 1918–1919, but failed "because there was no well handled advertising or personal solicitation such as would be the case with a private company."[12]

Other testimony proved that potential contractors wanted a guaranteed minimum. C. G. Peterson of the Wright Aeronautical Corporation testified that neither Wright nor any other responsible company would bid without the guarantee of a minimum load because there was no reasonable chance of breaking even without it.

The House failed to act on Steenerson's bill, or on similar proposals submitted in 1922, yet Congressman M. Clyde Kelly, Republican on the Post Office Committee, continued trying to design legislation that would satisfy businessmen and yet quiet his colleagues' apprehension about subsidies. In February 1924, Congressman Kelly introduced a bill authorizing the postmaster general to contract for air mail at a rate not to exceed four-fifths of the revenue derived from a postage charge of ten cents per ounce (or fraction thereof). Also, contractors could carry first class mail and receive up to four-fifths of that revenue. Kelly explained that this would permit the airmail service to expand without burdening the taxpayers and

would allow contractors to secure full loads of common mail until the use of airmail grew to fill the aircraft at the contracted rates.

Kelly's bill quelled Congress' fears and passed with little debate and no changes. The Air Mail Act of 1925, often called the Kelly Act, became law on February 2, 1925. It encouraged private contract mail carriers and stimulated the development of airlines but at a higher price than the government expected. Government payments to private companies exceeded air mail revenue by $53 million from 1926 to 1933.

The Air Mail Act of 1925 spelled the eventual end of the Post Office airmail service that had carried the mail since 1918. Although Postmaster General Harry S. New wanted to close the Air Mail Service "as soon as possible," he had to move cautiously because contract carriers were still relatively untried. "This is not a question of bargain counter competition," he warned. He intended "to exercise the most extreme care in scrutinizing bids and making these awards." Until contract carriers proved their ability, he contracted only the collateral routes (feeder lines), while the Post Office operated the New York-San Francisco main line, the "backbone of the system."[13]

The Kelly Act whetted commercial appetites and brought out a flood of bidders when the Post Office called for bids on the first contract airmail (CAM) routes. On October 7, 1925, New announced the first awards and proclaimed they marked an "epoch in the history of the American Post Office" and "the future of aerial transport in the United States" depended on their success.[14]

The Boston-New York route (CAM 1) went to Colonial Air Transport, which was partly owned by Juan Trippe, who would later head Pan Am.

The Chicago-St. Louis route (CAM 2) went to Robertson Aircraft Corporation, which then hired pilots, including the twenty-three year old Minnesotan, Charles A. Lindbergh. CAM 2 saved business letters one full day of travel over train service. Robertson started service with airplanes from the fledgling Douglas Aircraft Company on April 15. Nothing illustrates the danger of flying in those days better than Robertson's experience. The corporation had four planes; two crashed, and the third landed and was destroyed by fire. One of those crashes could have been especially tragic. On September 16, 1926, Lindbergh had to bail out after his plane stalled, but while he was still parachuting, the plane's engine restarted.

The plane circled and just narrowly missed him before crashing. True to the spirit of Snowshoe Thompson, Lindbergh took the mail, undamaged, to the nearest post office. The next spring he became famous. Robertson eventually sold out to another company that later became part of American Airlines.

National Air Transport won the valuable Chicago-Dallas route (CAM 3). National Air Transport was part of a holding company, North American Aviation Corporation, that Clement Keys had formed in 1925. One major investor was General Motors, which was intrigued by the possibility of a "flying fliver." During that time, GM also purchased Allison Engineering Company and helped organize Bendix Aviation. National Air Transport got underway on May 12, using Curtiss planes between Chicago and Dallas.[15]

Harris M. (Pop) Hanshue's Western Air Express won the Salt Lake City-Los Angeles (CAM 4) route. (Western later became the "W" in TWA.) On April 17, Douglas M2s of Western Air Express connected Salt Lake City and Los Angeles. Walter T. Varney won the Elko, Nevada-Pasco, Washington, route (CAM 5). Varney, a World War I pilot, ran a flying school in the San Francisco Bay area and operated an air express service out of that city. When the Post Office called for bids, Varney shrewdly bid for the Pasco-Elko route because he figured no one else would want it. He was right. His bid of $1.28 a pound was the only one received. However, he had to suspend service and seek an extension when his Curtiss C-6s, with a 150-HY engine, could not complete the northbound portion of the trip because of headwinds. Varney lost money under the Post Office's system of paying a percentage of the postage on letters they carried. Varney helped himself by convincing merchants to use a one ounce "air-o-gram." He sold his airmail contracts in 1930, and the airline eventually became part of United Airlines.[16]

Other contracts soon followed. Like General Motors, Henry Ford had the flying bug. He won CAM 6, Detroit to Cleveland, and CAM 7, Detroit to Chicago. Ford bought out designer William B. "Jackknife" Stout and started developing the next great airplane, the Ford Trimotor. He activated his routes on February 15, 1926. CAM 11, Cleveland to Pittsburgh, was won by Clifford Ball, an automobile dealer in Pennsylvania. He bought some land near Pittsburgh that pilots were using as an airfield. When the pilots did not pay their rent, he seized their aircraft as payment. Because he had an airport and airplanes, he bid and won CAM 11.[17]

Meanwhile, the Post Office was buying planes for its coast-to-coast route. In May 1926, Postmaster General New ordered forty Douglas M4 planes at $11,900 each to stimulate the aircraft industry. The airmail pilots preferred the Douglas M4, and it had easily won the competition. This single-engine biplane, with a 400-HP Liberty engine (as required by postal specifications) featured such "innovations" as brakes and a tail wheel instead of a skid. It could carry one thousand pounds of mail at 145 MPH and land at 52 MPH. The Air Mail Service later bought eleven more Douglas biplanes.

Between February 1926 and April 1927, contract route mileage increased from 328 to 4,713, and monthly compensation rose from $466 to $121,987. The contract carriers had proven themselves, and the Post Office decided to contract the transcontinental routes.

In the fall of 1926, Eddie Hubbard rushed to the Boeing Airplane Company offices proclaiming that the Post Office was opening its transcontinental airmail route for contract. The Chicago-San Francisco segment would be offered first, in November. "This is the opportunity of the century," he said. "I've got all the figures on mileage and pounds of mail carried. If you can produce some mail planes, I know we can operate them successfully."[18]

Harris Hanshue's Western Air Express had been flying the Salt Lake City-Los Angeles feeder line for $3.00 a pound. He felt he had the best chance to win this coveted Chicago-San Francisco route, CAM 18, and bid $2.24 a pound for the first one thousand miles and twenty-four cents a pound for each additional one hundred miles. But Hanshue had to make his profits off the mail alone. Boeing had an edge. Because he was also building the planes, he could bid lower on the route and still make money. He bid $1.50 a pound for the first one thousand miles and fifteen cents a pound for each additional one hundred miles. That bid shocked the industry when the bids were opened in Washington on January 15, 1927, because the Post Office was only paying that much for the relatively easy New York-to-Boston run. Hanshue and the other competitors protested that Boeing would ruin the contract system because no one could operate safely on such an income; their complaints fell on deaf ears.

To fulfill the contract, Boeing created a new Boeing Air Transport Company with common stock of nominal value plus $750,000 in preferred stock, all owned by Bill Boeing. The new entity contracted with the Boeing Airplane Company to build twenty-five planes. To comply with the contract start date,

however, Boeing's five-man lobby in Washington, D.C., convinced the navy to drop back twenty-five places in Pratt & Whitney's Wasp engine delivery schedule. Beginning in February 1927, Pratt & Whitney shipped five of the Wasp engines a month to Boeing. Meanwhile Boeing had modified the planes by adding two seats in a tiny enclosed cabin between the wings, "for a mechanic and a returning pilot." By the July 1 starting date, Boeing had twenty-five Boeing planes positioned along the route. To fly and maintain this fleet, Eddie Hubbard had followed the time honored tradition of hiring the previous "contractor's" workers by employing the Post Office's veteran pilots and mechanics.

Although Postmaster General New awarded the Chicago-San Francisco segment to Boeing Air Transport, he delayed a decision on the New York-Chicago route (CAM 17). Originally, Colonial had underbid National Air Transport by ten cents ($1.88 a pound versus $1.98 a pound) but the bids were thrown out on a technicality. On the rebidding, North American Airways underbid National Air Transport, but NAT had more experience as an air carrier and had better political connections. In April, New awarded the contract to NAT as the "lowest and best responsible bidder."

The Post Office relinquished the Chicago-San Francisco route to Boeing at midnight, June 30. The transfer of the New York-Chicago section to NAT occurred at Cleveland at 12:58 a.m., September 1, when Post Office pilot Stephen T. Kaufman arrived with the mail. A NAT pilot carried the mail through to Chicago in a Douglas M4 that had been purchased from the Post Office. So when Kaufman landed in front of more than ten thousand spectators, the Post Office Air Mail Service ended.

Meanwhile, the Post Office had been advertising for foreign airmail routes (FAMs). Juan Trippe had joined Pan American Airways and gobbled up the routes with shrewd determination and foresight, but the airline almost ended before it began.[19]

Pan Am's first route, FAM 4, was from Key West across the Florida Strait to Havana. The contract required the company to begin operations by October 19, 1927, but the factory had not yet delivered the airline's only plane, a Fokker trimotor. So for $175, an obliging barnstormer agreed to fly the route, and Pan American took to the skies.[20]

Meanwhile, the Post Office had advertised for bids on yet another foreign airmail route—from Brownsville, Texas, to Mexico City. Several companies bid, including one who bid less than a dollar a mile. Trippe bid two dollars a mile, the highest rate permitted by law, but still received the contract because only Pan Am could perform. The Mexican government permitted only a small Mexican concern called Compania Mexicana de Aviacion, or CMA, to carry mail in its territory. Trippe had negotiated with CMA the year before and bought the line. Two years later, the Post Office extended the route (FAM 8) south from Mexico City through Central America to Panama. Pan Am won all the contracts that went through Mexico even though it bid the maximum allowed ($2 per pound) because the lower bidders could not legally operate in Mexico. A similar scenario played out with route FAM 5, Miami to the Canal Zone. The only other bidder needed a thirty-day extension to negotiate arrangements with foreign countries. Its request was denied, so Pan Am got the contract because it already had arrangements with the countries involved.[21]

The Foreign Air Mail Act of March 8, 1928, helped Pan Am even more. Trippe had convinced Congressman Kelly to authorize ten-year contracts in the act and give wide discretion to the postmaster general in awarding routes. With that broad discretion, on July 28, the postmaster general awarded to Pan Am route FAM 6—Cuba to Puerto Rico via Haiti and the Dominican Republic. Although West Indies Aerial Express had bid the same price, Pan Am had already demonstrated its capability on the Key West-Havana route. Later, the next postmaster general, Walter Brown, asked Secretary of State Henry Stimson to render diplomatic assistance to Pan Am in preference to any other companies in Latin America because, as he later explained to a Senate investigating committee, the Post Office already had contracts with Pan American and desperately wanted to increase its revenues so it could become self-sustaining.

Within three years the modern airline industry began to take shape. For example, in early 1929, a group of financiers including W. Averell Harriman and Robert Lehman founded the Aviation Corporation (AVCO). They then bought, among others things, Colonial Airways Corporation, which had the New York-Boston contract, and several other northeastern routes. The group set up a holding company (American Airways) to handle its air transport business.

Boeing reorganized in 1928 as the United Aircraft and Transport Corporation and quickly merged with Pratt & Whitney and other firms to form a conglomerate to compete with General Motors' NAT and AVCO.

In September 1927, Pitcairn Airlines bid on the New York-Atlanta via Philadelphia and Washington air route (CAM 19). It won the contract on February 28, 1928, and began service on May 1. Clement Keys of NAT later bought Pitcairn for $2.5 million and assumed the mail contract. On January 15, 1930, Keys changed Pitcairn's name to Eastern Air Transport.

Transcontinental Air Transport (TAT) was incorporated on May 16, 1928. TAT was the brainchild of Keys, Charles Lindbergh, and former assistant postmaster general, Colonel Paul Henderson. They had met in the Engineers Club in New York City and conceived TAT, which would be a train-plane combination to connect the coasts for the first time. Henderson had been instrumental in developing the transcontinental airmail service through a network of landing fields and lighted beacons so pilots could fly at night.[22]

Soon, however, Keys lost control of NAT in a battle with United Aircraft and Transport Corporation. This combination of NAT and the old Boeing Transport meant that United controlled the CAMs from New York to Chicago and from Chicago to San Francisco. United then added Stearman Aircraft of Wichita, Kansas; Chance Vought (which built navy planes); Hamilton Propeller; and Sikorsky Aviation, which would sell the army its first helicopter in 1943. This conglomerate dominated the aircraft-airline industry.

Despite these encouraging beginnings, problems soon developed. A rate change altered the Kelly Act's compensation schedule. In 1928, Congress cut airmail postage rates to encourage public usage, but the airlines were still being paid by weight. Therefore, many contractors received subsidies that exceeded the postage on the letters they carried. Some of them began swelling their revenues by mailing letters to themselves. One line sent out hundreds of Christmas cards; each cost about nine cents including postage, but brought in eighteen cents in revenue. A recipient of one of the cards called it "a nice combination of good will to man and business sense."[23]

The new postmaster general, Walter Folger Brown, was former chairman of the Republican National Committee and had been Hoover's campaign manager in 1928. In early 1930, he lobbied Congress to change how the

government chose and paid the airmail carriers. On April 29, 1930, Congress passed the resulting McNary-Watres Act, named after Senator Charles D. McNary of Oregon and Congressman Lawrence Watres of Pennsylvania, but really drafted by Brown. It provided that airlines would be paid not by pounds of mail per mile, but by the amount of space available for mail. Large planes would thus earn more than small ones, even if they carried less or no mail at all on a particular trip. The new rules also provided bonuses for multi-engined craft equipped with better navigational devices. In one stroke, Brown had eliminated the revenue-enhancing tricks of some of the marginal airlines, ruined the companies with smaller airplanes, and forced airlines to use spacious planes that could also carry large numbers of fare-paying passengers.[24]

Under the act, the postmaster general could bypass low bids and award the route instead to the "lowest responsible bidder." This eliminated all but the most experienced air carriers, because the act defined a responsible bidder as one that had flown daily scheduled service over a 250-mile route for at least six months. Less than a month later, Brown stiffened this definition by requiring that such service must be offered both day and night. In addition, the postmaster general could extend or consolidate routes "when in his judgment the public interest will be promoted thereby."[25]

Congress did not realize that it had made Brown virtually the czar of the airlines. Brown had wanted the act to allow him to disregard the competitive bidding rules entirely, but Congress had not gone that far. Brown planned to do so anyway.

Like Alexander Hamilton, he believed in strong central power, and he used airmail contracts to redraw the air route map of the United States and reshape the entire industry. When he took office, forty-four contractors were carrying the mail over different routes. Brown simply choked off undesired competitive bids and redistributed routes. Ironically, he acted much as another Postmaster General Brown had acted right before the Civil War in drawing and then awarding the overland route for carrying the mail to California. That earlier Brown planned to help the South on the eve of the Civil War. The 1930s Brown intended to drag the airline industry into prosperity by ruthlessly forcing consolidation or liquidation of smaller lines.

Early in May, just two weeks after the act passed, Brown convened a conference at his office in Washington. He invited only the heads of the

large airlines because, as he later explained, "There was no sense in taking the government's money and dishing it out to every little fellow that was flying around the map and was not going to do anything." D. W. Schaeffer of Transcontinental Air Transport attended, even though his company had no contract.[26]

Between May 19 and May 30, Brown unfolded his bold plan to divvy up the airmail contracts despite rules requiring competitive bidding. These twelve days of often rancorous discussion and debate came to be known as the infamous "Spoils Conference." They deserved that pejorative title, since the big aviation combines reaped profits while the small operators were disenfranchised. The meetings were not secret, as critics later charged, just not well publicized. Paul Henderson of United wondered whether they were violating the Sherman Anti-Trust Act, but lawyer Chester Cuthell, one of TAT's founders, replied—"If we were holding this meeting across the street in the Raleigh Hotel, it would be an improper meeting, but because we are holding it at the invitation of a member of the cabinet, and in the office of the Post Office Department, it is perfectly all right."[27]

The postmaster general gave an ultimatum right away. He praised United's new service from New York to San Francisco as an admirable achievement but declared that no airline should have a monopoly on coast-to-coast operations. Two more bicoastal airlines had to operate: one flying a central route from New York to Los Angeles via such points as Pittsburgh and St. Louis, the other following a southern course from New York and Washington to Atlanta and on to Los Angeles by way of Dallas and Oklahoma City. He would not approve any transcontinental route served by an amalgam of airlines with connecting flights; a single carrier would have to operate each route even if it meant merging existing airlines. Brown then suggested that the executives work out various consolidations.

The executives did not like Brown's proposals, but because he would award the lucrative airmail contracts, their lifeblood until passenger travel developed, they really could not do much about it. Still, these competitors could not agree on the many changes required to lay out the new transcontinental lines. So before long, they asked Brown to "act as umpire in settling and working out such voluntary rearrangements as might be necessary."[28] Brown relished the opportunity and quickly reshaped the companies and the route map. To fly the central route across the country, he chose Transcontinental Air Transport, the coast-to-coast train-plane

combination. Although well financed, Transcontinental had never flown at night, which technically rendered it ineligible. To meet his own definition of a responsible bidder, Brown ordained that Transcontinental would merge with Western Air Express, whose long night-flying experience would then qualify the combined company.[29]

Pop Hanshue, Western Air Express' founder, had already rejected one merger bid from Transcontinental. This prospect and indeed the entire conference disgusted him. When asked his opinion of the meetings, he snapped, "I think you're all crazy as hell!" Now, he bristled at the ultimatum and furiously pointed out that WAE already flew large segments of both the central and southern routes. Brown quietly repeated his TAT-WAE merger suggestion.[30]

"But this will prevent us from bidding on the southern route," Hanshue protested. "We're flying as far east as Dallas now." "Of course it will," Brown agreed. "So I advise you to sell your Los Angeles-Dallas operation to Southwest Air Fast Express."[31]

Hanshue told Brown he could go to hell and that day's meeting soon adjourned. But he eventually gave in; otherwise, he would risk all of Western's mail contracts. The new line became Transcontinental and Western Air, or TWA. Years later, when TWA began to fly internationally, it preserved its initials in a new name, Trans World Airlines.[32]

Brown repeated such cohesion when he put together the southern transcontinental line. Delta Air Service, a former crop-dusting operation that flew passengers between Birmingham and Dallas, had hoped to contend for the route, but it lacked night-flying experience. The postmaster general had not even invited Delta founder Collett Everman Woolman to the conference, but Woolman received a phone tip and came anyway, arriving late.

According to Woolman's testimony four years later to a Senate committee, the postmaster general had acknowledged that Delta had established "legitimate pioneer operations over an important route" and had promised that the firm "would certainly be taken care of."[33] Delta then negotiated with Eastern Air Transport, which expected to win an airmail contract between Atlanta and New Orleans. When Eastern refused to sublet this contract to Delta, Brown left Eastern out of the running for the route. Disgusted, Woolman bowed out of the competition and went back to crop dusting.

Another airline executive, Erle Halliburton, refused to leave the business so gracefully. Halliburton, an Oklahoman oilman, owned Tulsa-based Southwest Air Fast Express, known for short as SAFE-way. He wanted his little operation to become a transcontinental system, but Brown had deemed him unreliable and had refused to invite him. Halliburton appealed, through an influential friend, all the way to the White House, and won the right to attend. It did no good. Brown had decided to give the southern route to the AVCO conglomerate, which would operate as American Airways. He forced Halliburton to sell Southern Air Fast Express to them for $1.4 million. Transcontinental and Western Air paid exactly that much to American for a hangar in Tulsa, plus the value of American's stock in a unit absorbed by TWA. After arranging these shotgun marriages, on October 1, 1930, Brown awarded the southern transcontinental route to American Airways and the central route to TWA.

Brown did the same thing overseas. By the summer of 1930, the NYRBA airline, a Pan Am competitor, desperately needed an airmail contract to survive. Brown refused and suggested they sell out. That was difficult because Pan Am was obviously the only buyer. Brown convinced both airlines that no airmail contract would be awarded until the merger. As one Pan Am official explained later, "Postmaster General Brown said to us, 'Buy them.' " On August 19, 1930, the sale of NYRBA to Pan Am was announced. NYRBA stockholders got about fifty cents on the dollar, generous under the circumstances. Pan Am acquired thirty-one Commodores, and Sikorskys and almost doubled the size of its fleet. Just one day after the merger, the Post Office advertised for bids on the South American east-coast mail route. Because Pan Am's only competitor had been eliminated, it bid the maximum rate and won.[34]

As early as 1932, critics began arguing that the Post Office should cancel the contracts awarded as a result of the Spoils Conference. A congressional committee began hearings in March 1932 on a bill directing the postmaster general to revoke all contracts and route certificates awarded without public advertisement. The bill died, as Fortune magazine remarked, because "a Republican Congress made barren soil for any inquiry into the actions of the party's No. I Politico, always the Postmaster General."[35]

For some time, the same people and interests, such as United and AVCO, controlled both the major air transport companies and the large aircraft manufacturers. In February 1933, the investigating committee concluded that

these holding companies had prevented the free development of aviation and had wasted public funds. Twenty-four of the twenty-seven Post Office airmail contracts awarded during Walter Brown's tenure went to United, AVCO, and TAT.

A month after the committee report, the Democratic administration of Franklin D. Roosevelt took office in March 1933. Soon Senator Hugo Black of Alabama and his Senate Special Committee on Investigation of Air Mail and Ocean Mail Contracts launched a full-scale probe that substantiated the earlier committee report. This committee brought out the details of the Spoils Conference.[36]

The investigation gained its fame from Fulton Lewis, a young Hearst reporter. Frustrated because his boss did not print the story, Lewis handed Senator Black his report on how the Post Office had awarded the New York-Washington mail contract to Eastern Air Transport at a rate three times more than the bid by the smaller incumbent, Ludington Line. Soon, at Black's urging, one hundred Interstate Commerce Commission agents fanned out through a dozen cities. Precisely at 9:13 a.m., their watches set by Western Union clocks, the investigators marched into one hundred aviation offices, simultaneously served warrants, and seized correspondence.[37]

During the hearing in February 1934, Black became convinced that in America "all great fortunes trace back to the government's treasury."[38] The hearings dealt with military contracts, the huge salaries paid to the heads of the big aviation combines, and the enormous profits they had made from stock in the anticipation that their airline subsidiaries would win lucrative Post Office contracts.

The hearings came to life when Black delved into the Spoils Conference with the disenfranchised small operators as star witnesses. Woolman explained why he sold Delta's operations to AVCO after Brown shut him out of any airmail contract. When Black asked, "Did the company who got the line have any experience of any kind or character on your line?" Woolman answered, "No one had flown that line but ourselves." Black then asked, "Did you sell out because you wanted to sell out?" Woolman replied, "We sold out because it seemed the expedient thing to do." "Why?", Black queried. "Because," Woolman said, "it would be impossible to compete with a line carrying airmail and it was impossible, and has proven repeatedly, to make money in carrying passengers alone."[39]

Black fleshed out the details through questioning and contemporaneous documents his staff had uncovered. One witness confirmed that the deadlocked operators had handed the map back to Brown and "agreed to abide by his decision."[40]

Black uncovered that William P. MacCracken, a former assistant secretary of commerce for air under Coolidge, and now a Washington lawyer representing half a dozen airlines, had acted as chairman of the meetings. Black demanded that MacCracken produce his records, but he refused, claiming the attorney-client privilege. Black countered that MacCracken had acted as a lobbyist and ordered him arrested for contempt of the Senate. Meanwhile, two airline executives had retrieved papers from MacCracken's files. When Black found out, he ordered these men arrested too. One quickly handed over his papers, but the other, Vice President L. H. Brittin of Northwest Airways, had torn his up. Black's men searched three hundred bags of wastepaper, located the torn fragments, and pieced them together. Black had Brittin read into the record a letter that he had written to a woman in Illinois during the meetings. The letter summarized the Spoils Conference.

> Thanks for yours of the 29th. The airmail contractors are having a desperate time in Washington. The postmaster general was not able to get the necessary legislation in the Watres Bill to enable him to grant airmail contracts to the passenger-carrying airlines without competitive bids. He has made up his mind to do this anyway, and has hit upon a plan that is causing the operators no end of trouble. He has conceived, probably in iniquity, a plan for three main transcontinental routes competitively operating, and several north-and-south lines as well.
>
> To work things out he called the operators together, handed them this map and instructed them to settle among themselves the distribution of these routes. The operators have been meeting every day for two weeks and to date have arrived nowhere. The postmaster general meets with them about once a week, stirs them up and keeps them going.[41]

MacCracken and Brittin were convicted and sent to jail for ten days.

When Brown testified, he took full responsibility for making the awards and supplied the background. With President Hoover's support, he had decided that the nation should not experience the disorganized and unruly competition in airlines that it had with its railroads. A single airline should serve each of three transcontinental routes. Brown decided that the three conglomerates that dominated aircraft manufacture and military contracting

should get the three routes. United already had the San Francisco-New York route. So he explained the mergers. He admitted his strong pressure when Western Air Express President Harris Hanshue balked at merging into the central transcontinental route. That merger was "the key to our whole plan of developing commercial aviation, and we naturally wanted to take as few chances as possible of disaster." Hanshue gave in, but Brown contended, "I did not force him."

Brown's description of how he helped arrange the third big combination to gain the southern cross-country route corroborated an exchange between Black and Fred Coburn of American Airways:

> *BLACK*: There was an understanding as far as these three big companies were concerned?
>
> *COBURN*: I did not fear any of these companies.
>
> *BLACK*: Why?
>
> *COBURN*: I understood they were not going to bid.
>
> *BLACK*: That was an express understanding?
>
> *COBURN*: Yes, sir.[42]

Although Brown insisted there had been no illegalities, Black asked, "What was the object of these conferences if they were not to arrange what companies should get what lines?" Black recognized the need for mail contract subsidies but not the need to dispense with competitive bidding, as Brown had done. Black concluded: "The control of American aviation has been ruthlessly taken away from the men who could fly and bestowed upon bankers, brokers, promoters and politicians, sitting in their inner offices, allotting among themselves the taxpayers' money."[43]

While the hearings unfolded, a related drama occurred. Late in January 1934, even before the hearings began, Black went to lunch at the White House. He told President Roosevelt that the whole system of airmail contracts that had been devised was illegal. He reminded Roosevelt that under an 1872 act, the postmaster general could cancel contracts obtained by fraud or conspiracy. Second Assistant Postmaster General Harllee Branch had sounded out General Benjamin Foulois, chief of the Army Air Corps. Foulois had been one of the participants in the 1908 Wright flights at Fort

Myer and had been trained by the Wright brothers. He had also commanded the squadron that went into Mexico with Pershing. Branch asked, "If the President should cancel all contracts, do you think the Air Corps should carry the mail?" As a soldier, Foulois did not lightly turn down missions from the commander-in-chief. He said, "Yes sir, if you want us to carry the mail, we'll do it."[44]

The new postmaster general, Jim Farley, relayed that reply to Roosevelt, who was eager to pounce on the Republicans' collusion, but he wanted Farley to check first with Attorney General Hugh Cummings. Cummings read the Post Office Department's one hundred-page report and agreed that wrongdoing had "undoubtedly" occurred. The next day, February 9, 1934, by executive order, Roosevelt annulled all airmail contracts except those held by Pan American (the international airmail carrier which had not been at the Spoils Conference). Postmaster General Farley telegraphed domestic airmail carriers that their contracts would be canceled in ten days. The Army Air Corps would fly the air mail, beginning on February 19.

The speed and breadth of the cancellation infuriated many people. Charles Lindbergh immediately telegraphed the President: "Your present action does not discriminate between innocence and guilt, and places no premium on honest business. Your order of cancellation of all airmail contracts condemns the largest portion of our commercial aviation without just trial." Will Rogers wired the Kansas City Star, "It's like finding a crooked railroad president, and then stopping all the trains."[45]

The order had tragic consequences as the operation became a deadly fiasco. Army pilots were not trained for bad weather flying; many were not even trained for night flying. When the Air Corps took over in midwinter, the worst possible time, crashes and deaths soon resulted. On March 10, responding to the national protest, Roosevelt temporarily halted the experiment, but soon ordered its resumption pending a plan to return to the use of contractors. While the Air Corps suffered more crashes and more casualties, its general efficiency started to improve, but this did not quiet such prominent critics as Charles Lindbergh, who continued to condemn the president. Furthermore, the costs of the army service far exceeded contract performance, so the contractors seemed less mercenary than the Black committee hearings had portrayed.

"The wrath of the public descended on my head," lamented Jim Farley. Roosevelt summoned Foulois. "General, when are these killings going to stop?" he demanded, and for ten minutes he administered what Foulois later described as "the worst tongue-lashing I ever received." In April, Postmaster General Farley met with the contractors at the Post Office Department, just like his predecessor. He told them that all the contracts would be resolicited by competitive bidding, but none of the companies whose contracts had been annulled could bid. Farley agreed to let them get around that prohibition by simply changing their names. American Airways was rebaptized American Airlines, Eastern Air Transport became Eastern Airlines, and Transcontinental and Western Air simply added "Incorporated" to its name in its new incorporation papers. United Airlines' name was not changed at all because the original contracts had been awarded to United's subsidiaries. However, no contract could go to an airline that still employed anyone who had attended the 1930 "Spoils Conference." Many new airline presidents, therefore, took office.[46]

After fifty-seven accidents and twelve deaths in seventy-eight days, army fliers made their last run on May 7, 1934. The commercial airlines were back carrying the mail.

The new contracts would last only until Congress could enact a new law. The operators bid well below Farley's new maximum rate of forty-five cents a mile to make sure they got the contracts in hopes that the new law would raise the rate. Because Farley's advertisements specified multi-engine equipment for the longer routes, the small companies still could not take over the top contracts. The big lines generally regained their major holdings. United, TWA, and American won their transcontinental routes, and Eastern won its profitable routes along the eastern seaboard. But the independents made a comeback, too. Tom Braniff, who had founded the Independent Scheduled Operators Association after he had been shut out entirely by Brown, took the Chicago-Texas route from United. Woolman's Delta Airlines, which had been forced to sell out to American, won a contract to fly mail from Texas through Birmingham and Atlanta to Charleston. In all, twenty-nine airlines now held contracts, though six dropped out within a year, and the Big Four hung on to the major routes.

Under the Black-McKellar Act of 1934, Congress focused on the "dovetailed nature of transport service and manufacturing concerns," and forced the separation of the air transport companies from the aircraft

manufacturers. United split three ways: Boeing took over all manufacturing properties west of the Mississippi; United Aircraft Corporation (the modern United Technologies) received all holdings in the eastern part of the country including Pratt & Whitney, Hamilton Standard, Chance-Vought, and Sikorsky; and United Airlines became a separate and independent entity, the largest air transport company in the United States.

At the end of the 1930s, the Post Office still experimented with new means of transporting mail by air. It contracted with a company to take off from the top of the Post Office building in downtown Philadelphia until one plane fell off the building into the middle of busy 30th Street. Two experimental routes were to test the feasibility of having planes pick up and deliver mail without landing. None of these proved very successful, so the modern airline industry was now in place.[47]

The airmail had not only brought people their mail faster; it had also forced the aviation industry to new technological heights and tested the endurance and skill of its daredevil pilots. Advances such as night flying, instrument flying, hard surface runways, radio communications, and multi-engined airplanes were all developed during this phase of government contracting.

## The Military Between the Wars

### *Take the Profits Out of War*

The years between the wars saw the most vehement, sustained attack against government contracting. The widespread belief that government contracts created some twenty-three thousand millionaires during World War I fueled the hatred that later developed into the "merchants of death" theory: the popular thesis that arms merchants had engineered our entry into World War I to profit from war. Americans, particularly members of veterans groups, decried the idea of stateside moguls reaping bonanzas while soldiers bled and died for a dollar or two a day. Besides urging that the burdens of war be spread by drafting capital as well as labor, they argued that a future war could be avoided if we took "the profit out of war." From the armistice in 1918 to Pearl Harbor, approximately two hundred bills and resolutions were introduced in Congress to prevent or limit wartime profits. These proposals ran the gamut from graduated excess profits taxes to plans for the outright "conscription" of capital and the complete confiscation of wartime profits. No bill passed dealing with the entire problem, but the government

did place a special tax on heavy machinery used solely to make weapons for war. Bethlehem Steel, for example, then offered to give its war-making machinery to the government to escape the tax but the government declined. Rather than pay the tax, Bethlehem smashed this expensive machinery into scrap, and sold it to the highest bidder.[48]

Besides such laws and the industry response, the demand for scarce commercial goods caused other industries to desert defense business. For example, DuPont abandoned the smokeless powder business in favor of commercial products. All of this made mobilization for World War II that much harder.

The April 1920 report of a House committee investigating wartime expenditures demonstrates Congress' reaction to the procurements of 1917--1918. This committee recommended abolition of the cost-plus contract even during wartime and urged Congress to revoke the power of the secretary of war to suspend competitive bidding during emergencies, as provided in the 1860 statute. The committee even suggested that Article IV of the Constitution be amended to include profiteering on war contracts within the definition of treason.[49]

Congress did not accept all the committee's recommendations. In the National Defense Act of 1920, on June 4, 1920, Congress continued to authorize the president in wartime, or when war was imminent, to contract without regard to the existing statutes and gave the military a large degree of centralized control. The act made the assistant secretary of war responsible for "adequate provision for mobilization of materiel and industrial organizations essential to war-time needs." The military tried to use this to build up the mobilization base, but the merchants of death theorists interfered with, and often thwarted, their plans.

### *The Bethlehem Steel Controversy*

A dispute with Bethlehem Steel festered throughout the entire interwar period; this dispute epitomized the resentment against contractors.[50]

Early in 1922, Bethlehem Steel claimed the Emergency Fleet Corporation (EFC) owed it $9 million on wartime shipbuilding contracts. EFC offered only $3.2 million. EFC referred the matter to its special counsel, William C.

Bullitt, for settlement. Bullitt's investigation took nearly three years to untangle the imbroglio, and the issue soon became a political firestorm.

In early March 1924, Congressman James F. Byrnes, a South Carolina Democrat, speaking on the floor of the House, charged Charles Schwab, the wartime head of EFC, with grave misconduct by allowing Bethlehem to reap $11 million in "excess profits" on its wartime shipbuilding contracts. He charged that Schwab had been responsible for awarding shipbuilding contracts to Bethlehem that were more profitable than the contracts given to other companies. Byrnes said, "Necessarily, as a member of the Fleet Corporation, Mr. Schwab had to transact business with his own company. The relationship should have prompted him to be overscrupulous in seeing to it that the Government was protected in its all dealings with the Bethlehem Corporation." Byrnes demanded that the attorney general sue to recover the "excess profit," but the government awaited Bullitt's report.[51]

In 1925, Bullitt ruled that EFC owed Bethlehem $5.5 million. Rather than protract the controversy and thus delay receiving the money, Bethlehem agreed to take the reduced amount. However, EFC repudiated Bullitt's report and refused to pay. Instead, EFC changed its position and then claimed that Bethlehem had made excessive profits during the war and, therefore, could claim no money at all. EFC echoed Congressman Byrnes' claim that Bethlehem "return" $11 million and sued Bethlehem to recover "excess profits." Bethlehem countersued for the original $9 million.

EFC's claim rested upon two contentions: first, that the type of contract was invalid and hence unenforceable; and second, that Schwab's ethical lapses as director-general had enabled Bethlehem to earn "unconscionable profits."

The contract type—the "bonus for savings" contract—provided that the government would pay Bethlehem the "actual cost plus a fixed fee (in no case more, in some cases less, than 10 percent of the estimated cost specified in the contract), plus a part (usually one-half) of the savings in the actual cost below the estimated cost."[52] It was commonly used in business, and the government often used it during the war, especially for shipbuilding and aircraft contracts. Today, it would be called an incentive contract.

Bethlehem claimed that its profits came from its cost-cutting efficiency and that EFC's refusal to pay penalized Bethlehem "for having been successful in keeping down costs—the very thing which the particular form of contract

was designed to accomplish." EFC responded that Bethlehem had fraudulently overestimated the base price "to derive excessive, unreasonable, and unconscionable profits" by creating imaginary savings on construction costs.[53]

Ten years later, in December 1935, the Special Master and Referee, appointed to decide the issue, reported that "the charge of fraud made by the Government against Bethlehem is without foundation" because EFC's own witness, who had been the contract negotiator for the government, did not support the charge. Instead, he agreed with the testimony offered by Bethlehem's negotiator that rising wages and shortages of materials made it "impracticable to estimate within a reasonable percentage what would be the actual cost of construction." Rather than finding fraud, the special master determined that the contracts "resulted from negotiations in which both parties were represented by intelligent, well informed, and experienced officers whose sole object was to make the best trade possible, under conditions which included the uncertainties of wartime contingencies, the results of which were not and could not have been known at the time the contracts were made."[54]

The second basis for the EFC claim was Schwab's dual position in 1918: chairman of Bethlehem Steel and director-general of EFC. When Schwab had accepted the appointment to head the Fleet Corporation, he had obtained a written promise from President Wilson and the Shipping Board that he would not have to negotiate with Bethlehem. Yet, EFC accused Schwab of dereliction of duty because he had not tried to force Bethlehem to revise its contracts and to accept less profitable terms. It condemned Schwab because the contracts he negotiated with other companies only gave them a net profit of 10 percent, whereas Bethlehem had more lucrative contracts—contracts that had been made before he became director-general.

Given EFC's hypocritical argument, the Special Master completely exonerated Schwab, because he was not responsible for EFC's contracts with Bethlehem. Furthermore, he could not have known Bethlehem's precise profits on its shipbuilding contracts because final claims for payment were not filed until years later. The report concluded: "The master finds as a fact that Charles M. Schwab had no responsibility as a representative of the Fleet Corporation or of the United States of America in relation to these contracts between Bethlehem and the Fleet Corporation, and that there is no evidence to support the charge that the dual relationship of Charles M. Schwab

imposes upon Bethlehem, in good morals, the duty to relinquish all profits from these contracts above 10 percent of the actual cost of the ships."[55]

The Special Master upheld Bethlehem's claim for additional payment in the amount of $5,380,000. The U.S. District Court also upheld that finding, but the government appealed.

The Supreme Court finally decided the case in February 1942, seventeen years after the litigation began and more than two years after Schwab's death. In a five-to-one decision, Justice Hugo L. Black, the former senator who had investigated the Spoils Conference, wrote for the court and rejected all the government's allegations. It ruled that there was no evidence of fraudulent misrepresentation by Bethlehem's negotiators; that under the contracts, Bethlehem was entitled to the bonuses; that Bethlehem's profits were not "excessive" because many other firms had made even greater percentages of profits on war orders; that the common law doctrines of unconscionability and duress as grounds for voiding the contracts did not apply, and that there was no justification for the charge that Schwab was guilty of wrongdoing. In a separate concurring opinion, Justice Frank Murphy pointed out the impropriety of trying to change the meaning and application of a contract on the basis of "afterthought and subsequent experience." He noted that contracts must be enforced literally, and that the government "had entered into the agreements with full understanding of their terms." Murphy concluded: "The possibility that the Government may be relieved of bargains twenty-four years after agreeing to them is not conducive to mutual trust and confidence between citizens and their government."[56]

### *Aircraft*

After World War I, defense spending returned quickly to its usual peacetime low, and that created a special problem for the army and navy. For the first time, the technologies of war advanced virtually overnight. We have seen how, in the nineteenth century, technology crept forward as decades elapsed between major advances. Even after adopting the breechloading rifle in the 1860s, the army did not modernize its rifle inventory again until 1892, when it adopted the Krag-Jorgensen magazine rifle. The Army Ordnance Department took seventeen years to develop, test, and finally produce the M-1 rifle.[57]

During World War I, however, fighter aircraft advanced so rapidly that models became obsolete only months after their heralded arrival. Thomas McNaugher points out that the rapid technological changes forced Britain's Royal Air Force to label tactical aircraft as obsolete after two years, while the United States Navy made the same determination after three years.[58] Irving B. Holley, in his classic, *Buying Aircraft*, explained that aerial warfare proved that an enemy with fewer but superior weapons could defeat a considerably larger force. "Quality paid better dividends than quantity." Military aviators realized that the timidity and shortsightedness of ordnance boards in adopting breechloaders or buying the Wright brothers airplane would be criminally negligent in the next war.[59]

The procurement system complicated the process because it was too laden with politics and a history of evolutionary progress to tolerate such an exploding technology. For example, between the time agencies requested appropriations, implemented the lengthy competitive bidding process, and spent the funds, advances in technology had increased the price. So both services had to buy fewer aircraft than called for in original budget requests. In the fiscal 1935 budget, the Army Air Corps had requested and was granted funds to buy 348 new aircraft, but by the time it received the money, it could only buy 222 aircraft. Because the army's arsenals were not tooled for that work and the Naval Aircraft Factory alone could not handle the job, the military depended on commercial aircraft firms to keep pace with such exceptionally rapid evolution. The dependence was mutual; the military remained the dominant customer in the interwar years.[60]

Not only the process changed; so did the contractors. The aircraft pioneers saw their young apprentices start their own trail-blazing firms much like apprentices such as Francis Pratt and Henry Leland of the armory system had done in the 1800s.[61]

The Wright-Martin Company was dissolved in 1920 and its redeemed stock was used to finance the Wright Aeronautical Corporation, which continued in the engine business. Glenn L. Martin established an independent airplane company. Martin had started manufacturing aircraft in 1911. In Santa Ana, California, Cleveland, and then Baltimore, he produced civil aircraft for the embryonic commercial aviation market and warplanes for the armed forces.

James McDonnell had worked at Martin for five years, becoming chief engineer, before he left in 1939. With $165,000 in start-up capital, he rented

space in the American Airlines building at the St. Louis airport and established the McDonnell Aircraft Corporation.

John K "Jack" Northrop went to work in 1916 for the Loughead brothers, Allan and Malcolm. (Later, to avoid being called "Loghead," the brothers changed the name to the phonetically correct "Lockheed.") Northrop and the Loughead brothers took passengers on sightseeing trips over the San Francisco Bay in their first seaplane.[62] The Loughead brothers soon received a contract to build flying boats for the navy, and Northrop stayed with them until 1920 when they went broke from the competition of thousands of war surplus aircraft. He then went to work for Donald Douglas but rejoined the Loughead brothers to launch the Lockheed Aircraft Company incorporated in Nevada on December 13, 1926. For the first time, it used the "Lockheed" spelling to benefit from the reputation of Malcolm Loughead's Lockheed Hydraulic Brake Company. It produced the new single-engine cabin monoplane that Jack Northrop and Allan Loughead had conceived. Northrop left Lockheed in 1928.

In 1908, Donald Wells Douglas had gone to Fort Myer to watch Orville Wright demonstrate his plane for the army. In 1915, right out of MIT, he joined the Glenn L. Martin Company as chief engineer. Douglas left Martin to work for the Aviation Section of the Army Signal Corps in Washington but returned to Martin a year later. He designed one of his earliest airplanes in the back room of a barbershop. Douglas started his own company, the Douglas Aircraft Company, in 1920. He won a navy contract to build torpedo bombers and sold planes to the Post Office and the airlines. Later, he reunited with Northrop who had sold out to the United Aircraft conglomerate. Northrop formed a new concern, Northrop Corporation, as a subsidiary of Douglas Aircraft.

The Consolidated Aircraft Corporation began in 1923 under the aggressive leadership of Major Reuben Fleet. Several other aircraft manufacturers joined it through a complex series of mergers, reorganizations, and acquisitions. During World War II, it became the Consolidated Vultee Aircraft Corporation, or Convair, which merged with General Dynamics in 1954.

Pratt & Whitney, founded by two employees from Sam Colt's armory, had started in 1924 to design and build radial, air-cooled aircraft engines. Pratt & Whitney started on a very modest scale, operating out of a leased machine-

tool factory. The company's first sale was to the navy for only six experimental engines for $90,000. Not long afterwards, it merged with Boeing, after Boeing reorganized in 1928 as the United Aircraft and Transport Corporation, and other aerospace firms to compete with General Motors and Aviation Corporation (AVCO).

Other companies continued their prewar success. In 1921, the navy awarded Curtiss a contract to produce thirty-four TS-1 biplane fighters, the first aircraft designed to operate from the deck of an aircraft carrier. Appropriately, the Curtiss Aeroplane and Motor Company won the contract, since Glenn Curtiss had pioneered aircraft flight from the deck of a ship. In 1929, Wright Aeronautical and Curtiss Aeroplane and Motor Company, Inc., merged as the Curtiss-Wright Aeronautical Corporation.[63]

Buying aircraft was complicated by laws never intended to apply to such a dynamic technology. Contractors complained mostly about the rules involving competitive bidding and development versus production contracts.

During World War I, Glenn L. Martin had labored to design an improved bomber. The War Department then bought the design rights and in 1919 planned to buy two hundred units. Instead of negotiating privately with Martin, it solicited for bids. The Curtiss Aeroplane and Motor Company underbid Martin and won. Two other firms received increments of the order, but Martin—the designer—received no contract at all because he had increased his bid on the production order to amortize his costs from the expensive experimental phase. Rival firms, with no such costs to cover, could bid lower.

Such occurrences threatened to drive developers out of business. Irving Holley observed that, "Deprived of his airplane, Martin no longer had any incentive to improve that particular design. Worse yet, deprived of a profitable production contract as a means of reimbursing his earlier investment, Martin was soon unable to finance further development work." Holley concluded that laws intended to protect the public's interest had the opposite effect and retarded the pace of research and development.[64]

Actually, the problem did not lie with the statutes but with the contractors. Contractors could price their design rights to compensate them fairly for the expense of development. Instead, they sold them at bargain prices in the hopes of having an edge in the production competition by already knowing

exactly how to make the plane. When that failed, they cried foul. However, the process often evened itself out. For example, the Martin problem was reversed on an all-metal scout plane that the Curtiss Company had developed for the navy. Curtiss bid $32,000 each, for mass production. When the judge advocate general of the navy ruled that the design was the navy's property and, therefore, subject to open bidding, the Martin Company bid $20,000 each and won.[65]

Nevertheless, the complaints of industry caught Congress' attention. In March 1924, the House established a special committee under Representative Florian Lampert of Wisconsin to make "inquiry into operations of the United States Air Service."[66] This committee, one of about fifteen committees to investigate the aircraft industry between the wars, conducted months of hearings, investigations, and visits to New York, Pasadena, and San Diego.

Industry witnesses bemoaned the competitive bidding system, the lack of continuity in procurement programs (much like the freighters in the 1850s had disliked the piecemeal way of contracting), the competition with private firms by the Naval Aircraft Factory, and, as a result of the others, the low morale of the aircraft industry.

Competitive bidding forced the government to accept the lowest bid; yet the aircraft manufacturers vehemently protested the failure to respect design rights as proprietary and to negotiate only with the developer. Almost every manufacturer appearing before investigating committees at one time or another voiced this protest and identified it as the source of many, if not most, of the other problems in the industry. The services had often "negotiated" a contract with a particular firm when only that firm could make the item. Sometimes they also negotiated to avoid the "Martin" problem when firms had developed the item only to lose the production contract to a lower bidder, who had spent nothing on development. All such negotiations really contravened the law. The secretary of the navy testified that the "principle of competitive bidding is not adapted to aircraft in the present state of the art."[67] The National Advisory Committee for Aeronautics also favored the negotiated contract, but many smaller builders protested that the government unfairly preferred the large companies and thus prevented the smaller firms from capturing government business.

Meanwhile, the manufacturers formed a special committee of their own, and declared that "a primary requisite for a useful and successful aircraft industry is confidence and cooperation among the members thereof." Seventeen major producers subscribed to "a code of proper conduct." The companies had to respect design rights and should specialize in their own product to avoid duplication and to help the government save money. The companies should also have design staffs able to handle peacetime problems yet be easily expandable during war. Besides proposing rules for industry, this code cautioned that the government could get satisfactory equipment only from companies able to produce that equipment within their own organization and that the government should adopt a "standard procurement policy," respect proprietary rights, stop the competitive bidding process in appropriate circumstances, improve its research and testing program, give as much repair work as possible to private firms as opposed to the government factories and arsenals, and "assist the industry in the procurement of non-commercial supplies."[68]

In 1924, the Lampert committee concluded that "technical development of aircraft was proceeding at very unsatisfactory rates," largely because of "the destructive system of competitive bidding." The committee concluded by clearly breaking with tradition and recommending that the government "recognize the manufacturer's proprietary interest in his designs and permit the purchase of air materiel without competitive bidding."[69]

While the Lampert committee conducted its investigation, the executive branch began one of its own. President Coolidge appointed an aircraft board under the chairmanship of Dwight W. Morrow. Like the Lampert committee, the Morrow board's exhaustive report underscored the problem and suggested solutions. Congress then began debating new legislation and, within six months, enacted three landmark aviation laws, none of which fully adopted the solutions presented. Congress could not shed its decades-old adherence to competitive bidding and did not accept these views. Ignoring the Lampert committee's findings, it maintained the requirement for competitive bidding.

The National Air Act of May 21, 1926, appointed the Department of Commerce to control commercial aviation, provided for certain aids to civilian flying, and created the post of Assistant Secretary of Commerce for Air. The Navy Aviation Act, enacted on June 24, directed that contracts,

after competitive bidding, be awarded to the lowest responsible bidder, with such awards subject to review only by the president or by the federal courts.

The Army Air Corps Act of 1926, sponsored primarily by Representative John J. McSwain of the House Military Affairs Committee, was similar to the Navy Aviation Act. It retained the competitive bidding requirement but provided a greater opportunity to negotiate in Section 10(l), still codified at 10 U.S.C. 2276(a). The act, however, reflected Congress' distrust of negotiated contracts by allowing the government to audit the contractor's books. The act instituted a reform that Navy Secretary Herbert could have used thirty years before. When he requested pricing data from the steel companies, they refused, and he had no authority to force them. Congress corrected this problem but in a different industry. It provided in Section 10(l) that "the manufacturing plant, and books of any contractor for furnishing or constructing aircraft, aircraft parts, or aeronautical accessories, for the War Department or the Navy Department, or such part of any manufacturing plant as may be so engaged, shall at all times be subject to inspection and audit by any person designated by the head of any executive department of the Government."[70]

To address the contractors' request for continuity, in 1926, Congress approved five-year procurement programs for the army and navy, which increased the number of aircraft each year and appropriated more than $435 million for the years 1927 to 1932.

## Anti-Contractor Sentiment

Despite these appropriations, the animosity toward profiteers had not been dispelled.

At its 1922 National Convention, the American Legion demanded that in time of war, the government draft materials as well as men. The 1924 platforms of the Democratic and Republican parties echoed those sentiments. The Democratic platform announced: "In the event of war in which the manpower of the Nation is drafted, all other resources should likewise be drafted. This will tend to discourage war by depriving it of its profits." The plank in the Republican platform was even more explicit: "We believe that in time of war, the Nation should draft for its defense not only its citizens but also every resource which may contribute to success. The country demands that should the United States ever again be called upon to

defend itself by arms, the President be empowered to draft such material resources and such services as may be required, and to stabilize the prices of services and essential commodities, whether utilized in actual warfare or private activity."[71]

Protests from the legionnaires (several of whom were congressmen) and various anti-war groups pressured Congress in June 1930 to establish the War Policies Commission composed of four members of President Hoover's cabinet, four senators, and four representatives. The WPC was to consider the following: (1) amending the Constitution to allow Congress to seize private property for public use during war, (2) methods of equalizing the burdens and removing the profits of war, (3) other policies the nation should adopt during wartime, and (4) the "war profiteering" charges of the war. Bernard Baruch, the star witness who later published his own treatise, "Taking the Profits out of War," proposed a general wartime price-freeze. Another highlight of the hearings occurred in 1931 when General Douglas MacArthur, then army chief of staff, gave the most extensive public statement of the War Department's plans for wartime procurement and industrial mobilization that appeared between the wars.[72]

He insisted upon the need for decentralized procurement and the relaxation of the competitive bidding system. To avoid the delays of competitive bidding, the nation should allocate specific facilities to each procurement agency to supply its needs. For specialized equipment on which manufacturers had no production experience, he proposed to issue educational orders in peacetime for a limited quantity without advertising. He condemned "profiteering by the unscrupulous contractor" and promised that in wartime "prices will be determined by negotiations, controlled by the knowledge obtained in peacetime planning, of the items that make up costs and by all information that can be collected by the Government."[73]

General MacArthur also stated that to avoid World War I's confusion, caused by so many types of contracts, the War Department had prepared various contract forms specifically for use in the unsettled economic and industrial conditions of war. These forms would, so far as possible, relieve the contractors of the perplexing hazards of wartime production, facilitate prompt payment and early final settlements, avoid the evils of cost-plus contracts, be self-settling if the government had to terminate before completion, adequately protect the government and contractor, and contribute to speedy and early production. To do this, the War Department

proposed for commercial supplies and relatively simple construction to use peacetime contract forms that would be modified to meet war conditions. The most important changes allowed the government to terminate the contract for its convenience and to change the contract and adjust the price when its needs changed.

For large construction projects and noncommercial items, the contracting parties would use the adjusted compensation contract containing tentative costs, which the parties would periodically revise as more accurate information became available. The government would audit all accounts before paying the approved costs of performance. It would also pay the contractor a fair rental for that part of his plant involved in the contract.

General MacArthur acknowledged that the adjusted compensation contract "contemplated inspection and auditing, detailed and complete, but not pernicious, throughout performance." He contended that such a system would eliminate profiteering and keep profits within reasonable limits. "Army purchases, in the event of a future war, will not be, as they have been in past wars, one of the principal causes for profiteering and for the useless and unnecessary piling up of burdensome war debts."[74]

The WPC's report reached no startling conclusions and satisfied neither the military nor the merchants of death theorists. Few of its recommendations ever became law. It did, however, stymie the military's attempt to enhance mobilization by expressly rejecting MacArthur's request to increase educational orders—noncompetitive contracts awarded to educate producers on the techniques of producing military items.

> The War Department also desires Congress to grant it the funds for "educational orders." This type of order would permit the War Department to place contracts without complying with the legal necessity of inviting public bids. In effect, it really is a factory subsidy plan which would tend only to whet the appetite of the unscrupulous manufacturer whose desire for more profits is sharp enough without adding additional stimulus in the form of legalized temptation.[75]

Soon Congress learned of other attempts to avoid competitive bidding. About 90 percent of the large aircraft appropriations of the five-year plans went to about ten companies. This made the government their main support and produced the industrial concentration that developed in the aircraft industry and has continued ever since. In 1926 and 1927, the manufacturing

companies almost completely depended on government orders. But the "Lindbergh Boom" boosted commercial demand from 1927 to 1929 and propelled sales from $21,162,000 to $71,153,000.[76]

After the stock market crash in 1929, sales of the aircraft industry dwindled almost as rapidly as they had risen. By 1933, they had fallen to $26,460,000, and scores of aircraft companies, especially the smaller new entrants, deserted the business. In 1931 and 1932, government orders again comprised at least two-thirds of the manufacturers' business. Douglas Aircraft exemplified this dependence. Until 1933, approximately 90 percent of its income came from the government. Fortune magazine scoffed that Douglas and his staff had "an aeronautical education for which the U.S. had put up some $19,000,000 cash."[77]

So, the aircraft industry suffered withdrawal symptoms after 1932, when the army and navy five-year programs ended with no demand for civil aircraft to replace them. No new buying program appeared until the middle of 1934 when another government committee, the Baker Board (named after its chairman, Newton D. Baker, former secretary of war), investigated the reasons for the depressed status of the industry. Because the commercial demand could not maintain the industry, the Baker Board recommended that the army and navy continue to increase their air fleets (the Army Air Corps, for example, should grow to 2320 airplanes by 1940), and that the government not compete with the industry by manufacturing its own aircraft. The Baker Board resulted in new five-year procurement programs for the army and the navy, which began in 1935. The Vinson-Trammel Act passed in 1934, alone authorized the navy to buy twelve hundred planes during the next five years. The result was that by 1936 about two-thirds of the industry's business remained with the military services.[78]

However, that same year, 1934, also inflicted some significant wounds on the aircraft industry as four congressional committees—the Black, Vinson, McSwain, and Nye Committees—investigated government contracts.

### *The Vinson-Trammel Act*

During the House Naval Affairs Committee's early 1934 hearings, Chairman Carl Vinson of Georgia noticed a market flurry in aviation stocks after an announcement that the government would soon place larger orders for aviation equipment. He launched an investigation into the costs and profits

of aviation manufacturing companies with navy contracts, explaining that "we want to know what profits these people make and we want to know whether there is favoritism or trickery in obtaining contracts; in fact, we want to have a clear picture of the aviation manufacturing industry or those companies who sell almost exclusively to the government."[79]

Representative William D. McFarlane, a member of the special investigating subcommittee under Representative John J. Delaney, focused attention on the profits made by the manufacturing companies on government orders. McFarlane spotlighted two aspects of the situation: the manufacturers monopolizing army and navy business were subsidiaries of the same large conglomerates that monopolized airmail contracts, and the large profits made by these subsidiaries were not directly subject to taxation, because their parent companies filed consolidated income-tax returns. He estimated that the government had lost more than $2 million on the consolidated returns of five companies. Such arguments might not have aroused the public were it not for the sensational tales of huge profits.[80]

Rear Admiral Ernest J. King, chief of naval aeronautics, later a five-star admiral and the chief of naval operations during World War II, cited navy audits that showed one contractor had made a 50 percent profit on a $10 million plane order, while its seven-year profit level was 36 percent.

Rear Admiral King testified about how concentrated the production had become. Only Wright Aeronautics and Pratt & Whitney produced engines of the size and power to meet the requirements of military aircraft. They so dominated the market that virtually no other company received orders after 1926. Army audits estimated that Pratt & Whitney's profits on army orders reached 32.7 percent. However, the navy audit showed that Pratt & Whitney's profits on completed business from 1927 to 1933 were 23 percent on army orders, 36 percent on navy orders, an even higher 71 percent on commercial orders, for an average of 43 percent on all orders. Nevertheless, Congress was outraged. The Vinson-Trammel Act of 1934, therefore, besides authorizing a second five-year program for the navy, imposed some safeguards.[81]

First, it ignored the Baker Board's recommendation and expanded the operations of the Naval Aircraft Factory (NAF). In order to provide a yardstick to measure costs as well as to diminish the government's reliance on contractors, the act required the navy to build at least 10 percent of its

aircraft and engines in its own plants. Although this applied only to the navy (there is no record that the army ever manufactured its own planes) and the president could modify this rule, the Aircraft Yearbook recognized this threat to private industry: "Among the disturbing factors in American aviation is an increased tendency in some official circles to consider seriously government manufacture of aircraft and engines."[82] In 1937, the NAF produced 117 trainers. In 1938, for the first time, it turned out complete planes, including the engines. In April 1939, Congress authorized funds for continued construction of an engine factory at the NAF to enhance its facilities.

Second, Representative C. W. Tobey issued an amendment, limiting profits on navy orders, which Congress adopted despite the objections of the navy that the proposal was unworkable and would be expensive to administer. This amendment limited to 10 percent of the total contract price the profit on all contracts or subcontracts over $10,000 for construction of complete naval vessels, naval aircraft, or any portion thereof. The contractor or subcontractor had to file with the navy upon the completion of each contract or subcontract a report showing its profit and pay to the Treasury any excess over 10 percent. Persons subject to the act had to maintain records adequate to segregate costs on particular contracts.[83]

The act also required the contractor for vessels and aircraft to agree "that the manufacturing spaces and books of its own plant, affiliates, and subdivisions shall at all times be subject to inspection and audit by any person designated by the secretary of the navy, the secretary of the treasury, and/or by a duly authorized committee of Congress: [and] to make no subcontract unless the subcontractor agrees to the foregoing conditions."[84]

Although only applicable to navy contracts, this audit-granting authority was more expansive than the authority granted in the 1926 Air Corps Act in several important ways. First, it applied to vessels and aircraft; second, it applied specifically to subcontractors; third, it required a clause by which the prime and subcontractor would agree to the audit rights; fourth, it allowed congressional committees to have their agents do the inspection and audit.

### *The Army Hearings*

The navy committee revelations of excessive profits intrigued Representative John J. McSwain, chairman of the House Military Affairs

Committee, who grabbed the opportunity to include the army's method of procurement in the hearings he was planning on several Air Corps expansion bills. He wanted to see whether Army Air Corps contractors had received such profits as the Naval Affairs Committee had uncovered.[85]

On January 27, 1934, the Washington Post, in a signed feature article, reported that McSwain was about to expose irregularities in army aircraft procurement. The Post report summarized its conclusion: "Over the protests of Comptroller General McCarl, with Congress ignorant of what was going on, the War Department for seven years has been procuring aircraft for the Army Air Corps in contravention of the intent of the sponsors of the act of July 2, 1926."[86]

Procurement methods and policy, rather than being a mere addition to McSwain's hearings, soon dominated the proceedings. When the hearings began on February 8, retired Brigadier General Billy Mitchell castigated military aviation procurement by pronouncing that "merchants in control of the government under Presidents Coolidge and Hoover plundered the Treasury" to the detriment of national defense.[87]

The next day, February 9, the chief of the Air Corps Materiel Division, Brigadier General Henry C. Pratt, testified that profits made by Consolidated Aircraft on Air Corps contracts during 1927 had been so large that Major General Mason M. Patrick, then the chief of the Air Corps, concluded that $300,000 of the company's $800,000 in earnings represented "excess profits" that ought to be returned to the army and navy. Consolidated's President Reuben Fleet vehemently disagreed. "It was nobody's business what we made since our bid was the lowest and since we had the best plane," he told an Associated Press reporter years later.[88]

Nevertheless, Consolidated's board of directors reluctantly agreed to refund $300,000 to the government. But General Patrick didn't want a cash reimbursement, which would be deposited in the Treasury rather than in the Air Corps' budget; instead, Patrick insisted that Consolidated sell fifty trainers (worth about $6,000 each) to the army and navy for $1 each.

Although the navy had bought trainers from Consolidated and would have been entitled to thirteen of the $1 aircraft, it declined to accept any payment from Fleet. Rear Admiral Moffett wrote to General Patrick: "It is the opinion of this office that, having procured aircraft from the Consolidated Aircraft

Corporation after due competition, the Navy Department is not in a position to question the profits that the company may have made."[89] General Patrick thought otherwise. He demanded the army's thirty-seven $1 planes and the navy's thirteen as well. To taunt General Patrick, Fleet intended to send fifty separate $1 invoices to the army and mount the fifty checks he received on his office wall. But the army paid for Consolidated's fifty planes with a single $50 check.

Pratt also cited an example of a company whose two contracts with the Air Corps in 1931 netted profits of 81.6 percent and 38.3 percent, respectively. Some refunds, however, were forced by the chief of the Air Corps and others were still being considered, the General went on, because "we feel that 15 percent is sufficient Profit."[90]

Other contractors allegedly also made huge profits. Boeing made 21 percent on the navy and 25 percent on the army. Douglas Aircraft made 21 percent on the navy and 18 percent on the army. These were higher than the average for plane companies, but still well below Pratt & Whitney's. Wright Aeronautical, the other engine-manufacturing company, showed a lower average profit than P&W's—5 percent on the navy and 10.5 percent on the army. They had been higher before P&W ended Wright's monopoly of engine manufacture.[91]

In his testimony, Assistant Secretary of War Harry H. Woodring branded as "unjust and misleading" the allegations of enormous profits made by manufacturers. On the contrary, he argued, the average profit made by the companies selling to the Air Corps since 1926 had been 19.8 percent; and for the three-and-a-half years just passed, the profit had dropped to 8.9 percent. Woodring apparently convinced the committee, which did not limit profits in army contracts.

The biggest scandal developed with the method of procurement. The Air Corps Act of 1926 had mandated that aircraft be bought competitively. Congress insisted that the army buy the rights to the new aircraft's design and then seek competitive production bids. It had specifically rejected the Lambert committee's recommendation to do otherwise. This had perpetuated the problem that Martin had experienced in 1919. Because the developer rarely priced its design bid to fully compensate it for its work, the developing firm would try to amortize its development losses during production. So, it often lost the production competition to companies who

were not trying to recoup development costs. Many aircraft and engine developers refused to bid on contracts that gave the government proprietary rights to the finished design, which the government could award to a competitor.

So the army, despite Congress' clear mandate, virtually abandoned formal advertising and adopted negotiations as its method of procurement. This shift was based on army regulations that authorized purchases without advertising and competitive bidding when competition was impractical. Competition thus existed, whether formally or not, as contractors vied to win development contracts. But competing firms knew that successful development would yield monopoly production rights to the finished aircraft.

This reliance on a regulation to the detriment of the clearly expressed statute enraged Congress. The House Committee on Military Affairs in 1934 called the industry "rapacious" and pilloried the federal officials who had countenanced negotiated contracts, which the committee believed had helped aircraft firms reap huge profits at the taxpayers' expense. "The Army has purchased $57,346,098 of which $3,336,634 was by competitive bidding, or 92 percent of their contracts during this period were let without competitive bids; the navy purchased $53,026,614 of which $5,901,051 was purchased through competitive bids, or 91.3 percent of the navy's aircraft equipment was purchased without competitive bids. "Congress erroneously assumed that negotiations were not competitive."[92]

Congress then reaffirmed competition throughout the procurement process with a new wrinkle. The Army Air Corps and the Navy Bureau of Aeronautics now had to hold "sample" competitions in which aircraft firms would submit working models of their designs. Winning firms were then awarded production contracts, normally with no further competition.

Such practices exacerbated the dilemma the services had been facing all along, because the aircraft companies did not want to face a truly competitive marketplace. Competitive pressures and technological advances forced contractors to incorporate the latest designs into their sample aircraft. Because these sample aircraft were rarely ready for mass production, the production contract really equalled a contract for further development accomplished through numerous design changes. Actually, the government assumed most of the risks in this scenario, but many contractors did not want

to incur the expense of developing a new military aircraft unless they could be assured of some recoupment, even if they lost the bid. So, many aircraft firms shifted their attention to the expanding commercial market. As Thomas McNaugher points out, this shift ironically occurred as Congress was willing to appropriate more money for development.[93]

The aircraft industry image sank especially low because, while McSwain's committee was hearing this evidence, the Special Committee on Investigation of Air Mail and Ocean Mail Contracts, under Senator Hugo Black, heard the bombshells about the "Spoils Conference," speculative stock manipulation, and excessive profit-taking in military and post office contracts. All in all, February 1934 was a bad month for the aircraft industry.

In all the commotion about excess profits and noncompetitive bidding, the critics overlooked how well the five-year programs had succeeded. The army, for example, had an Air Corps better equipped and manned than possibly any other single branch of the army at the time. The chairman of the House subcommittee on War Department appropriations described the typical condition of the rest of the army of this period: "We have 13 worth while tanks; we have 4 armored cars; we have 80 automatic rifles; and that is about all. It is a pitiable condition." Similarly, another representative cast a striking perspective on the total of sixty thousand troops then available by declaring that they could all fit into the seats of Yankee Stadium. Still another legislator stated that America's fighting army was actually the size of a large urban police force, which Chief of Staff Douglas MacArthur agreed was "absolutely true."[94]

### *The Merchants of Death Theory*

Magazines and newspapers continued to attack the munitions industry through 1933, and then, in the spring of 1934, two books, Engelbrecht and Hanighen's *Merchants of Death* and Seldes' *Iron, Blood and Profits* appeared. In April 1934, *The Merchants of Death*, described by Business Week as an "exhaustive presentation of the facts," became a best seller. A March 1934 article in Fortune entitled "Arms and the Men" (reprinted two months later with wide distribution in *The Reader's Digest*) portrayed the American munitions makers as scoundrels without conscience. The article said it had cost about $25,000 to kill a soldier during the war and then luridly proclaimed: "Every time a burst shell fragment finds its way into the brain, heart, or the intestines of the man on the front line, a great part of the

$25,000, much of it profit, finds its way into the pocket of the armament maker."[95]

These works and others with similarly sensational titles did for their followers what Mahan's writings had done for the navy buildup: they provided the philosophical base. They aroused the American public and Congress to the supposed evils of private arms manufacture. Senators Nye and Vandenberg proposed an investigation of the munitions industry, which Congress unanimously adopted two months later on April 12, 1934. Congress created the Special Committee on Investigation of the Munitions Industry, which would also review the findings of the War Policies Commission and consider whether to create a government monopoly for the manufacture of munitions.[96] Its chairman was Senator Gerald P. Nye, a Republican from North Dakota, who had previously been chairman of the Senate committee investigating the Teapot Dome scandal of the late 1920s. Senator Nye, a leader of the isolationist movement, used the committee to bolster his argument that those who stood to profit had caused the war, and he left no doubt of his bias and his plans. At New Haven on April 29, over four months before the hearings began, he declared: "[with] high confidence I predict that when the Senate investigation is over, we shall see the war and the performance for war is not a matter of national honor and national defense but a matter of profit for few." He proposed as a remedy a government monopoly of all munitions manufacture.[97]

The ninety-three hearings concentrated on four topics: manufacture and sale of munitions, especially the international arms trade; activities of the country's major shipbuilders; plans to eliminate or at least reduce corporate and individual profits in any war; and finally, the economic circumstances of America's entry into World War I. The hearing opened on September 4, 1934, and ended on February 20, 1936.[98]

The hearings became a media circus as Nye designed them to build on the stir created by the books and magazines. He summoned company officers to appear before hostile senators in highly sensational and publicized confrontations to answer questions about how they ran their businesses. Nye delivered impassioned speeches attacking the greed of the arms makers and the dominant financiers as the prime cause of war. Often a "revelation" came before lunch for the evening papers and another in the afternoon for morning editions. The Nye Committee concentrated on exposing unethical conduct by bankers and arms makers in peace and war. It raised charges of corrupt

corporate practices involving bribes, government favors, high prices, secret worldwide marketing agreements, the exchange of patent information, and other misdeeds. The most serious abuses uncovered involved large navy contracts. In addition to excessive profits on ship construction, the committee found an absence of real competition and suggested collusion on the part of the shipbuilders in the submission of bids: "If there were no conversations about bidding among them, there was telepathy."[99]

But for all the bombast, the committee's attempt to indict the munitions business came to little. It failed to substantiate its basic charges about widespread corruption that had engineered our entry into the war. It found scattered documents and heard conflicting testimony, but the evidence failed to support general conclusions. It established that a mutual dependency existed between certain industries and the military and that high profits and favoritism existed, all of which other committees had already reported.[100]

A majority of the Nye Committee made five recommendations for improving the munitions industry and coping with procurement during another war. The first recommendation was the most controversial. To eliminate an "unhealthy alliance" between arms contractors and the government, the arsenal system should be expanded to cover major military products, all warships, gun forgings, projectiles, and armor plate, as well as powder, rifles, pistols, and machine guns. In other words, the committee suggested nationalizing much of the arms industry. The committee exempted the aircraft industry "because airplane and engine construction are still rapidly developing arts and in that way different from the somewhat more standard articles for which it is proposed to have the government acquire facilities."[101]

Four of the committee members voted to nationalize naval shipbuilding completely, believing the profit motive subverted the public interest. A minority of three, however, including Senator Arthur Vandenberg, questioned the wisdom of complete nationalization. The Vinson-Trammell Act of 1934 had provided for building half of all ships authorized under the act in navy yards and had severely limited profits (but gave no guarantees against loss) for the private builders. That, the minority thought, was going far enough. It argued that with large government plants, the local communities would press to keep such plants going at full capacity, regardless of actual defense needs. That would encourage armament rather than disarmament. Furthermore, if private yards fell into disuse, "their skills

would be scattered and soon extinguished so that, if war came, private yards would not be available for an expanding effort."[102]

The majority's other four recommendations were similarly strict: all war contracts should limit profit to 3 percent; during war, personal income should be capped at $10,000 per year, the American Legion's proposed draft on capital should be adopted and extended to a draft on industrial management; and (the least controversial recommendation) all conflict of interests should be avoided in government work.

The committee accomplished little. When it issued its report in 1936, the new war in Europe was looming, and by 1940 the merchants of death theory had given way to a vision of the U.S. as the "Arsenal of Democracy." Critics of the Nye committee, including President Truman who called it "pure demagoguery in the guise of a Congressional Investigating Committee," accused it of mistreating witnesses and pursuing excessive publicity.[103]

Curiously, the same year the Nye Committee was appointed, Lewis Mumford in his classic work, *Technics and Civilization*, identified military buying, especially its voracious wartime appetite, as the driving force behind mass production. Mumford recognized that mass production had grown out of the standardization and production of military weapons in the late eighteenth and early nineteenth centuries by Whitney, North, and Colt under their government contracts. The Civil War contracts had fostered the development of standard, mass-produced clothing and goods. Mumford argued that the military served as the perfect "pattern not only of [mass] production but of ideal consumption under the machine system. . . . Quantity production must rely for its success upon quantity consumption; and nothing ensures replacement like organized destruction." He concluded, "War . . . is the health of the machine." Not even he could foresee the even more extraordinary impacts of World War II.[104]

## Efforts to Reform Contracting

After World War I, a dual system of civilian procurement developed. The General Supply Committee continued its work as it had throughout the war, but now spent much of its time trying to dispose of the tidal wave of excess war supplies. Its procurement activities were still limited to the Washington, D.C., area. A national scheme for procurement occurred when the Budget and Accounting Act of 1921 created the Bureau of the Budget. This bureau,

predecessor of the present Office of Management and Budget, was originally within the Treasury Department, but in 1939, by Executive Order 8248, President Roosevelt made it part of the new Executive Office of the President. The Budget and Accounting Act also created the General Accounting Office, headed by the comptroller general. This office would have a pervasive influence on procurement.

Although the Bureau of the Budget was a "civilian" agency, it had a decidedly military flavor. Its first three directors were high-ranking army officers. President Harding selected General Charles G. Dawes, a former chief of supply and procurement for the American army in France and a future vice president of the United States and Nobel Peace Prize winner, as the first director of the budget.

On July 27, 1921, General Dawes issued Budget Circular No. 15, which created the Coordinating Service to supervise the purchasing functions of all departments and coordinate purchasing with the transfer, sale, or disposal of government property. The chief coordinator, another army general, set up twelve coordinating boards composed mostly of military and naval officers. For procurement purposes, the most important of these twelve new boards were the Federal Purchasing Board, which scrutinized agency purchasing policies; the Federal Specification Board, which standardized the various specifications to limit the diverse number of supplies; and the Interdepartmental Board of Contracts and Adjustments (IBCA), which standardized contract forms and methods of letting contracts. These boards were advisory only and could not enforce their rulings and forms. Nevertheless, they performed admirably, especially the IBCA, which unified the kaleidoscope of different department procurements by standardizing the contract forms. For example, it compiled the Standard Form for Construction and Supply contracts, which the Bureau of the Budget required all federal agencies to use. The comptroller general was promulgating other standard forms pursuant to his authority under the Budget and Accounting Act of 1921. These forms increased the uniformity procurement desperately needed and simultaneously decreased the discretion of contracting officers.

The IBCA, as its name implies, was composed of representatives from the Departments of Justice, War, Navy, Treasury, Interior, Commerce, and Labor, as well as the Comptroller General and the Postmaster General. The board, one of those unsung bureaucratic committees, faithfully adhered to its instructions to draft simple concise contract forms. Whether it developed the

clauses itself or improved the clauses then in use, the IBCA followed the same painstaking practice. It laboriously studied the various problems and benefits associated with each suggested change. Each important change culminated from a lengthy succession of drafts, reports, and presentations of interested parties. That its 248th meeting occurred on August 31, 1926, less than four years after it was created, demonstrates how often it met. At that meeting the standard disputes clause was promulgated.

The services also adopted some uniformity. To harmonize the work of the two armed services on industrial planning, the secretary of war and the secretary of the navy, in June 1922, created the Army and Navy Munitions Board consisting of the assistant secretary of war and assistant secretary of the navy. The new board began coordinating the plans for acquiring munitions and supplies and evolving a suitable program to implement the procurement plans. The board created staff committees dealing with various aspects of the industrial mobilization to avoid the inefficiency of World War I.[105]

Also in 1922, the War Department appointed a permanent War Contract Board to study all phases of contracting and devise suitable terms and forms for wartime. General MacArthur described these forms in his 1930 testimony before the War Policies Commission, described earlier. Peacetime forms and procedures were not neglected, however. Between the wars, the largest overhaul of regulatory policies occurred. The army published detailed regulations governing procurement that required the use of the standard forms published by the IBCA. Army Regulation 5-160, Procurement of Supplies—Bids and Awards, for example, provided definitive guidance of over fourteen pages, much more than ever before, but still insignificant compared to modern rules.

Congress also controlled civilian contracts more tightly by strengthening the General Supply Committee. On February 27, 1929, Congress directed the secretary of the treasury, through the General Supply Committee, to buy and distribute supplies both in the District of Columbia and for field services. The General Supply Committee would pay for the supplies out of a General Supply Fund, which the consuming agencies would reimburse. This marked a true milestone toward more centralized procurement, but this revitalized General Supply Committee was short-lived and ended with the new administration.

On June 10, 1933, President Roosevelt issued Executive Order 6166, which dramatically reorganized the federal bureaucracy. He abolished the General Supply Committee and the Federal Coordinating Service. In their stead, he created a Procurement Division, headed by a director of procurement, in the Treasury Department. The new creation, vested with determining policies and methods of procurement, could do the procuring itself, permit the requesting agency to procure it, or have another agency do it. On October 9, 1933, the president energized the Procurement Division by staffing and transferring to it the functions formerly performed by, among other agencies, the Federal Specification Board and the IBCA. The Procurement Division began operation on October 17, 1933, under its first director, Admiral Christian Joy Peoples, who was skeptical about the advisability of centralizing procurement. The division was composed of two branches, the Public Works Branch and the Branch of Supply. Originally, the Procurement Division was to oversee the procurement policies and practices of all federal agencies except the Corps of Engineers. So, the Procurement Division supervised military and naval procurement but let the services do virtually all their own contracting, subject to forms and regulations promulgated by the division. Not since the Purveyor of Public Supplies had federal procurement been so centralized.

The division established a General Schedule of Supplies from which the executive departments could order. The departments could buy outside the General Schedule of Supplies if it did not include an item or if an emergency existed. The division continued the standardization of forms begun by the IBCA.

Director's Order No. 73, approved by the president on June 10, 1939, immeasurably strengthened the Procurement Division. Although it exempted the War and Navy Departments and the Marine Corps, it directed that the division "shall hereafter undertake the performance of procurement of all supplies [expansively defined] for use either at the seat of government or in the field." More importantly, it provided the division with an infrastructure to fulfill the expanded role. It transferred "all records and property pertaining to, or utilized in, the procurement of supplies by any agency, and all personnel engaged in the procurement of supplies for any agency" to the Procurement Division.[106] The practice was modified in 1940 to allow agencies to make purchases of less than $100 and to place purchase orders against Procurement Division contracts.

The Hoover Commission later commented that the Procurement Division was evidently modeled organizationally after the Bureau of Supplies and Accounts of the Navy. In the commission's opinion, although such elaborate channels of authority had a chance of success in a traditional, disciplined military environment, "they are doomed to failure with a civilian staff lacking military discipline."[107] The Procurement Division never really had a chance to develop before it was washed away by World War II.

*Chapter 17*

# Socioeconomic Statutes and Goals

During the 1930s, socioeconomic goals played a much greater role in government contracting. Ever since the War of 1812, the nation had expressed a preference for domestic goods, and statutes enacting that preference had grown increasingly common. General Meigs had warned his contracting officers to avoid awarding contracts to sweatshops during the Civil War, and World War I had seen the initiation of labor standards. In the 1930s, however, socioeconomic goals took on a different order of magnitude. The Great Depression forced the government to use contracting to combat unemployment and low wages in an attempt to pull the country toward recovery.

To ensure "a decent wage for honest work," the Davis-Bacon Act of March 3, 1931, provided for the payment of prevailing wage rates on public construction projects. The Buy American Act of March 3,1933, preferred domestic over foreign supplies. In implementing this act, the Treasury Department, by a circular letter in 1934, added 25 percent on foreign bids. The Copeland Anti-Kickback Act of June 13, 1934, provided criminal sanctions against anyone who preyed on companies' hunger for business by demanding a kickback on a government construction contract. The Miller Act of August 24, 1935, required contractors performing construction, alteration, or repair of any public building or public works to post a performance bond to protect the government. It also provided for a payment bond to protect people who furnished labor and material for such arrangements. The Walsh-Healey Public Contracts Act of June 30, 1936, required working hours and minimum wage rates for contracts involving the manufacture of materials, supplies, articles, and equipment in any amount exceeding $10,000.

## Efforts to Curtail Government Competition

While these acts were designed to aid industry or its workers, other government actions infuriated business. The armor plant bill was not the only incident of the government doing for itself work that had previously

been done by contractors. Agencies had been required to buy plain or printed envelopes through the Post Office Department since an act of June 26, 1906. In the Economy Act of June 30, 1932, Congress fostered broader interdepartmental procurement whereby one federal agency would buy goods and services from another, rather than from private industry.

An act of May 27, 1930, required government agencies to buy goods from federal prisons at prices not exceeding those in the current market. In 1934, by Executive Order No. 6917, President Franklin D. Roosevelt created the Federal Prison Industries, Inc., to coordinate the output of prisons and market their products to federal government activities. FDR ordered the agencies to help this corporation by buying its products "to the extent required or permitted by law." As a result, agencies bought brooms, brushes, automobile tags, steel furniture, and other items from the Federal Prison Industries, Inc.

Four years later in the Wagner-O'Day Act of June 25, 1938, Congress directed procurement of products and services from both the Federal Prison Industries and workshops for the blind. It created a Committee for Purchase from the Blind and Other Severely Handicapped, composed of fifteen members appointed by the president. All federal departments and agencies were required to buy from this committee articles manufactured by nonprofit agencies for the blind, organized under federal or state laws.

Many manufacturers protested such purchase of goods by the government, especially prison products produced in competition with private enterprise, and particularly during the depression. Similarly, the operation of government repair shops, laundries, and government-owned factories (particularly the production of clothing at the Philadelphia Depot) frustrated and infuriated the desperate businesses. The National Defense Act of 1920 required the assistant secretary of war to produce at government arsenals or government-owned factories "all such supplies or articles needed by the War Department" because these establishments could produce on "an economical basis." Despite this mandate, business repeatedly tried to abolish or curtail these manufacturing operations because they competed with commercial enterprise. Eventually the House of Representatives appointed a special committee to investigate "Government competition with private enterprise and all other questions in relation thereto that would aid the Congress in any necessary remedial legislation."

The Shannon Committee, named after its chairman, Rep. John B. Shannon, over a period of eight months heard 625 witnesses representing more than 225 lines of competitive industrial activities. These hearings highlighted a widespread and growing resentment against governmental competition with all kinds of private business enterprise. The committee emphasized that such government competition had "pernicious results" both for "individual enterprise and the self-preservation of individual and independent corporate industries."

The committee made sweeping recommendations. Various army quartermaster manufacturing operations should be discontinued as soon as practicable and the properties liquidated. The Army Transport Service should be suspended as a matter of principle and economy. Furthermore, laundries and dry-cleaning establishments maintained by the army, navy, and other departments should be restricted "absolutely to actual service requirements," and "under no circumstances" should they "interfere with private business adjoining navy yards or army posts and reservations." Government competition with private business, if continued, must consider "actual costs," including interest on invested capital, taxes, depreciation, and all other proper elements and standards "ordinarily recognized under similar conditions of private business operation." The committee believed that by exposing all costs, the government would uncover the "hidden" costs, which would reveal many overpriced governmental activities then justified "on the basis of economy." If, other things being equal, government operation cost more, the public facilities "should be abandoned or devoted to some other purpose." The net effect would be to curtail, not eliminate, government competition with private enterprise.

Although the broad recommendations of the Shannon Committee were never fully adopted, the persistent pressure from industry and Congress substantially reduced some of the government manufacturing operations. Actually, the committee disclosed instances of Congress forcing the arsenals to compete. Congress once set a price limit of $2,800 per truck when the lowest bid from industry was $4,000. The Quartermaster Corps met the emergency by buying the axles, wheels, tires, transmissions, and other necessary parts and assembling them at the depot.

## Contracting for the Civilian Conservation Corps

Within a month of assuming office, President Roosevelt created the Civilian Conservation Corps and tasked the War Department to support it. The secretary of war required the Quartermaster Corps to supply the men with food, clothing, equipment, and shelter, and transport them to and from their work camps.[1]

Enrollment began on April 6, 1933, without any supply difficulties, but on May 12 the president directed that the entire quota of men (about 300,000) be at work by July 1. Since this was almost triple the size of the Regular Army within the continental United States, this acceleration forced a supply effort similar to a mobilization and tested the effectiveness of the supply operation. The army had to make emergency purchases of clothing and equipment, initially using decentralized procurement, but quickly replaced that with centralized purchasing. Because the army, already under a spotlight, dared not forego competition, the department issued formal invitations for bids for practically all items. The purchases were slow but the process did not break down.

As successful as these diverse efforts were in providing isolated relief to companies and their workers, the most successful and imaginative efforts to reduce unemployment were the great dam projects of the 1930s. Hoover Dam, Grand Coulee Dam, and Bonneville Dam even today are almost unbelievable achievements of engineering, backbreaking labor, and vision. Hoover Dam symbolizes such efforts.

## Hoover Dam

For years, Westerners had lobbied for a dam to harness the tremendous power of the Colorado River. Nothing happened, however, until 1930 when President Hoover, an engineer, decided to go ahead. Congress soon funded the first large multipurpose water resource project of modern scale.

The Bureau of Reclamation was the contracting agency. Congress had established the Reclamation Service in 1902, as part of the Department of Interior, to carry out the program of irrigating and reclaiming arid lands in the West. It achieved bureau status in 1907, and in 1923 it became the Bureau of Reclamation. From its start in 1902, this office had let contracts

for fifty dams, which together had used 4.4 million cubic yards of concrete. Hoover Dam alone would require that much.[2]

Before the construction contract, however, the bureau had to accomplish such towering tasks as providing transportation to the dam site and designing the dam itself. Transportation facilities had to come first. The Union Pacific Railroad built a twenty-three-mile branch line from Las Vegas to the construction camp site. From that point, the Bureau of Reclamation built its own seven-mile railroad to the dam site. Meanwhile, John L. Savage, the world-renowned chief designing engineer of the Bureau of Reclamation, designed the dam. The bureau then rushed to finish detailed specifications so it could advertise the project for bids.[3]

On January 10, 1931, 100 pages of specifications and plans and seventy-six drawings describing Hoover Dam, the power plant, and the appurtenant works in minute detail became available to interested parties at $5 per copy. The bureau announced that bids would be opened at the bureau's Denver office at 10 a.m. on March 4. A $2 million bid bond had to accompany each bid, and the winner would have to post a $5 million performance bond—a staggering sum during the Great Depression, but appropriate for the size and scope of the job.[4]

The solicitation listed 119 bid items, including the major tasks of excavating 3.7 million cubic yards of rock, pouring 4.4 million cubic yards of concrete, and implanting 45 million pounds of pipe and structural steel. The government would furnish all the materials incorporated into the completed work such as cement and steel, but the contractor had to furnish all the machinery, tools, vehicles, and supplies needed for construction. The solicitation required completion in seven years, imposed deadlines for various phases of the work, and established a schedule of penalties for any delays.

Scores of firms bought the specifications, but for most of them it was merely an exercise in curiosity or incredible optimism. The size, cost, timetable, and sheer physical danger and financial risk of the project demanded that only giants could successfully compete for this job. In one case, it was a collection of giants.

Henry Kaiser had long dreamed of this project. When he learned of its imminent bidding, he met in Cuba with W. A. "Pop" Bechtel of Bechtel

Construction Company. Kaiser suggested a conglomerate of the largest construction firms in the West to do the job. Bechtel agreed and was soon joined by other members: Felix Kahn of San Francisco's MacDonald & Kahn, Pacific Bridge Company, Warren Brothers, and W. H. Wattis.

The contractors and their lawyers, accountants, and engineers met at the Engineers Club in San Francisco just two weeks before the March 4 deadline for submitting bids. Until the last minute, the number of partners had been in doubt since the Depression had left several of them in desperate financial straits. Some had to pledge their personal security to come up with their share of the "up-front" money. Once the individual partners were identified, the consortium had to pick a name. "Continental Construction" or "Western Construction" inspired mere indifference. Then Kahn suggested "Six Companies." Although eight companies were in the room, they all liked the sound of it and recognized its meaning. Six Companies was the name of the council used by the Chinese tongs in San Francisco to arbitrate their differences. If Six Companies was good enough for the tongs, Kahn joked, it was good enough for this group.[5]

Kahn and his partners delayed until later the most crucial piece of business: exactly how much to bid on the project. The construction business, always fiercely competitive, had become absolutely cutthroat as companies clawed to survive during the Depression. Loose talk by a gossip or a drunk could disclose the bid and wreck the venture. So with the secrecy of a covert military operation, the builders decided not to meet to complete their bid until forty-eight hours before the bid deadline.[6] Meanwhile, Frank Crowe, veteran dam builder of the Bureau of Reclamation, would prepare the estimate. The meeting to settle on a final figure occurred on schedule but not in posh surroundings like the Engineers Club. The builders met at the hospital bedside of W. H. Wattis, who was dying of cancer and would live only six months longer.[7]

Bechtel, Kaiser, and the others listened as Frank Crowe reviewed each phase of the project and its costs. To illustrate his points, he had built a wood-and-plaster scale model of the dam that he wheeled into the room on a hospital cart. When he finished, the partners totaled the numbers, then added 25 percent. If all went well, this would be their profit. Right after the decision, Crowe bolted from the room and rushed to Oakland to catch the train east to Denver. When he arrived on March 3, he checked into the Cosmopolitan Hotel. For the rest of that day and evening, he double-checked and triple-

checked his numbers. The next morning, March 4, 1931, he went to the Denver office of the Bureau of Reclamation and formally submitted Six Companies' bid in the required sealed envelope.

Not surprisingly for a contract of this size, the office swarmed with contractors, insurance brokers, supply salesmen, reporters, bureau personnel, and other onlookers. At 10 a.m., through the noisy crowd, with its attendant cigar and cigarette smoke, the central figure in the drama emerged. Raymond Walter, the bureau's chief engineer, worked his way to the front and spread the envelopes on a table. Of the thousands of construction companies throughout the country desperate for work, and of the scores who had bought copies of the specifications, only five companies had bid.[8]

Walter opened the first envelope, quickly examined the contents, and laughed nervously. Edwin A. Smith of Louisville, Kentucky, had bid 180,000 less than the lowest bid you get. Smith had enclosed a brief family history and several character references. Walter dutifully read them aloud and then declared the bid invalid because such references did not replace the required $2 million bid bond. The second bid from the John Bernard Simon Company of New York for $200 million or "cost plus 10 percent" also lacked a bond. The third bid came from the Arundel Corporation, an eastern construction giant, which bid $53.9 million with a proper bond. The fourth bid, from the Woods Brothers Corporation of Lincoln, Nebraska, for $58.6 million was also valid.[9]

The silent onlookers waited in suspense as Walter opened the last envelope and examined its contents. Clearing his voice, he read: "Six Companies, Incorporated, San Francisco, California, $48,890,955." Frank Crowe's meticulously prepared and verified bid was only $24,000 more than the Bureau of Reclamation's estimate, $5 million below the next lowest bid, and $10 million below the highest. Six Companies had won the right to build the world's largest dam. The crowd applauded and cameras captured the scene as reporters raced to call their papers. Within hours of the announcement, other companies were predicting the consortium would go broke at that price.

Interior Secretary Ray Lyman Wilbur had to examine the figures and approve the contract, but this was a mere formality. On March 11, 1931, he awarded the contract to Six Companies, Inc. At almost $50 million, it was the largest single contract ever let by the U.S. Government.[10]

Six Companies had to move quickly since the contract contained performance incentives. The faster the work went, the more bonuses it would receive on its risky venture. The constructors selected Frank Crowe as construction superintendent.

Recruiting over five thousand qualified workmen for the job presented special problems, despite the Depression's tidal wave of unemployment. Thousands of unemployed workers arrived in broken-down cars, on foot, or any way they could. Some were undernourished and had difficulty adjusting to the desert heat. Sixteen workmen died of sunstroke in the first year. Eventually, the government and the company devised ways to select men with the needed skills and physical capabilities. During the construction, government physicians examined and approved over twenty thousand men for employment. Some worked long enough to get a "grub stake" and then moved on, but in general the turnover rate was low. The contract required a new city, Boulder City, to be built to house 80 percent of the labor force. The government would administer the new town, but the contractor would really run it.[11]

By the beginning of 1932, Crowe was so far ahead of schedule that Six Companies had recouped its initial $5 million surety bond, and pocketed an additional $1 million in incentives. Nor was that all. The contract allowed, for instance, $8 for every cubic yard of earth excavated, but the Depression had reduced Six Companies' cost to a third less. On June 6, 1933, the company poured the first bucket of concrete. Six months later, it had put in place a million yards of concrete, the second million within the following half year, and the third million by December 6, 1934—only eighteen months after starting. It had finished all the concrete work by May 1935—more than two years ahead of schedule.[12]

Outrage developed, however, over the chasm between the company's profits and the treatment of its workers. Nevada Senator Tasker Oddie led the denunciations, threatening a full congressional investigation. "The housing and feeding of the workers has been commercialized and monopolized by the contractors to such an extent that their profits are exorbitant and too large for the workers to stand." He added that a probe of the Hoover Dam job would "put to shame the Teapot Dome scandal."[13]

The critics spotlighted Six Companies' policy of paying its workers in scrip redeemable in Boulder City stores. Criticism of this practice intensified

during the 1932 presidential campaign when Oddie and Representative Sam Arentz alternated condemning–scrip as "un-American," an attempt to "establish a business monopoly," and "a pernicious practice which should be stopped." Oddie and Arentz criticized even more harshly the Interior Department and its administration of the Hoover Dam project. Both Ray Wilbur and Elwood Mead (the head of the Reclamation Bureau for whom nearby Lake Mead would be named) defended the scrip as "standard business practice . . . used by most of the large companies." Wilbur even went so far as to label Oddie "seriously misinformed."

On March 4, 1933, the Roosevelt administration took over, and Interior Secretary Harold L. Ickes acted to resolve the scrip issue. On May 8, 1933, after meeting with W. A. Bechtel, he announced that he had ordered Six Companies to "cease immediately" paying its workers in scrip and to redeem all outstanding scrip in cash. Ickes proclaimed, "I believe a man is entitled to his salary in money." He ordered the city manager to collect all the redeemed coupons and coins and destroy them.[14]

Blacks had been conspicuously absent from the job bonanza that the project was intended to create.[15] The highway and railroad work, and then the dam itself, began with an all-white force, mostly from out-of-state. The contract stipulated that American citizens were to be hired, with preference given to veterans. "Mongolians" were the only racial group specifically prohibited from working on the project, but when the proposal to limit hiring to American citizens was presented to Congress, the Las Vegas *Evening Review-Journal* titled its article, "White Labor for Dam Work Urged." Six Companies had apparently translated "American citizen" to mean "white American citizen." The contractor had hired over a thousand men without a single black laborer on the payroll. In June 1932, responding to pressure, Six Companies' president, W. A. Bechtel, said he had "never heard of any refusal to employ colored people" and that he would see to it that some were hired "when and if they [have] the necessary experience."

On July 7, 1932, two-and-a-half weeks later, Six Companies hired ten black veterans. The *Las Vegas [Review-Journal] Age* expected, or at least hoped, that would end the problem. "It is gratifying, not alone to the people of African descent but to all lovers of fair play, that this question of Negro labor on Hoover Dam has been settled with justice and fairness." By September fourteen more blacks had been hired, but neither the Colored

Citizens Labor and Protective Association nor the NAACP believed that anything had been settled.

Blacks represented less than 1 percent of the dam's work force and had been assigned to the Arizona gravel pits, the hottest and most remote spot in the project reservation. Furthermore, Six Companies refused to give them housing in Boulder City, so the blacks had to make a thirty-mile drive twice each day between the dam site and the West Las Vegas slums via jolting Boulder Highway. Roy Wilkins, assistant executive secretary of the NAACP, charged that the blacks "were transported to and from the dam in buses separately from white workers, and on the job, they were humiliated by such petty regulations as separate water buckets." A further humiliation for the blacks came when the company, with much publicity, hired six Apache Indians, who were to perform skilled labor (high scaling) and could live in Boulder City.

Harold Ickes had only been Secretary at the Interior Department for several months when he learned of the hiring discrimination on the Boulder Canyon Project. Ickes investigated black employment at the dam and substantiated the NAACP charges. The number of black workers had dropped to eleven out of more than four thousand, and Boulder City was strictly off limits to them. He also found that because of the language of the government's contract with Six Companies, he could not force the company to hire black labor. He did control the administration of Boulder City, however, and ordered the contractor to permit the handful of blacks on the payroll to live there.

The scrip and discrimination problems were not all.[16] On the morning of February 26, 1935, U.S. Attorney Edward P. Carville, accompanied by a squad of United States marshals, entered the Six Companies office building in Boulder City. They seized all the time records and payroll checks for the period between March 16, 1931, and December 31, 1934, loaded them into a truck, and hauled them away for audit by federal agents. Carville announced that, acting on the instructions of Attorney General Homer Cummings, he was investigating eight-hour law violations alleged in an affidavit by John F. Wagner, a disgruntled former employee of Six Companies.

This action staggered the company. The contract had incorporated the Eight Hour Act, which forbade contractors from working any laborer more than eight hours a day and fixed a penalty of $5 for each violation, "to be

withheld for the use and benefit of the government." Wagner, who had been a typist and assistant auditor in Six Companies' Boulder City office from July 1931 to April 1934, alleged in his affidavit that the company had kept two sets of books, one for regular time and one for "emergency time." Bureau of Reclamation auditors did not see the second set of books, he said, which detailed at least sixty thousand violations of the overtime provision. As a result, the government had made forty-four payments to the contractors without withholding anything for overtime penalties. He estimated that Six Companies had defrauded the government of more than $300,000, and he charged that Frank Crowe and others were all criminally liable.

Secretary Ickes had not entangled himself in the project since he abolished scrip and pushed for more black employment, but he remained interested. He had kept the job funded, allotting $38 million from the Public Works Administration budget in 1934 when the rapid depletion of previous appropriations threatened to delay the schedule. Ickes wanted this popular project to conclude smoothly and quickly to illustrate the economic and social benefits that would flow from other large public power developments that he was championing, such as Grand Coulee Dam. Fighting with Six Companies over eight-hour law violations was not what he wanted, but he could not ignore the charges. He reluctantly launched a special investigation that disclosed 70,000 separate violations and resulted in a fine of $350,000.

The timing and tone of the investigation outraged Six Companies executives. The government's top field representative had known from the start that they had used overtime. The contractors had understood that this overtime would be exempt because hazards, common in the project, constituted an exemption in the overtime law. The extra work also had kept the project ahead of schedule, saving the government millions of dollars. For the government now to charge overtime violations and threaten stiff penalties, with the job almost done, was hypocritical and unjust. The contractor, however, did not adequately address the charge of the two sets of books.[17]

Kaiser began what Secretary Ickes called a "telegraphic bombardment." Kaiser sent a lengthy telegram to Secretary Ickes, defending Six Companies' payroll practices and denying any secrecy or dishonesty on the part of the contractor. He then went on the offensive and suggested that such charges maligned the integrity of the hundreds of Interior Department officials overseeing the construction. "A majority of the government representatives

understand the emergency situation involved in constructing a project of the magnitude and nature of this dam." The overtime had been authorized because of emergencies and was not subject to penalty, Kaiser concluded. He then flooded the Interior Department with wires supporting the Six Companies position.[18]

The telegrams were merely the opening salvo in a full public-relations war, similar to what Schwab had done to impede the armor plant bill. Kaiser appeared in radio and newspaper interviews and described the heroic, tireless, round-the-clock efforts of the contractor's employees to overcome incredible obstacles. He claimed that Six Companies' fast work had saved the public several million dollars. Books, pamphlets, articles, and broadcasts all blared the same message: the Interior Department's fines for overtime violations were unjustified. Kaiser's public-relations blitz worked. The parties met in Washington toward the end of 1935 and resolved all disputes and the company waived any further claims. They then set a date for the termination of the contract.

On February 17, 1936, the Interior Department quietly announced that the contractor and the government had agreed on a fine of $100,000, a two-thirds reduction. On February 29, 1936, Six Companies turned over the dam to the government, which formally accepted it the next day. These acts terminated the contract and ended construction—two years, one month, and twenty-eight days ahead of schedule. Gross costs were about $54.7 million, or $5.7 million more than the original bid, because of design changes. After deductions, including the $100,000 fine, payment came to more than $51.6 million not counting the design changes, of which between 20 and 35 percent ($10.4 million to $18 million) was profit.

The Hoover Dam project and controversy had occurred against a broader backdrop of congressional debate on competition. Purchases of heavy electrical equipment for a project the size of Hoover Dam extended over several years. Domestic bidders protested foreign competition in several such contracts, especially the purchase of turbines for the Madden Dam for the Panama Canal. On that project, a German firm had been the apparent low bidder, but other factors in addition to the price, which would affect the final cost to the United States, resulted in award to the second low bidder. However, with regard to Hoover Dam, Secretary of the Interior Wilbur stated on February 10, 1933:

> Under the law now applicable to the Interior Department, award must be made to the low bidder, whether American or foreign, provided the requirements of the specifications are met. Until and unless Congress passes legislation similar to that applicable to the War and Navy Departments, a German manufacturer can bid on the turbines, and if the bid is low the foreign concern must be awarded the contract.

From 1920 through 1933, the United Kingdom, hoping to stimulate its sagging postwar economy, set up a Buy-British policy for all materials and supplies on public projects. In Washington, Congress sought protective legislation for domestic industry and labor to combat the British policy. For years, some permanent legislation and sundry appropriation acts had contained prohibitions on foreign purchases. Three statutes containing domestic preference provisions date back to 1844, 1862, and 1865.[19] President Hoover agreed that legislation was needed and wrote to the Speaker of the House, John Nance Garner, suggesting that bidders be required to certify "whether the articles proposed to be furnished are of domestic or foreign" origin. Unless the extra cost was unreasonable, the government could buy the more expensive domestic item.

Hoover's strong support for what became known as buy-national legislation caused bills to proliferate. Many of the bills "shot beyond the mark" and required the government to buy "only articles and materials grown or produced and manufactured in the United States." That would in some instances interfere with the government's ability to purchase articles manufactured by American capital and labor from foreign raw materials.

Many domestic interest groups, such as the Common Brick Manufacturers Association of America, supported the proposals. They argued that federal appropriations should be spread throughout the nation; however, many products came from overseas rather than from the United States. Other testimony indicated that the cement on the Hoover Dam project came from Belgium and that the furniture for a federal building came from South America and from Czechoslovakia. Several bills reached committee. One would have excluded all foreign purchases whether for use within or outside the United States. The executive agencies objected because since the bill included supplies the government needed to buy and use abroad. It would be economically impractical to buy goods in the United States and ship them abroad. The attorney general stated that the law would force the government to buy domestic articles, despite exorbitant prices, and would be difficult to

enforce because government contracting officers would have to trace the source from which contractors secured their supplies and materials.

A similar measure required departments, as well as government contractors and subcontractors, to buy and use domestic articles and materials, and to give preference to materials and articles produced, grown, or manufactured locally. This bill, like others embodying similar provisions, received support from the construction industry, particularly the cement industry, but it was not accepted.

On December 15, 1932, a compromise bill composed of provisions from the earlier proposals passed the House of Representatives and was sent to the Senate.

Senator Hiram Johnson of California added the so-called "Buy American" bill, identical with the House bill, as a floor amendment to the Treasury and Post Office Appropriations Bill for fiscal year 1934. Fierce opposition mounted. Senator Gore of Oklahoma derided the proposal on the Senate floor.

> Mr. President, I may want to offer some amendments to this proposition myself. I may wish to offer amendments providing that no State shall buy anything that is not produced within the State, and that no county shall buy anything that is produced outside the county, and that no farmer shall be allowed to buy anything at all or sell anything that grows on his farm, and also to offer a motion that the American eagle shall be displaced as the emblem of the Republic and a terrapin be substituted in its stead—a terrapin closed up in its shell and hermetically sealed. If trade is a curse let us stop it.[20]

Senator Gore continued his opposition in less oratorical terms, arguing that compelling American taxpayers to pay more for domestic goods than for imported goods, after the imported goods had scaled high tariff walls, would not be inflationary. The proposal invited trusts among American manufacturers, since it banned imports at any price; furthermore, the imports were paid for with American exports, which were produced with American labor. But other arguments won the day.

Senator Johnson and other supporters of the measure wanted to alleviate domestic unemployment and to answer protests by California and Pennsylvania manufacturers of heavy electrical equipment against possible competition from German manufacturers on contracts for the Hoover Dam.

Also, the Buy American amendment sponsors wanted to retaliate against other governments employing "buy-at-home" policies in their government purchases. Senator Vandenberg described the legislation as "primarily . . . an employment measure. American tax money should maintain American labor in a moment of American crisis and exigency." He continued: "[T]o provide employment for unemployed American people, we have a right to draw the line . . . in defense of American industry and American employment, when we are spending American tax funds. Why have American make-work programs which make work in Europe or Asia? Mr. President, the American Treasury is not the world's community chest."[21]

Senator Davis agreed:

> Why we permit these competitive imports or products from other lands to be dumped into the United States while our own workmen are in the breadlines; is beyond my comprehension. As long as we maintain the American standard of living there is not the slightest hope of America's competing with the cheap labor of Europe and Asia unless we give ample protection to American industry and agriculture.
>
> Our Government, through contractors, is buying foreign products while our workers are idle. . . . when it comes to the Government of the United States' levying a tax on the American people and using that tax money to buy foreign-made products while its own are idle, I have not words to describe my opposition to it.

The timing of the Buy American statute and its relation to the Hoover Dam is interesting. The bid opening for hydraulic apparatus for the Hoover power plant was scheduled for February 3, 1933. Because Senator Johnson introduced his bill on February 2, 1933, however, bid opening was postponed until March 10, 1933. Prospective bidders had such short notice of the postponement that several were already on the way to Denver for the bid opening. The act passed the Senate and was signed by President Hoover on his last day in office, March 3, 1933, with an immediate effective date. Seven days later, on March 10, 1933, the effectiveness of the legislation was evident at the bid opening for the hydraulic apparatus. The act disqualified six foreign bidders for the contract—the six low bidders.

## Bonneville Dam

The Hoover Dam was not the only project the government used to pull the country out of the paralysis of the Great Depression. The Bonneville Dam[22]

benefited the Pacific Northwest, where 80 percent of the lumber mills had closed by 1932. Farm markets and income dropped, tenancy increased, and apple growers burned their trees to avoid the expense of caring for them.

In September 1932, candidate Roosevelt spoke in Portland. He stated his interest in the "vast possibilities of power development on the Columbia River." He promised that, if he were elected, "the next hydroelectric development to be undertaken by the Federal Government must be on the Columbia River." Roosevelt was true to his word. After his election, the Bonneville Dam became a major project implemented by the alphabet soup of agencies he created during his first one hundred days in office. The Federal Emergency Administration of Public Works authorized the building of Bonneville Dam on September 30, 1933, as Federal Works Project No. 28 under the National Industrial Recovery Act. Engineers immediately made plans to use the abundant energy of the Columbia River.[23]

Since FDR wanted Bonneville Dam to provide employment during the Great Depression, the Portland district engineer acted quickly to get the project underway. To hurry employment, the district engineer divided the work into many contracts. As fast as the project plans could be developed and assembled into discrete contracts, the Corps of Engineers advertised and awarded each separately. After the Public Works Administration allotted the initial $250,000 for design and construction on October 12, 1933, the district engineer recruited the personnel necessary to design the project. When work began on November 17, 1933, the plans called for locating a dam, a powerplant with two units, and a navigation lock near Bonneville, Oregon.[24]

Before contractors could excavate for the spillway, powerhouse, and navigation lock, the government had to clear land, move railroad and highway routes, and build a work camp. The Corps started building a 400-man camp with hired labor on November 1, 1933, and awarded the first relocation contracts on November 17 and December 29, 1933. On February 6, 1934, the Corps issued the first principal contract, involving excavation for lock and powerhouse, for $8.9 million. Between that date and letting of the main dam contract on June 12, 1934, the Corps awarded seven miscellaneous contracts amounting to $1.2 million. The next month, the Corps awarded a $3.8 million contract for building the lock and powerhouse substructure, and another $800,000 in contracts before the end of 1934. When the project was fully underway, the total work force averaged about

three thousand, with skilled workers earning a minimum hourly wage of $1.20 and unskilled workers, $.50.

In September 1937, top civilian and military figures assembled to formally dedicate Bonneville Dam. Before a large crowd, President Roosevelt dedicated the dam to "a policy of the widest possible use of electricity," and to "more wealth, better living and greater happiness for our children." The contractor finished the navigation lock early in 1938 and by March of that year, the first two generators produced power. Within six years, the dam would provide power for the plants involved in building the atom bomb.

*Chapter 18*

# The Mobilization Begins

As late as the eve of World War II, some recruits were drilling with wooden guns as a result of the parsimony of the nation in military spending. The Public Works Administration had helped build the nation's defenses while it reduced unemployment, but much more had to be done.

In spite of meager budgets and limited personnel, the services had enhanced mobilization capacity by reaching gentlemen's agreements, known as Accepted Schedules of Production, with manufacturers; these agreements specified quantities and rates of future war production. The government planners allocated the government's projected needs to these manufacturers and executed production schedules with their plants earmarked for the use of particular bureaus. These arrangements were supposed to eliminate competition among the army and navy supply services for particular facilities. By 1937, the services had about 2,500 accepted schedules, representing agreements with 645 different commercial facilities. For example, for any company that pledged to make ordnance in emergencies, the ordnance district officers and the management concluded fairly detailed production plans—plant layouts, machine tool requirements, gauges, raw materials, power, and labor needs—to convert rapidly to manufacture of the unfamiliar ordnance item. The government freely shared its arsenals' blueprints and production methods for this purpose.[1]

On the day of mobilization (M-Day) and during the ensuing conflict, the government was to negotiate with the allocated facilities in accordance with the war procurement plans, which were periodically revised. The peacetime method of formal advertising for bids was to be abandoned. However, the transition from a state of limited emergency, proclaimed by the president in 1939, to the war in 1941 was so gradual that no M-Day was recognized. As a result, the procurement plans and the Industrial Mobilization Plan were not implemented on schedule. Nonetheless, such planning provided more industrial and military preparedness in 1941 than in 1917.

## More and Better Weapons

### *Ships*

Allison Saville and others have recounted the story of the navy buildup between the wars.[2] In this area, national defense and efforts to alleviate unemployment merged. The army bought very few tanks and guns, and much of what it did buy it produced itself, as the Shannon Committee discovered. But the navy needed the shipyards to produce the massive descendants of the *Monitor*.

Back in 1914, when six navy yards could build ships, Congress wanted to use them as yardsticks to determine whether construction would be cheaper in naval or private yards. These yardsticks, however, proved unsatisfactory. To educate its officers, the navy wanted its own yards. Navy yards can exist without shipbuilding; however, private yards normally cannot. So a navy report concluded that some shipbuilding skills must be maintained in private yards. After that report, the navy built battleships, carriers, and submarines to the limits of its own facilities and left other classes of vessels, such as destroyers and cruisers, almost exclusively to private suppliers. In the 1930s, navy shipbuilding accelerated and forced more contracting.[3]

FDR decided to build up the military services with money appropriated for the Public Works Administration (PWA), one of his early depression-fighting alphabetical agencies. In October 1933, the PWA gave the army and navy $15 million to buy aircraft, ships (including several destroyers), and facilities as well as to provide unemployment relief. Unfortunately, that procurement program encountered severe criticism fueled by accusations of irregularities and profiteering. Critics accused the military of using emergency public works and relief programs to fund unnecessary projects.[4]

FDR spread the work as much as possible to reduce unemployment. Bath Iron Works in Maine, which desperately needed work, built the destroyers *Drayton* and *Lamson*. Their four sisters were built by United Shipbuilding in New York and by Federal Shipbuilders in New Jersey. Other orders followed for more ships, including destroyers, in ever-growing numbers. Sixteen were put under contract in 1933. A pair went to each of five navy yards, and the remaining six, again in pairs, went to three private yards: Bath, Federal, and United. General Electric (GE) turbines and Babcock & Wilcox (B&W) boilers went into all sixteen ships.

The surge in battleships had to be shared with contractors. The New York and Philadelphia Navy Yards built the two-ship North Carolina class of 1937, but new naval construction overwhelmed the navy and forced it to go to private yards for the four units of the 1938 South Dakota-Indiana classes. New York Ship Building Company of Camden (NYSB) designed and built the *South Dakota*, and provided Bethlehem Fore River of Quincy with the design for the *Massachusetts* to be built there. Similarly, the Newport News Ship Building Company of Virginia designed and built the *Indiana*, and transferred a set of plans to the Norfolk Navy Yard for the *Alabama*, the last vessel in the class. GE or Westinghouse turbines and B&W or Foster Wheeler boilers powered these ships. GE and the New York Navy Yard supplied the turbines and B&W the boilers for the North Carolina class. GE and Westinghouse also shared contracts for steam-turbine generator equipment and electrical switch gear in virtually all classes of ships for this period. The next classes of battleships, the six Iowa class and projected five Montana class (58,000-ton giants of 1939–40), were exclusively navy design and construction projects.

During the inter-war period, the navy developed a new type of ship to use its air arm effectively—the aircraft carrier. In 1919, Congress authorized $25 million to convert the coal collier, U.S.S. *Jupiter*, into "an aeroplane carrier." During the conversion in 1920, the *Jupiter* was renamed the U.S.S. *Langley*—after Samuel Langley, with whom the army had unsuccessfully contracted for an airplane at the turn of the century. The *Langley* provided valuable training before more modern carriers replaced it. It was serving as a seaplane tender when it was sunk by the Japanese in 1942.

In 1922, Congress authorized the conversion of two 1916 battle cruisers, *Lexington* and *Saratoga*, into airplane carriers. The Bethlehem Fore River Yard built the *Lexington* and NYSB built the *Saratoga*, both of which the navy commissioned in 1927. These 33-knot, GE turboelectric-drive ships, at 909 feet the longest ships in the world for a decade, served as vital developmental carriers for the evolution of tactical air doctrine and carrier evolution, and tested such equipment as plane-arresting gear, palisades, and catapults. The *Lexington* sank on May 8, 1942, two and a half months after the *Langley*, after helping to stop the Japanese at the Battle of the Coral Sea. The *Saratoga* survived World War II, but was destroyed on July 25, 1946, as a target vessel for the Bikini Atomic Bomb test.

In 1929, Congress authorized another carrier, the 14,500-ton *Ranger* built by Newport News Ship Building. Two more were authorized in 1933, the 19,900-ton *Yorktown* and *Enterprise*; again Newport News won the contracts. The *Yorktown* alone failed to survive the war, sinking on June 7, 1942, after helping win the Battle of Midway. The 14,700-ton *Wasp* contract went to Bethlehem Fore River in 1933. She was completed in 1940 after numerous construction and trial problems. Japanese submarines sank her on September 15, 1942.

The navy did not get funding until 1938 for another carrier, the 20,000 ton *Hornet*, which Newport News completed just before the outbreak of war. She sank on October 26, 1942, but not until she had launched Jimmy Doolittle's planes for their raid on Tokyo.

The final pre-war orders for carriers came in 1940 with appropriations for eleven long- and short-hull Essex-class vessels, on a standard displacement of 27,000 tons. The navy awarded seven to Newport News and four to Bethlehem Fore River (the latter using its own design), thus confirming those two firms as the prime contractors for fleet carriers by the beginning of the war. For these World War II fleet carriers, the navy abandoned the practice of allowing the shipyards to supply their own turbines. The navy adopted a standardized Westinghouse type to mate with the B&W boilers, navy-wide favorites.

### Submarines

The powerful German U-Boat fleet of World War I had convinced the navy that it needed more submarines, so it contracted in late 1919 for a submarine base at Key West, Florida. It established a similar facility at Astoria, Oregon, four years later. By adding a complete submarine facility at Pearl Harbor and extensive additions to existing bases at New London, Hampton Roads, and Coco Solo, the navy could maintain and berth a considerable number of submarines by the eve of World War II.[5]

From 1918 to 1924, the navy built submarines in conjunction with civilian contractors. It selected two Connecticut firms, the Electric Boat Company of Groton and the Lake Submarine Company of Bridgeport, in the design field (Simon Lake, one of the most inventive geniuses in the pioneering days of submarining, had founded his company in 1908); Lake and Bethlehem Steel for construction; Busch-Sulzer of St. Louis and Electric Boat subsidiary,

Nelseco of New London, Connecticut, for diesel engines; Electric Dynamics, another Electric Boat subsidiary, for generators and motors (over Ridgeway Dynamo and Diehl Mfg. Co.); Electric Storage Battery (Diehl Storage Battery for Lake boats only), for batteries; and Sperry, for the gyro compass. The navy handled all ordnance.[6]

From 1924 to 1932, however, the navy's demand shrank and only ten submarines were commissioned. Worse still, the navy monopolized the work and eviscerated its mobilization base. By taking over all torpedo development, it forced the veteran E. W. Bliss Torpedo Company out of business. The Lake Company collapsed and had to liquidate because the navy took over submarine design and construction. Bethlehem Steel completed its last submarine in the mid-1920s, and Electric Boat barely kept itself in business by building bridges, printing presses, and a few antiquated submarines for Peru during the 1920s.

In 1932, the navy brought contractors back into the field. By sharing design and construction work with Electric Boat Company and contracting for the diesel and air-compressor fields, it tried to evolve a successful fleet-type submarine and a rapid mobilization base.

By 1936, Congress realized its aged merchant fleet could no longer compete in the world market. To rejuvenate the industry, it passed the Merchant Marine Act of 1936, which began a crash merchant shipbuilding program to produce 500 new ships for the merchant fleet over ten years.

As war approached, Congress began appropriating more funds for naval ship construction; in 1940, $885 million was spent. By December 1, 1941, the active fleet had 340 fighting ships with 344 more under construction. Thus, a shipbuilding program was in full swing by WW II and shipbuilders were well prepared to mobilize for warship construction. The shipbuilding commercial base did not have to be reborn, as the guns and munitions base did; rather, it could expand to multishift work conditions. Naval shipyards provided much of the technical expertise required by the commercial shipyards for conversion to warship construction. Entrepreneurs like Henry J. Kaiser, one of the builders of Hoover Dam, implemented a system of mass-producing Liberty ships (10-knot transports).

## Tanks

What Sam Colt was to the revolver, J. Walter Christie was to the tank. Christie, an early race car driver who competed against Louis Chevrolet and Barney Oldfield, developed and built his first tank in 1919, and tried to sell it to the army, but neither mobilizations nor demobilizations are ideal occasions to introduce new weapons. In one case, the demand is too urgent to risk buying something new; in the other, the nation's supply is too great to buy anything more.[7]

Orr Kelley recounts Christie's remarkable saga. By 1927, his tank had a low-slung chassis and weighed ten tons, with a 57-mm cannon and a .30 caliber machine gun in a round pillbox-shaped turret. It also had a marvelous suspension system, in which each road wheel had a separate suspension, allowing the tank to switch between tracked and wheeled operation. On tracks it could reach more than 42 miles per hour (MPH) cross-country. With wheels on a roadway, it could do 70 MPH a remarkable speed for any vehicle at that time. Christie claimed a later model could do 120 MPH. He proposed fitting it with wings so it could hopscotch across the battlefield. Once, he sealed his tank, added two propellers, and showed it off by having it swim the Hudson River and then climb the Palisades above the Jersey shore.

He suffered the same problems with his tank as Holland with his submarine. Unlike the breechloader, the weapon he proposed did not so much enhance the existing method of warfare as threaten it. What would happen to the cavalry or even the infantry if steel behemoths were allowed to roam the battlefield? Christie's biggest obstacle to government contracts, however, was probably his irascible disposition. With more than a little egocentricity, he did not recognize the legitimacy of the army's concern for reliability, timely delivery and cost. Nor did he accept the ability of the men who would depend on the tank in battle to propose changing it. He told one interviewer. "All I want the Army authorities to do is say: 'Give him the money and let's see what sort of machine he can turn out.' I won't let them change a thing on it. If they try to, I'll walk out. I won't let them tinker with it."

As a result, although the United States tested experimental models, it never mass-produced a Christie tank. But the Russians and the British bought prototypes and used them as the basis for highly successful combat vehicles. Orr Kelley suggests one theory about why the British and the Russians used

Christie's designs: unlike the Americans, they got Christie's technology but didn't have to put up with *him*. The British got their prototype in 1936, after Christie had defiantly parked a tank, which the army had rejected, in the courtyard of the State, War, and Navy Building (now the Old Executive Office Building) next door to the White House. When the British showed interest, Christie disassembled the tank and shipped it to England. To avoid export controls, he labeled the chassis "a farm tractor" and the accompanying containers "grapefruit."

Instead of mass-producing a Christie tank, the army built a few armored cars during the 1920s and 1930s, either at the Rock Island Arsenal in Illinois or under its direction. Most were merely four- or six-wheeled commercial trucks to which the army added sheets of armor and a turret carrying a 37-mm cannon or a .50 caliber machine gun. Manufacturers included the White Motor Company, Marmon-Herrington, Joseph Cunningham Son & Company, Studebaker, Pontiac, International Harvester, and even LaSalle, a luxury car division of GM.

### *Aircraft*

Within two years of the Nye Committee's report, aviation companies had regained the public's approval, as aircraft had become America's most spectacular means of defense.

In July 1937, the government ordered 210 Curtiss aircraft, designated P-36A, for $4,113,550, the largest peacetime contract to date for military aircraft. The planes were needed. By 1938, the Air Corps had only 1,401 planes, but fewer than 900 were combat types, and many were obsolete. The navy had over 800 planes, but several hundred were biplanes.[8]

The navy's new carriers needed aircraft, and between 1927 and 1942 seventy design and manufacturing firms participated in the naval aircraft procurement program. Curtiss, Chance-Vought, Grumman, Douglas, Convair, and (to a lesser extent) Boeing and Martin, were major navy contractors. All these firms joined to produce the successful fighter bomber, torpedo and dive bomber, and observation and patrol bomber types of World War II. Wright and Pratt-Whitney continued as the most successful engine producers.

Congress used some legerdemain to build the air fleet without eliciting the "merchants of death" outcries. One device, using "contract authorizations" in lieu of outright appropriations, was frankly discussed on May 26, 1937, during the Senate Hearings on War Department appropriations for 1938.[9] By this device, Congress authorized the air arm to obligate money in contracts for which payment would not be due until beyond the fiscal year in question. Using such contractual authorizations, in addition to the funds actually appropriated, Congress hoped air officers could award contracts and enhance defense while delaying payment for at least a year. This politically expedient device helped, but there were real drawbacks. When Congress voted for increased contract authorizations rather than outright appropriations, the air arm could not contract for aircraft until late in the fiscal year. Furthermore, payments at the end of production did not ease the burden of companies that had to incur hundreds of thousands of dollars in tooling costs and inventory charges before a single aircraft could start down the assembly line.

In 1938, a military board proposed a compromise, which Congress later approved in the Split Award Act of 1940. The government would hold a design competition, fund the development of two or three finished models, and then choose the best one. This solution would give the industry reasonable incentives: the winning firm would have monopoly production rights to its design, and the losing firms would be reimbursed for at least part of their development costs. The services would also have acquired competitive leverage over the cost of the winning aircraft so long as no significant design changes occurred between the sample competition and the start of production.[10]

Such innovations were needed in the Air Corps' quest for a 300 MPH fighter, which had become more urgent with the increased threat of war in Europe. The Messerschmitt, Bf 109B, could reach 292 MPH, and the prototype of the Supermarine Spitfire, flown in 1936, could reach 350 MPH. The procurement methods to improve America's fighter capability represented some of the tradeoffs that have faced contracting officers since the Revolution.[11]

The Air Corps had invited manufacturers to bid by January 25, 1939, to produce a medium altitude pursuit plane capable of at least 310 MPH and up to 370 MPH at 15,000 feet. A climb to that altitude, according to the

specification, could vary from 4.5 minutes to 6 minutes. Mission endurance had to be two hours at between 280 and 335 MPH.

The Curtiss P-40 was unquestionably inferior at high altitude to the turbo-supercharged designs submitted, on the other hand, it cost less. Furthermore, based on a proven airframe in mass production, it could be mass-produced a full year ahead of any other type. The other competitors, such as Bell or Lockheed, would need two years before they could mass-produce, and Republic would need to expand its facility before a large order could be filled. Time had run out, however. On March 14, 1939, Hitler announced that Czechoslovakia had become a German protectorate, and German troops began an occupation the next day. On March 28, Madrid surrendered to Franco and the Spanish Civil War ended. On March 31, Prime Minister Neville Chamberlain disclosed British and French guarantees of aid to Poland if Germany attacked. In April, Italy occupied Albania. Clearly, the days of peace were numbered. Vitally needing a modern fighter in the shortest possible time, the army realized that quick delivery was more critical than performance. Later, critics cited deficiencies in the P-40 and compared it to the admittedly superior P-51 Mustangs and P-47 Thunderbolts, but those fighters were not available then.[12] Meigs' rule from the Civil War rang true: an average horse available now that could last a month was worth its weight in silver.

On April 17, 1939, the War Department awarded a $12,872,898 contract to Curtiss for 524 Curtiss P-40 pursuit planes, its largest single contract since the end of World War I. Service test orders for thirteen each of the Lockheed YP-38 and Bell YP-39 were announced the same day. It was none too soon.

## The Mobilization Picks Up Steam

The palpable threat of war wrought a total change in America's opinion of the defense industry. All of a sudden, the "Merchants of Death" became builders of the "Arsenal of Democracy."

World War II represents the ultimate effort in government contracting; it cost the most money, involved the most people, and entailed the most technological advances, culminating in the atomic bomb. The production potential seen but not fulfilled in World War I was achieved and surpassed. The symbol of this period is a production line; virtually everything the government bought came in quantities considered unrealistic in 1939. Just as

in the Civil War, the techniques of mass production excelled, but this time not only clothes and shoes but airplanes and ships of ever increasing complexity were being produced. The quantities demonstrated what can be done when money is not a constraint. That deluge of money, the induction of hundreds of thousands into the armed forces, and the employment of hundreds of thousands of men and women by defense industries did what the socioeconomic programs could not do: end the Great Depression. Fully one-third of Americans moved into the middle class during the war, and perhaps for the first time, civilian workers realized their role in the war effort.

During the war, the nation bought more of everything than it ever had before. As naval historian R. H. Connery notes,[13] between July 1, 1940, and June 30, 1945, the navy added 10 battleships, 18 large aircraft carriers, 9 small aircraft carriers, 110 escort carriers, 2 large cruisers, 10 heavy cruisers, 33 light cruisers, 358 destroyers, 504 destroyer escorts, 211 submarines, and 82,028 landing craft of various types. The navy spent over $13 billion to buy huge three-gun turrets for battleships, thousands of anti-aircraft guns of various calibers and small arms of all types, 27,000 torpedoes, 500,000 depth charges, and 100,000 16-inch shells.

During that same period, the navy's air fleet jumped from approximately 1,800 airplanes to more than 40,000, but the navy actually bought more than 80,000 airplanes at a cost of nearly $8 billion. The navy transferred some of these to the Allies under land-lease arrangements, some were used for training, and some were destroyed.

The area of naval medicine grew at a similar rate. In July 1940, the navy had 15 naval hospitals in the United States plus 3 outside the continental limits, totaling 6,000 beds, plus 1 hospital ship with slightly more than 500 beds. Five years later, the navy's 54 hospitals and 12 hospital ships offered approximately 100,000 beds, staffed by 13,500 doctors. Medical supplies and equipment cost more than $250 million, and hospital construction, exclusive of hospital ships, cost as much.

In those same 5 years, the navy bought about 50 million white sailor caps, 30 million white trousers, 12 million blue trousers, 25 million pairs of shoes, 95 million pairs of cotton socks, 68 million pairs of woolen socks, 10 million blankets, 4.5 million pillows, and 172 million handkerchiefs. But all of these items, together with other types of clothing, cost the navy less than $1 billion.

On December 7, 1941, 8 navy yards and 24 private yards could build large combat or merchant vessels. By the end of the war, 99 more yards appeared along the Atlantic, Pacific, and Gulf coasts, as well as on the Great Lakes and major inland rivers. These shipyards, financed by the navy and Maritime Commission, needed millions of new shipyard workers. They increased from 120,000 in 1939 to over 1.7 million in December 1943. By the middle of 1942, shipyards employed more workers than any other war industry. About 4.5 million people worked at one time or another in World War II shipyards.

The army's contracting effort surpassed the navy's and represented the greatest single agency purchasing operation in U.S. history.[14] To supply the 89 divisions the army had by V-J Day, the army bought goods estimated at $117 billion from July 1, 1940, to August 31, 1945. Yet even this figure, which dwarfed the operations of the nation's most gigantic corporation, does not reveal the true magnitude of War Department purchasing in World War II. To obtain the needed goods and to train and house its troops, the War Department contracted, directly or indirectly, for many additional billions of dollars in industrial facilities, machinery and equipment, and army installations throughout the world. The combined value of total war production for the army, including its air forces, during this period has been estimated at approximately $180 billion. Moreover, these figures do not include the army's contracts terminated before completion, which ran from $40 billion to $50 billion.

Nor did the army contract for all its needs. As in the Civil War, the armories performed magnificently. For example, the army's Detroit Arsenal produced more than 22,000 of the 88,000 tanks made during WW II. At the beginning of the war, the Springfield Armory produced 1,000 M-1 rifles per day, but by the end of the war, it was producing 3,000 per day.[15]

Pearl Harbor jolted the country with vengeful energy. Fortunately for America and its allies, preparations had started months before to combat the traditional inter-war lethargy. As Hitler and Mussolini grew stronger in Europe and Hirohito in Asia, the United States began mobilizing—ponderously and with no clear direction.

Franklin Roosevelt held office for all but a few months of World War II, and wielded power over the procurement process like no one before or since. The Roosevelt Administration's pre-war planning for economic mobilization, however, has been described as "mismanaged, confused, and

marked by political expediency," but that overstates the case.[16] A Congress that only a few years before, during the Nye, Black, Vinson, and McSwain hearings, had heard tales of outrageous profits and sweetheart deals would not be hurried into, granting sweeping power and money to the military.

To achieve its massive quantities, the government absolutely controlled industry to ensure military and essential civilian production. The government ruled the shipyards and factories and the manufacture of every important product used in them. It determined when, and how many, employees were hired, their wages, and basic worker health and safety standards. Moreover, contracts between primes and their subcontractors provided that the contracts were "subject to the approval of" the government.[17] World War I had taught the need for synchronization. It was not enough to have supplies moving from the steel companies to the tank manufacturers; the government had to ensure that the production schedules of the steel companies, the gear manufacturers, the electronics companies, and the rubber boat companies all meshed into a carefully designed mosaic of efficiency. The government exercised this control through the Army, Navy and Maritime Commission and by new agencies ruled by economic czars such as Jesse Jones of the Reconstruction Finance Corporation, Harry Hopkins in charge of Lend-Lease, Donald M. Nelson at the War Production Board, and eventually (above all the rest) James F. Byrnes at the Office of War Mobilization. As Clinton L. Rossiter observed. "Of all the time-honored Anglo-Saxon liberties, the freedom of contract took the worst beating in the war."[18]

A discussion of pre-war mobilization can be viewed as merely a boring litany of statutes and executive orders pulled from dusty volumes of the Statutes at Large and the Code of Federal Regulations. Put yourself in Washington from 1939 to 1941, however, and you realize that panic is just below the surface. Each statute represents the peeling away of another layer of belief going back to the days of Robert Morris. The same members of Congress giving expanded powers to the military and industry had pilloried them just a few years before for doing the very things it was now authorizing negotiated contracts, cost-plus contracts, and a lack of competition. Congress did this not because it feared the military and the arms merchants any less, but because it feared Hitler even more.

## The Rules Slowly Change

Congress was gradually weaned from its faith in competition. The process began with the Educational Orders Act of June 16, 1938. The act authorized the secretary of war to place educational orders with companies to teach them how to manufacture "munitions of war of special or technical design." The secretary could only use this exemption from competitive bidding by soliciting bids from firms that could handle large wartime contracts for the items. Furthermore, no concern could receive more than one order within any three consecutive years. Finally, the president was required to approve every contract.[19]

To carry out the act, Congress appropriated $2 million, not a huge sum, but any appropriation for this purpose was vital. The army had tried for more than twenty years to place orders to educate firms in munitions manufacture and to set up facilities to manufacture new materiel to avoid long wartime delays. Without educational orders with suitable firms, and not necessarily with those submitting the lowest bids, only the government arsenals, with their limited capacity, would be ready in emergencies. Although the army had used educational orders before the War of 1812, the first attempt before World War I failed as had every attempt in the 1920s and early 1930s.[20] In 1926, Guy E. Tripp, chairman of Westinghouse Company, headed a national committee on industrial preparedness, which recommended legislation for educational orders, but bills introduced in Congress the next year and in 1929 failed to pass. Even General MacArthur's testimony before the War Policies Commission had not changed Congress' view. A new bill in 1933, proposing $2 million yearly for five years, also failed even though advocates pointed out that educational orders would help "prime the industrial pump" in the depth of the Depression. So, legislation for educational orders in June 1938 marked a considerable victory.

Seven months later, on January 12, 1939, after Hitler had marched into Austria and partitioned Czechoslovakia, President Roosevelt called for $32.5 million more in educational orders and $1.762 million for both procurement planning and production orders. On April 3, 1939, Congress authorized $32.5 million to be available until June 30, 1941, and $2 million in each of the four ensuing years. Congress also authorized funds to buy production studies and provided for storage of special manufacturing aids, such as gauges, jigs, and dies, which became government property. At the

last minute, Congress appropriated an additional $14.25 million for 1940. Thus, in reality, Congress approved a seven-year program.

As war approached, the services began to ask for and receive other exceptions to the competitive-bid statute. The slow but inexorable adoption of the negotiated contract to replace formal bidding represented the greatest single step in developing procurement policies during the war.[21]

On April 25, 1939, Congress authorized the navy to contract for construction projects outside the United States with cost-plus-fixed-fee (CPFF) contracts. These contracts could be made without advertising but at fees not to exceed 10 percent of the estimated cost. The navy, however, had to negotiate with three or more reputable and qualified firms. Congress intended to speed construction by allowing work to begin without waiting for complete specifications and by altering specifications with minimal delay. Congress also believed that negotiation would minimize the cost to the government, because the navy's experience showed that the inherent risks made it "impracticable to obtain competitive bids from reliable and experienced contractors on work at outlying stations except at exorbitant prices." Negotiated CPFF contracts allowed the government to assume many of the risks.

Following this navy success, on July 10, 1939, at a Washington conference of aircraft manufacturers and War Department officials, an announcement was made that a House bill would shortly be introduced authorizing "negotiation" for aircraft parts. Such an act would avoid overloading a few firms and thereby endangering delivery, instead, it would develop sufficient capacity for emergencies. Congress, however, only authorized the War Department to buy secret aircraft parts and accessories without advertising, provided it requested offers from three reputable concerns. Within a year, in March 1940, Congress enacted the Split Award Act, which allowed the services to divide an award for aircraft among the three lowest bidders, in the form of a seminegotiated contract, when this was necessary for national defense.[22]

Despite these exceptions, Congress and the services, perhaps mindful of the horror stories from the Civil War so recently touted by the "Merchants of Death" theorists, were clearly reluctant in 1939 and early 1940 to abandon the traditional contracting methods until absolutely necessary. That urgency seemed to have abated. After the outbreak of war in Europe in September

1939, a period of lethargy known as the "phony war" followed, during which the Nazis prepared for the blitzkrieg. This "phony war" lasted until the spring of 1940 and lulled the country as a whole into an apathy that lasted until June 1940.

Fortunately, industry began to plunge into war production, but it produced for the allies, rather than the United States. Desperately, the British and French turned to America, specifically its aircraft industry, for fighters, bombers, and trainers. To spur production, the allies not only paid high prices but financed plant expansions in 1939 and 1940. The British alone ordered supplies worth $2 billion and furnished $171 million for factories. The U.S. aircraft industry's total sales for 1939 were about $225 million, and foreign business jolted the industry into expansion.[23]

As the aircraft expansion program accelerated in the summer of 1939, many manufacturers complained about the inclusion of the eight-hour law requirements in their contracts.[24] This June 19, 1912, law prohibited the employment of laborers or mechanics under government contracts or subcontracts for more than eight hours in any one day. This law had caused Six Companies' confrontation with the Justice Department on the Hoover Dam project. The manufacturers were more than willing to pay time-and-a-half for overtime and had bid accordingly, but the comptroller general insisted that the eight-hour clause prohibited work in excess of eight hours in any single day. The services feared that the comptroller's intransigence would imperil the mobilization. The Justice Department searched for precedents for an exemption, especially after one of the nation's leading engine manufacturers, the sole source for liquid-cooled, in-line engines, refused to bid on an Air Corps contract containing the eight-hour act provisions. The manufacturer agreed to pay for overtime work, but to comply with the eight-hour curb on labor would have disrupted its entire plant, which was already working overtime. Eventually in May 1940, Congress solved the problem by suspending the eight-hour law during the emergency. Meanwhile, the delay cost nine months.

## Early Mobilization Organizations

Besides making the transition from formally advertised procurements to negotiation, the nation frantically searched for the right structure to control the contracting effort and avoid the confusion of World War I. In this process, the government created and quickly discarded numerous boards and

commissions much like a child picks up, shakes, and throws away plastic Easter eggs while looking for the one with the prize.

On July 12, 1939, an Army and Navy Munitions Board (ANMB) Clearance Committee was established to coordinate foreign procurement so that it would not interfere with America's war efforts. For example, the British government tried to buy nearly all American stocks of 7 x 50 binoculars for its Merchant Marine. The navy representative, however, pointed out that the navy needed to maintain these stocks and that the British should instead buy 6 x 30 binoculars, a serviceable type but not as scarce. Similarly, when the British asked for millions of rounds of .30 caliber ammunition, the army representative objected and succeeded in getting the order decreased.[25]

On August 9, 1939, FDR appointed a War Resources Board, headed by Edward R. Stettinius of U.S. Steel, to advise the president and the Army and Navy Munitions Board on economic mobilization in the event of a war. Many expected this board to become an executive agency, similar to the War Industries Board of World War I when war broke out. Yet the board, after making its report in October 1939, was allowed to expire because many New Dealers attacked it as a coterie of robber barons. The nation was not yet ready to be that cozy with industrialists, especially steelmen.[26]

On December 6, 1939, President Roosevelt replaced the ANMB Clearance Committee with a new one, the Interdepartmental Committee for Coordination of Foreign and Domestic Military Purchases, usually referred to as the "President's Liaison Committee." The new committee consisted of the director of procurement for the Treasury Department, the quartermaster general of the army, and the paymaster general (chief of the Bureau of Supplies and Accounts) of the navy. The president designated this group as the exclusive liaison agency on procurement matters with foreign governments. Three days later, the assistant secretaries of war and navy objected to the establishment of the new committee, but FDR overruled them. By transferring control from the ANMB to the Liaison Committee, he brought the activity under the cognizance of the Treasury Department whose secretary, Henry Morganthau, Jr., advocated all-out aid to Britain and France.

## The Wheels Start Turning

Negotiation and commissions were not enough, however. The nation had to begin buying huge quantities of materiel.

The German blitzkrieg into the Low Countries and France during May 1940 ended the "phony war." It also smashed congressional opposition to mobilization and opened the floodgates for extensive defense expenditures. President Roosevelt went before Congress on May 16, 1940, to call for an aircraft industry with an annual capacity of 50,000 planes a year and an air force of 50,000 military and naval planes. The industry was then producing between 5,400 and 6,000 military planes per year, so FDR called for an eight or ninefold increase for an industry already straining. The industry had barely produced 50,000 planes since 1903. (Ever the optimist, Henry Ford declared on May 28 that his company stood ready to "swing into a production of a thousand airplanes of standard design a day," a statement reminiscent of his boasts at the start of World War I.)[27]

FDR also requested an urgent appropriation of $1.2 billion for the military. Two weeks later, he requested another billion. Congress quickly authorized these sums. On July 10, Roosevelt proposed further authorizations and appropriations totaling approximately $5 billion, which were approved in less than two months. Between June 1 and December 1, almost $10.5 billion in defense-related contracts were awarded. Executing such a program—the industrial equivalent of waking a lethargic man and forcing him into a marathon—demanded centralized control.

The president, in a May 24, 1940, memorandum to the secretaries of war and navy, stated that Secretary of the Treasury Henry Morgenthau would review supply contracts for aircraft and engines. Five days later, he changed his mind.

On May 29, 1940, with FDR's approval, the Council of National Defense, a cabinet committee still existing by virtue of the National Defense Act of 1916, established an advisory commission of seven members. The members and their responsibilities were as follows: William S. Knudsen, industrial production; Edward R. Stettinius, Jr., industrial materials; Sidney Hillman, labor; Chester C. Davis, agriculture; Ralph Budd, transportation; Leon Henderson, price stabilization; Harriet Elliott, consumers' interests. Thus

began the civilian command responsible for industrial mobilization during the war.[28]

The new National Defense Advisory Commission (NDAC) invited Bernard Baruch to advise it based on his experience in World War I. He warned them to leave the actual contracting to the military agencies. President Wilson had rejected suggestions to take this authority away from the services, and when he appointed Baruch, he emphasized that procurement should remain with the agencies established for that purpose. Baruch was "to let alone what is being successfully done and interfere as little as possible with the present normal processes of purchase and delivery in the several departments."[29] After that, no serious proposals were made to disturb the basic pattern of procurement responsibility.

Originally, the NDAC was only to advise and deal with the Council of National Defense through the president or through his administrative assistant. That changed on June 6 when the president told the secretaries of war and navy: "In order that the program of industrial expansion in the preparedness field may be coordinated and expedited most effectively, I should like you to obtain the approval of Commissioner Knudsen of the Advisory Commission to the Council of National Defense on all important contracts for purchase by your Department." Shortly afterward, Knudsen ruled that all contracts for more than $500,000 should be submitted to him for clearance.[30]

Born in Copenhagen, Denmark, Knudsen had immigrated to the United States early in 1900 and worked as a benchhand in a bicycle factory. Later, he went to work for Ford Motor Company. After the United States entered World War I, Knudsen supervised the production of army war material for Ford and directed the construction of the Eagle boats. Early in 1921, Ford fired him. After a year working as a general manager of a Detroit firm making automobile parts, Knudsen joined the General Motors Corporation as its staff advisor. Within three weeks, he became vice president of the Chevrolet Division in charge of operations. In January 1924, he was made president and general manager of the Chevrolet Division and the vice president and director of General Motors. In 1937, he succeeded Alfred T. Sloan, Jr., as president of General Motors.

Knudsen had to act quickly as defense coordinator because France fell the same month he assumed his duties. He realized that for the British and

Russians to stay in the war, America would have to produce as many tanks and airplanes as it could, and as soon as possible. Coming from General Motors, Knudsen decided that only standardization of parts, the moving assembly line, and precision mass production could solve the critical weapons shortage. Not surprisingly, he went to the automobile industry first.

The most critical shortage was tanks. Photos depict old army trucks being used in the 1938 maneuvers with signs stating "tank" hung on them. On a Sunday morning in May 1940, Knudsen called K T. Keller, the president of Chrysler Corporation, and asked, "K T., do you want to make tanks?" "Sure," replied Keller, "Where can I see one?"[31]

The next day, Keller and several of his staff went to Rock Island Arsenal to study the army's latest tanks. When Keller and his Chrysler team left the arsenal, they took 168 pounds of blueprints and began planning how to mass produce tanks.[32]

Meanwhile, the army had formed a makeshift armored division in the summer of 1940. That division so impressed the army that, on July 10, it created the U.S. Armored Force and planned to form at least two armored divisions. A week later, the army contracted with Chrysler to build an arsenal in Detroit and turn out ten tanks a day for $30,000 each. While its engineers developed the new machine tools, Chrysler located a cornfield just outside Detroit, bought the land, and began designing a new factory with a moving assembly line nearly fifteen hundred feet long. But the awesome power of the German panzers in their blitzkrieg through Poland and France convinced the army it needed a tank with at least a 75-mm cannon rather than the 37-mm gun then in use. Within two weeks of the contract award, the army modified the tank by moving the turret to one side and installing a bigger cannon on the side of the hull. Thus, the situation was so critical that the Iron Law of Mobilization ("in an emergency there is little hope of innovation; the nation builds what it is already building") had to change in the face of Nazi tanks. Despite the changes, Chrysler completed the arsenal and, in April 1941, produced the first of 5,628 M-3 tanks. American industry reached a peak of nearly 30,000 in 1943.[33]

But Knudsen encountered problems, too. In June, the British government asked him to have an American carmaker build Rolls-Royce motors to keep the Royal Air Force flying during the Battle of Britain. Knudsen called Edsel Ford, president of the Ford Motor Company, who came to Washington and

accepted the British contract. Yet, seventy-seven-year-old Henry Ford, owner of the company, for some reason refused to permit Ford factories to make the British motors. Knudsen shifted the job to Packard.[34]

Despite all his efforts, Knudsen progressed slowly during 1940 and 1941. The country was not at war, and all he could do was ask firms to start making weapons. During these two years, the car industry, for example, still produced 7.5 million cars. Even so, Knudsen's NDAC achieved impressive results. Chrysler not only mass produced tanks but began delivering anti-aircraft guns. Ford agreed to build the heavy bomber, the B-24 Liberator, and began tooling up for the job. Some General Motors divisions were already producing machine guns. Studebaker had begun work on aircraft engines. Pontiac had started on the Oerlikon anti-aircraft guns. Oldsmobile was producing shells for the army. Graham-Paige worked on amphibian tanks. Dodge contracted to produce 20,000 army trucks.[35]

The various procurement programs needed coordination to avoid the mass confusion that has accompanied all America's mobilizations. Donald Nelson, former executive vice president of Sears, Roebuck and Company who had been serving as director of the Procurement Division of the Treasury Department, became coordinator of purchasing on June 27, 1941. His position and duties vis-a-vis the advisory commission were not clear. He was not part of the commission nor under its jurisdiction. He was to do no buying, but advise the government when and how to buy. That appointment without power meant that chaos would soon develop as panicking contracting officers, flush with money, flooded the marketplace and competed for scarce resources.

Just as in the Civil War, it soon became obvious that many articles and materials could not be bought in the United States in quantities sufficient to meet the needs of the defense program. The under secretary of war, therefore, issued certificates of determination, which meant that the Buy American Act did not apply to certain purchases from foreign suppliers during the emergency.

In buying foreign goods, the government preferred articles produced in the western hemisphere. When markets for 40 percent of Latin American exports were lost because of the war, the United States feared that economic and political stability in some of these countries might deteriorate and jeopardize the defense of the Western Hemisphere. President Roosevelt

asked, in the interest of "hemispheric solidarity and as good neighbors," that the War Department give priority to Latin American products when buying in foreign markets. On June 15, 1940, Congress authorized the secretary of war to buy arms, ammunition, and implements of war produced within any Latin American republic.

## The Flood Gates Open

The pace of the defense program increased and intensified after British troops had to be evacuated from France at Dunkirk. Stark reality forced a further easing of the traditional restrictions on purchasing. Through a series of laws in June and July 1940, the 76th Congress gave the services wide discretion to negotiate contracts. Congress approved the spending of billions, then tens of billions, and ultimately hundreds of billions of dollars. After 1941, the military procurement agencies operated virtually with a blank check.

The other federal agencies could not be forgotten, considering their importance to any mobilization. The National Defense Supplemental Appropriation Act on June 26, 1940, authorized the Treasury Department to purchase strategic materials without competitive bidding. This and other acts prohibited the use of cost-plus-percentage-of-cost contracts, but permitted the use of cost-plus-fixed-fee contracts at maximum fees, generally 6 or 7 percent of the estimated costs.

In June and July of 1940, while England stood alone, President Roosevelt asked Congress to provide a two-ocean navy. Congress agreed and authorized a 70 percent increase in the fleet at a total cost of about $4 billion. This required a substantial increase in shipyard capacity. On June 30, 1940, when the industry was already greatly expanded from its inter-war low, 138 naval vessels were being built, 68 of them in private yards and 70 in navy yards. One year later, 697 were being built, 94 in navy yards and the rest in some 73 private yards. Such a huge increase in the fleet meant that competitive bidding could not be used.

Bath received a contract on July 1, 1940, for six destroyers, followed by contracts for twenty-five more. Immediately after the fall of France, Secretary of the Navy Frank Knox telegraphed Bath: "Take immediate steps to expand your facilities with view to greatly enlarged shipbuilding program. Speed is of the essence." Bath began constructing a plant on the strength of

Secretary Knox's telegram. It was 70 percent completed before the navy awarded the contract, authorizing its construction and agreeing to pay for it.[36]

Despite the increased urgency, competitive bidding was still required in most cases. From July 1, 1940, to March 1, 1941, 733,000 out of 739,000 contracts were awarded by competitive bidding. Although normally small in dollar value, the contracts awarded by competitive bidding represented 27 percent of all contract dollars. From July through December 1941, the navy awarded contracts valued at $575 million on a competitive bid basis out of total awards of $3,498 million. As late as January 1942, the Army Quartermaster Corps apparently still contemplated extensive use of the traditional system because a representative of that service announced through the press that "it is the Army's intention to continue the use of the competitive bid system so long as we are able to meet our needs by this method." Congress, in June and July 1940, eliminated most of the requirements to use competitive bidding.[37]

Congressman Carl Vinson of Georgia, still the chairman of the House Naval Affairs Committee, sponsored the "Act to Expedite Naval Shipbuilding" (the Vinson act), which became law on June 28, 1940. It provided that if the president deemed it to be in the interest of national defense, the secretary of the navy could negotiate contracts for the acquisition, construction, repair, or alteration of naval vessels or aircraft. The price had to be reasonable and bonds were still required. Although it outlawed the cost-plus-a-percentage-of-cost contract, Congress allowed cost-plus-fixed-fee contracts when necessary; the fixed fee could not exceed 7 percent of the estimated cost.[38]

The act did not stop with negotiation. The secretary of the navy could modify contracts if the nation's defense warranted. The act also allowed the payment of advances up to 30 percent of the contract price to help contractors start production. Once begun, partial or progress payments were authorized to help manufacturers meet their operating costs for projects far beyond the normal range of their working capital. This continued Hamilton's practice of advances that Congress had adopted on August 22, 1911, during the WWI naval buildup. A similar provision for advance payments had been granted the army. This enabled many producers, especially small ones, to accept contracts and finance the conversion to war production. During peacetime, the government had been prohibited from making any payments in advance of procurement deliveries, or equivalent

performance, by the contractor. Private banks had been unwilling to provide sufficient working capital to small companies because their credit was often already greatly extended. Now with advance, partial, and progress payments, the navy could provide working capital and thus multiply the number of firms that could perform its contracts.

Furthermore, Congress granted the authority that Baruch called "the synchronizing force in any defense system." In the act, Congress established the defense contract priorities system by requiring that deliveries of material to the army or navy "shall . . . take priority over all deliveries for private account or for export."[39] The priorities system also required that manufacturers who needed raw materials for war contracts and subcontracts were to obtain those materials ahead of other manufacturers producing civilian goods. The Civil War had taught the generals to keep one eye on the marketplace, but World War I had taught them that they had to control the marketplace. The act also suspended the provisions of the eight-hour law that had hindered the early mobilization effort.

These discretionary powers applied only to the navy, but some provisions of the act governed both army and navy procurement. One such measure was the excess profit limit on all army and navy aircraft contracts. The opposition to the profits limitation of the Vinson-Trammel Act of 1934 had gathered momentum through the years. A subcommittee of the House Naval Affairs Committee had recommended in January 1938 that naval aircraft be exempted from the 10-percent limit because airplanes were more akin to scientific instruments. (Actually, the navy already exempted aircraft instruments from the 10-percent limit on the basis that they were scientific instruments.) In April 1939, Congress raised the navy's limit to 12 percent; simultaneously, for the first time, it limited army contractors to the same level.

In the Vinson act, Congress set the new profit ceiling at 8 percent. If actual cost was less than the contract's estimated costs, the contractor could keep 8.7 percent of this cost as profit. The act also limited subcontractor profits whenever the profit reached $25,000.

Finally, the Vinson act authorized the navy and war secretaries to certify to the Commissioner of Internal Revenue both the need for and cost of any additional facilities that manufacturers needed to fulfill a defense contract. That gave manufactures a decided tax advantage because they could write

off their capital costs by the amount certified rather than the 5 or 10 percent normally allowed under the prevailing peacetime statutes. All in all, the new measure gave the navy, and to a lesser extent the army, broad discretionary powers to hasten defense production.

On July 2, 1940, four days after the Vinson act became law, the army received similar power when Congress passed an "Act to Expedite the Strengthening of the National Defense," introduced by Representative May, chairman of the House Military Affairs Committee. Far more sweeping than the Vinson legislation, the act authorized all defense purchases to be made under the new War Department appropriations "with or without advertising." This eliminated the need to go through the time-consuming (and often inappropriate) formal advertising process, waiting for suitable bids, and awarding a single contract to the lowest responsible bidder. This act mirrored the Vinson act and outlawed cost-plus-a-percentage-of-cost contracts but allowed cost-plus-a-fixed-fee (CPFF) contracts, subject to a maximum fee of 7 percent of estimated cost.[40]

The act also permitted the army to make advance payments up to 30 percent of the contract price. In addition, Representative May's measure granted the broadest powers to the president to "provide for emergencies," exercise wide discretion, and buy "with or without competition." The army wasted no time. On July 2, 1940, the same day the act passed, the army approved the use of CPFF contracts and negotiating without formal advertising wherever this would expedite the defense program.

So, even though some overlapping existed, the secretary of the navy enjoyed some powers not given the secretary of war, and vice versa. For example, the secretary of the navy could seize facilities when necessary, but the secretary of war did not receive comparable authority until ten weeks later. The two services, then, rushed to rearm under numerous statutes that gave them inequitable and unbalanced powers for dealing with the common tasks of mobilization.

That same summer, Congress authorized the Reconstruction Finance Corporation (RFC) to lend money to or buy stock in corporations organized to promote national defense, or to create such corporations. The Defense Plant Corporation set up under this act could loan working capital to manufacturers and finance facility expansions.[41]

During the war, the RFC widely exercised these powers, described as "perhaps the broadest powers ever conferred upon a single government agency."[42] The federal government became an investor, producer, and commercial dealer through numerous RFC subsidiaries: Metals Reserve Company, Defense Plant Corporation, Defense Supplies Corporation, Petroleum Reserves Corporation, Rubber Reserve Company, U.S. Commercial Company, War Emergency Pipelines, Inc., War Insurance Corporation, and others.

On August 28, 1940, a three-man committee under the chairmanship of Donald Nelson began to develop a comprehensive set of contract placement principles. The NDAC adopted this committee's policy statement, "General Principles Governing the Letting of Defense Contracts," on September 6, 1940. It set forth twelve criteria of contract placement[43] (1) speed of delivery, (2) quality of product, (3) price, (4) impact of defense program upon consumers, (5) adequate consideration of labor, (6) geographic dispersion of orders, (7) financial responsibility of suppliers, (8) avoidance of congestion of transportation facilities, (9) adequacy of power facilities, (10) preference to firms experienced under educational orders, (11) moral responsibility of suppliers, and (12) use of negotiated contract whenever necessary to attain the above objectives.

The NDAC briefly elaborated on each of these criteria and closed by emphasizing the importance of conserving the humanitarian gains achieved by legislation such as the Walsh-Healey Act, the Fair Labor Standards Act, the National Labor Relations Act, and others. Although procurement policy remained volatile throughout the rest of the mobilization period, the Office of Production Management made no formal changes in these contract placement principles.

The profit limitations on aircraft still were a hindrance, so the services and the Council of National Defense asked Congress to eliminate them. On September 9, 1940, a little over two months after the Vinson act of June 28 changed the profit limitations and a month after the Battle of Britain began, Congress exempted contracts and subcontracts for military aircraft from the profit limitations of the Vinson-Trammel Act of 1934. The new act also qualified the suspension of the eight-hour act by requiring payment of time-and-a-half for work over eight hours a day.

One week later, Section 9 of the Selective Training and Service Act of 1940 strengthened the laws that gave War and Navy Department contracts precedence over all other orders and contracts. If a contractor refused to manufacture the requested products or materials or to furnish them at the reasonable price determined by the government, the president, through the head of the War or Navy Departments, could seize the plant or plants and manufacture the product or material. The recalcitrant contractor faced felony charges and imprisonment for not more than three years and a fine not exceeding $50,000.

This section was virtually identical to Section 120 of the National Defense Act of 1916. As the Court of Claims colorfully described it. "A manufacturer had no more choice than the man who was accused of cattle theft in the early days of the West, and who by the Committee of Safety was given a choice as to whether he would be hung or shot. While he couldn't muster up any considerable enthusiasm for either method, he was compelled to submit."[44]

In May 1941, Congress gave the Maritime Commission broad authority to negotiate contracts for merchant ships and allowed the Maritime Commission to impose priorities to obtain preference in shipbuilding and supply contracts similar to that held by the army and navy.

Congress continued to blend incentives and mandates to speed mobilization. October 1940 occasioned other far-reaching legislation. On two successive days, Congress enacted the Second Revenue Act and the Assignment of Claims Act.[45] In the Second Revenue Act on October 8, 1940, Congress suspended the profit limit on contracts awarded after December 31, 1939, or uncompleted by October 8 by contractors or subcontractors who were subject to the excess profits tax. This put all industry, civilian or military, on an equal basis. The Revenue Act also continued the tax incentives of the Vinson Act, and authorized rapid, five-year depreciation of new facilities certified as necessary for defense by the secretaries of war and navy. Manufacturers could then expand their productive facilities for defense and, on certification, write off 20 percent of their capital outlay each year as depreciation. This stimulated the expansion of production facilities. By converting high wartime tax rates from a liability into an asset, it permitted a complete charge-off, for tax purposes, of all approved new capital facilities within five years. The act made it decidedly profitable for contractors to convert to war production and eased the sting of high wartime taxes.

The Excess-Profit Tax Act of 1940, part of the Revenue Act, allowed contractors to compute excess profits taxes based on the alternative theories of "average earnings" or "invested capital." The primary goal of the tax statute, however, was to raise revenue from which to finance the war effort, not to control costs and profits.

On October 9, the Assignment of Claims Act helped mobilize bank credit to support war production. By permitting contractors to assign, to banks and other financial institutions, their claims to payment under government contracts, the act provided a high degree of security to lenders. Many of the contractor financial aids developed during World War II rested squarely on the foundation of the Assignment of Claims Act. For many years, the assignment of claims under government contracts had been prohibited.

In his quest for an efficient procurement apparatus, FDR created two agencies in 1941 to coordinate defense production: the Office of Production Management and the Supply Priorities and Allocations Board.

On January 7, 1941, Executive Order No. 8629 established the Office of Production Management (OPM),[46] which assumed many of the duties of the Advisory Commission, including the administration of the priorities system and the placement of mandatory orders. The director general of OPM, William S. Knudsen, was authorized to coordinate the placement of all major defense contracts; to review all War and Navy Departments' proposed contracts for $500,000 or more and other purchases involving "unusual procurement problems" that would have a substantial impact upon the market; and to review the procurement procedures, policies, and specifications of various agencies.

In August 1941, FDR established the Supply Priorities and Allocations Board to act as a policy determination group over the OPM. After that board set the policy, the OPM enforced the priorities system under Section 9 of the Selective Training and Service Act. That same month, the government issued Priorities Regulation No. 1, the "backbone of the priorities system," which detailed how the mandatory preference system would work. The priorities system became "the basis of our entire economy." Government bulletins stressed that Priorities Regulation No. 1 provided for "[c]ompulsory acceptance of defense orders," and that "[a]ll industry must . . . take the war business offered. Every worker and every factory, every bit of material and every machine is now part of the war program. No use of

materials is unimportant and no company has a right to think of its own operations except in connection with the war program. Priorities must be accepted on this basis, and a strict observance, not only of the letter but also the spirit of the priorities system, is a high patriotic duty."[47]

In a May 31, 1941, amendment to the Priorities Statute, Congress granted authority to "allocate" any material to promote the national defense. This allowed the government to determine the relative importance of the alternative uses of scarce materials and to distribute available supplies accordingly.

As of December 1941, the OPM had taken "strong punitive action" to enforce the priority system in only ten instances, but it noted that as the system became better understood, "emphatic action [would] be taken in a greater percentage of cases."[48]

Sometimes mobilizations force governments to do what they should have done all along. Seven years earlier, Harold Ickes could do nothing to prevent discrimination in the hiring at Hoover Dam because the contract gave the government no such power. On June 25, 1941, Franklin Roosevelt issued the first Executive Order 8802, requiring contracting agencies to include in all defense contracts "a provision obligating the contractor not to discriminate against any worker because of race, creed, color, or national origin." The order created a five-member Committee on Fair Employment Practices. Although it contained no specific statutory reference, it apparently was based on the president's mobilization authority under "the Constitution and the statutes and as a prerequisite to the successful conduct of our national defense production effort."[49] Executive Order 8802 was a response to pressure, specifically the threat of a massive march on Washington organized by A. Philip Randolph, president of the Brotherhood of Sleeping Car Porters.

## The Truman Committee

Some members of Congress worried about this rush to fund and grant power, however necessary it might be. Senator Harry Truman fumed that from June 1, 1940, to April 30, 1941, the military awarded $3 billion in contracts to firms whose executives were working in Washington as "dollar-a-year" men. Their companies still paid these men, who were far more influential than lobbyists. The military had maintained relations with many

of these companies during lean peacetime budget years through personal, informal contracts. Not surprisingly, these firms landed numerous contracts. Nine companies with navy contracts in 1941 were awarded fees and possible bonuses in excess of their total corporate net worth in 1939. One such firm's profits increased eight hundredfold.

In the spring of 1941, as the result of a resolution by Senator Truman, Congress established the Committee to Investigate the National Defense Effort and named Truman to chair it. The committee sat until 1948, long enough to be served by three different chairmen. It held 432 hearings at which 1,798 witnesses appeared giving 27,568 pages of testimony (occupying almost six hundred feet of shelf space). Another 300 executive sessions produced 25,000 additional pages of transcript, as it delved into potential inefficiency and abuse.[50]

The committee served two basic purposes: it focused the attention of Congress and the public on abuses and defects in the defense machinery, and it reminded profiteers of the imminent threat of investigation and the spotlight of adverse publicity.

Truman maintained a low profile, avoiding publicity. He did not want to be an obstacle to defense authority as the Wade committee had been in the Civil War.[51] Truman also sought to avoid what he called the "misdirected" efforts of the Nye Committee. Truman wanted the committee to investigate the defense effort and the war program simultaneously so mistakes could be remedied before irretrievable damage occurred. "We were interested in doing a surgeon's job to cure, not in performing an autopsy to find out why the patient died."[52]

He was nevertheless a severe critic. Truman complained that contracts went only to big firms. "It has been the policy of the Army and Navy to let contracts to big contractors and to big business because it is the easy way out."[53] From June 1940 through September 1944, the government let military contracts worth $175 billion. Two-thirds of this amount went to the top 100 corporations. Half of the total amount of military contracts went to the top thirty corporations.

In the summer of 1941, the Truman Committee turned its attention to profits under the shipbuilding program and documented the rumors of profits. The House Naval Affairs Committee, during the last half of 1941, also

investigated war profits on navy contracts and sent a questionnaire to approximately 6,900 contractors having some 16,500 navy contracts. The replies disclosed that although most contractors received only a fair profit, others realized an "unconscionable percentage." According to the committee, "We found that the Navy was extremely liberal with the private shipbuilders."[54] In some cases, "Huge fixed fees were offered by the government in much the same way that Santa Claus passes out gifts at a church Christmas party." Truman indicated, "I have had considerable experience in letting public contracts and I have never yet found a contractor who, if not watched, would not leave the government holding the bag. We are not doing him a favor if we do not watch him."[55] Congress would later correct such problems, but the mobilization demanded its immediate attention.

*Chapter 19*

# World War II Begins

On December 7, 1941, the Japanese bombed Pearl Harbor, shattering and sending to the bottom the armor on the *Arizona* that had caused such a controversy twenty-eight years earlier. Pearl Harbor rendered obsolete many established contracting procedures. All of the government's functions and agencies for purchasing, contract clearance, and contract administration now bubbled with chaotic energy.

Two days later, in a radio address to the nation, FDR thought of soldiers, contractors, and ordinary citizens when he said:

> It is not a sacrifice for any man, old or young, to be in the army or the navy of the United States. Rather is it a privilege. It is not a sacrifice for the industrialist or the wage-earner, the farmer or the shopkeeper, the trainman or the doctor, to pay more taxes, to buy more bonds, to forego extra profits, to work longer or harder at the task for which he is best fitted. Rather is it a privilege. It is not a sacrifice to do without many things to which we are accustomed if the national defense calls for doing without.[1]

On December 18, 1941, Congress enacted the First War Powers Act, which authorized the president to award contracts "without regard to the provisions of law." Roughly translated, in view of the prevailing feeling, that meant: "Win the war—forget about all this legal foolishness."

Executive Order 9001, issued December 27, 1941, soon delegated the powers granted by the First War Powers Act to the war and navy secretaries and the Maritime Commission. Executive Order 9023, dated January 14, 1942, extended this authority to the Treasury and Agriculture Departments, the Panama Canal, the Federal Works Agency, the Government Printing Office, and the National Advisory Committee for Aeronautics. By July 1942, the nation bought virtually all supplies and services under the authority of the act and the executive order.

## Initial Chaos

The peak in contract awards came in the first quarter of 1942, immediately after Pearl Harbor. Only in the case of ships and communications equipment did the awards of any subsequent quarter exceed in dollar value those of the first quarter of 1942.[2]

The government feverishly awarded many contracts without adequately considering price and often used unpriced letters of intent or contracts with maximum prices that would be redetermined downward. The letter of intent, primarily an emergency device, was used throughout the war.[3] During the first four months of 1942, the navy made commitments of $8.4 billion, of which $5.3 billion were in letters of intent and $500 million were in contracts superseding letters. During that same period, the War Department issued instructions to use such informal contract methods more extensively "in the interest of expediting procurement."

Roosevelt had to resolve the conflicts over resources. He realized that total industrial mobilization would require a "czar." The success of mobilization depended on the carefully scheduled, cooperative behavior of thousands of far-flung people, many of whom had never laid eyes on each other. So, on January 16, 1942, in Executive Order 9024, he created the War Production Board (WPB) to direct war procurement and production and named Donald M. Nelson to head it. The board allocated resources and set priorities between and within the military and civilian segments of the economy. The board consisted of the chairman, the secretary of war, the secretary of the navy, the Federal Loan administrator, the director general and associate director general of the Office of Production Management (OPM), the administrator of the Office of Price Administration (OPA), the chairman of the Board of Economic Warfare, and the special assistant to the president supervising defense aid. Nelson could "exercise general direction over the war procurement and production program" and "determine the policies, plans, procedures, and methods" which all federal agencies had to follow, but he had to have the advice and assistance of the other members.[4]

A week later, in Executive Order 9040, FDR consolidated the power of the WPB by eliminating its main rival. He abolished the OPM and transferred its functions to the WPB. The director general of OPM, William Knudsen, continued as a member of the board in his new capacity as lieutenant general in charge of production for the War Department. The Army and Navy

Munitions Board, now clearly a secondary organization, had to report to the president through Nelson.

Nelson soon faced severe criticism as he tried to control the uncontrollable. In what Robert Higgs described as a "procurement free-for-all,"[5] departments and agencies during the first half of 1942 awarded more than $100 billion in contracts, far surpassing the economy's ability to respond. This flood of procurements precipitated the controversy in 1942 between WPB and the services over requirements. The system for assigning priorities broke down completely from "priority inflation"—when officials gave high priority to their pet projects. Chaos resulted. Steel originally intended for the navy went to the merchant marine. The army's aircraft aluminum was commandeered by the navy. The demand for common items like rubber, petroleum, and steel caused ruthless inter-service battles.

Despite a twenty-year effort to avoid competition by dividing procurement responsibility between the army and navy, and between the technical services and bureaus within each department, unruly and harmful competition raged.[6] For instance, even as late as 1944, the navy still bought binoculars and cranes through four different bureaus and bought radio tubes and watches through three bureaus. The Quartermaster, the Army, Air Force, and the Bureau of Supplies and Accounts each bought petroleum products while Army Ordnance and the Chemical Warfare Service bought incendiary bombs.

This competition illustrates that in World War II, as always, the armed forces jealously guarded what Secretary of War Stimson called "the natural and traditional procurement functions of the Army and the Navy"—just as they had done since that first potential encroachment in 1809. Their vast procurement efforts inevitably caused the military authorities to compete with each other and civilian economic interests.[7]

When the WPB could not handle the chaotic rush for contracts, critics blamed Nelson personally and unfavorably compared him with Bernard Baruch. This was unfair. The WPB was created only forty days after Pearl Harbor, at the height of the procurement frenzy, and the apparatus still had many kinks to work out. Expecting him to control this initial shambles would be like parachuting someone into the middle of a stampede and expecting him to stop it. The comparisons with Baruch were off the mark, since Baruch's results were not exactly stellar. Nevertheless, Nelson was no

longer the czar. Roosevelt created the Office of War Mobilization on May 27, 1943, and named James F. Byrnes to run it. Byrnes was the congressman who had castigated Charles Schwab for his activities with the EFC during the First World War. The Office of War Mobilization operated for the rest of the war.[8]

## More Government Powers

The Second War Powers Act, in March 1942, was designed to increasingly "compel the acceptance of Government orders." The act also gave the president virtually unrestrained power over resource allocation: "the President may allocate such material or facilities in such manner, upon such conditions and to such extent as he shall deem necessary or appropriate."[9] This provision allowed the War Production Board to dominate the economy during the last three years of the war.

The greatest example of the government's wartime powers came in February 1942 when it halted new car production. Nearly 250,000 cars had been built before the 9th of February. After that, Detroit made only 139 cars in 1943 and 610 in 1944 from parts on hand. Truck and bus production in 1943 totaled 669,689, and in 1944 the figure was 737,524.[10]

The government had adopted audit powers in the Air Corps Act of 1926 and the Vinson-Trammel Act of 1934, but Congress deemed these audit powers insufficient to handle the onslaught of contracts. Title XIII of the Second War Powers Act applied the audit provision of the Air Corps Act "to the plant, books, and records of any contractor with whom a defense contract has been placed at any time after the declaration of emergency on September 8, 1939, and before the termination of the present war."[11] President Roosevelt's Executive Order 9127, on April 10, 1942, implemented the act and provided for the inspection of plants and the audit of defense contractors' books.

The government also realized that it would have to provide grist for the industrial mill, especially loans to finance the mobilization and expedite war production. To facilitate contract financing, on March 26, 1942, FDR's Executive Order 9112 allowed the War Department, the Navy Department, and the Maritime Commission "to make or to guarantee loans, discounts, and advances" to finance any contract or subcontract deemed necessary, and appointed the Federal Reserve Banks as agents of these departments.

To implement FDR's order, the Federal Reserve Board on April 6, 1942, issued Regulation V to finance essential contracts. Loans were called V-loans but the term referred to Regulation V, following Regulation U, rather than the word "victory." A war contractor who needed financing applied to its bank for a loan, but if the amount exceeded the credit normally available to such a contractor, the bank asked the local Federal Reserve Bank for a guaranteed loan listing the war orders held by the applicant. The Reserve Bank then submitted the application with a preliminary report to that branch of the services with the major interest in the applicant's uncompleted war contracts. If approved, the Federal Reserve Banks would then help finance business enterprises, including small businesses, so they could participate more fully in war production.[12]

## Price Controls

In presenting the industrial mobilization plan to the War Policies Commission in 1931, General MacArthur clearly believed the War Department would set prices for "special supplies," and a civilian control agency would establish prices for "general purchasing." By the Emergency Price Control Act of 1942, Congress agreed and acted to prevent "speculative, unwarranted, and abnormal increases in prices and rents," eliminate and prevent "profiteering, hoarding, manipulation, speculation, and other disruptive practices," and protect "persons with relatively fixed and limited incomes." Finally, and perhaps most importantly, Congress wanted "to assure that defense appropriations are not dissipated by excessive prices."[13]

The act established the Office of Price Administration (OPA) as an independent agency and authorized it to control prices and rents by direct regulation or by licensing dealers. The OPA administrator could contract and make such subsidy payments "as he determines to be necessary to obtain the maximum necessary production." The act prohibited anyone from buying or selling in violation of the administrator's rules "regardless of any contract, agreement, lease, or other obligation heretofore or hereafter entered into." Penalties of one year in prison or a $5,000 fine were provided. OPA concluded that holding contractors liable if ceiling prices were violated would suffice. So OPA exempted the war procurement agencies and their contracting and disbursing officers from the civil and criminal penalties if they bought at higher than ceiling prices.

OPA exempted from price controls many military items, such as aircraft, ammunition, artillery, bombs, projectiles, small arms, ships, boats, torpedoes, fire control equipment, and armed vehicles and their component parts and subassemblies. To facilitate military procurement, OPA also raised prices if anyone holding or proposing to hold a prime contract or subcontract believed that an established maximum price "impedes or threatens to impede production of a commodity which is essential to the war program." After asking OPA to raise the ceiling price, a company could contract with the procurement agencies. If OPA denied the application in whole or in part, however, the contract price was reduced to the maximum price finally established. This procedure aided the services when a low ceiling price might not provide sufficient incentive to a particular producer because of his exceptionally high costs. OPA also exempted emergency purchases, which could sometimes be accomplished only at substantially increased costs, without time to apply for a price adjustment. OPA's price control benefited the war effort and far outweighed the inconveniences and procurement delays it sometimes caused.[14] Navy Secretary Knox urged the Senate Banking and Currency Committee on April 17, 1944, to extend the Price Control Act: "I believe the stabilization program has benefited the navy in three general ways: (1) it has saved billions of dollars on Naval expenditures; (2) it has helped to insure full and uninterrupted production of ships, planes and other navy materiel, and (3) it has helped to sustain the morale of navy officers and men."

### *Labor and Equipment Shortages*

As more and more people entered the armed forces, serious labor shortages and rapid turnover of workers increasingly jeopardized war production, especially in the production centers of the West Coast, the Northeast, and Midwestern areas such as Detroit and Wichita. General Motors alone lost more than 113,000 employees to the armed services, and had to hire and train 750,000 new workers to meet its government contracts. The number of women workers increased from 10 to 30 percent. Early in 1942, in anticipation of such problems, Roosevelt had created the War Manpower Commission, which he later allowed to control the U.S. Employment Service and the Selective Service System. The War Manpower Commission could regulate the hiring and recruitment of workers in critical areas.[15]

Not only personnel were in short supply. Early in the war, the shortage of machine tools threatened to impede the entire production program. The War

Production Board inaugurated a program known as the Critical Tool Service to find idle machine tool capacity and to channel it into factories where it could be used. Begun as an experiment in Pennsylvania, it soon spread to the New England area and finally to the rest of the country. The Industry Cooperation Division worked with the War Production Board to promote this program by finding subcontractors who had idle machine tools.

### *New Methods of Contracting*

Such an unprecedented mobilization required new forms and techniques. The nation swept away all vestiges of competitive bidding. The War Production Board's Directive No. 2 of March 3, 1942, stated that formally advertised bid procedures were not to be used in war contracts. Negotiation was to be used, as it had been in all previous mobilizations. The directive also set three criteria, in order of importance, for contract placement: (1) speed of delivery, (2) conservation of superior facilities for the more difficult items of production; and (3) placing contracts with firms needing the least amount of additional machinery and equipment.[16]

On October 10, 1942, the WPB amended Directive No. 2 to add labor and machinery shortages and small-plant problems to the list, plus "lowest price" as a final criterion. The order of importance of the several factors became: (1) speed of delivery, (2) avoidance of new machinery requirements, (3) avoidance of labor-shortage areas, (4) conservation of special abilities, (5) spreading production among as many firms as possible, and (6) lowest price.

By September 1943, WPB Directive No. 2 elevated price to a more prominent place, not only as a budgetary matter but as an instrument of control.

### *Standard Forms*

Some four hundred different contract forms were used in World War I, and few, if any, had been devised to meet the special situations of modern warfare.[17] As a result, differences and problems abounded. To avoid the contracting debacle of World War I, the assistant secretary of war in 1922 appointed a board to devise war contract forms. The board labored to prepare forms that could speed wartime production, adequately protect both the government and the contractor, facilitate prompt payment, avoid the

disadvantages of the cost-plus contract, and provide a fair settlement if the government terminated the contract.

By the end of 1938, the assistant secretary of war approved four wartime contract forms, which representative industries had reviewed, designed to meet most contractual situations: (1) contract for supplies (fixed-price); (2) contract for construction (fixed-price); (3) evaluated-fee construction contract, with subcontract form; and (4) adjusted-compensation contract. Within these contracts, the army had developed termination clauses, overcome the "proxy-signing" difficulty, and addressed a number of the problems that would be encountered in the administration of price-adjustment clauses.

The War Department planned to use fixed-price contracts as much as possible to force contractors to keep costs down. Nevertheless, the planners knew they would need some kind of cost-reimbursement contract for novel and complex projects or items that could not be fairly priced in advance. So, for those, the government used the "evaluated-fee" contract for construction projects and the "adjusted-compensation" contract for supplies such as planes, tanks, motors, and ammunition. The evaluated-fee contract was similar to the cost-plus-fixed-fee (CPFF) construction contract of World War I, except that the fee varied, depending on the quality of the contractor's performance. NASA would develop this more fully in the 1950s as an award-fee contract. The maximum fee was a percentage of estimated cost almost identical to the scale adopted for World War I, the minimum fee was about 60 percent of the maximum.

The Treasury Procurement Division, not the War Department, controlled contract forms when the emergency began.[18] While the country was in a "limited" emergency and before drifting into full mobilization, no one was granted authority to use the wartime forms. So, the bureaus improvised many emergency forms and the fruits of twenty years' planning appeared to have been largely discarded. Shifting to negotiated contracts complicated the process. Under the competitive bid system the federal agencies used standard form contracts. In negotiating individual contracts, however, a standard form could not be used since the terms differed. These contracts included a great many standard clauses commonly called "boilerplate," but they had to be individually put together. Tailor-made contracts began to replace the standard forms. During World War II, the War Department

approved about twenty-five standard forms for army-wide use, while about sixty more forms were approved for use by particular technical services.

During the pre-war and early war periods, the government used various contractual instruments, such as letters of intent, letter orders, letter contracts, and letter purchase orders, to enable contractors to start work immediately on urgent items, without waiting for a formal contract. Under these flexible arrangements, contractors could get necessary equipment and supplies and start manufacturing before agreeing on specifics such as price, quantities, and detailed specifications. While these were determined as fast as possible, the government guaranteed reimbursement of all costs incurred before the formal contract.

When the mobilization began, many of the army's major, long-term supply contracts contained hastily-drafted escalator clauses. Thus, the Ordnance Department's tank contract with the Chrysler Corporation in August 1940 provided for an increase in the price per tank for each one-cent increase in Chrysler's average hourly wage payments, and for each five-cent increase per one hundred pounds in specified raw material prices. The contract allowed for a decrease in price if the indicated costs went down, and for a revision in the formula if the specifications were changed. This contract remained in effect until January 1945, despite some three hundred supplemental agreements. Only one adjustment, amounting to about $570,000, had been made under the escalator clause by that time.

### *Incentive Contracts*

The navy also developed new forms. The Bureau of Ships changed the cost-plus-fixed-fee (CPFF) contract, so that a portion of the fee was firm and the remainder paid as a bonus for economies.

Later, the navy developed a contract, the fixed-price-incentive contract, providing a real incentive to the contractor to keep costs down; it was used after 1943 on large contracts for ships, air frames, and some ordnance items.[19] The navy had used bonus and incentive arrangements quite often in some of the large ship construction CPFF contracts but had not extensively used the fixed-price-incentive contract. In a typical incentive contract, the navy would estimate the probable cost and fix a base price per item, which would include a reasonable profit. R. H. Connery illustrated that $100,000 per unit plus 6 percent would allow a base price of $106,000 per unit. The

navy guaranteed, however, that it would cover all costs up to a maximum, for instance, of $140,000 per unit. If costs increased, the contractor's profit as well as percentage of profit per unit decreased. Thus, if the cost were $140,000 per unit, the profit might be fixed at $3,000 instead of $6,000. If, on the other hand, the cost were below the base price of $106,000 per unit, it received a percentage of the savings and its profit rose.

Although the War Department had developed a contract similar to this in 1938, it did not adopt this form of contract until late in the war, and by June 30, 1945, only one such contract was in effect.

Navy Under Secretary Forrestal, who later tragically committed suicide after serving as the first secretary of defense, spoke glowingly of the incentive contract. "This kind of contract gives a company a definite incentive to cut its costs. In fact, the heart of the contract is the conviction that American business can perform miracles of low-cost production if it is given a profit incentive for doing so." The incentive contract demanded a contract price based on actual cost experience and very close to the current cost line. Without a firm, close contract price, the incentive contract could be abused, the contractor could achieve a saving by merely tightening an inflated contract price.

In the fall of 1943, the navy tried to convert as many of its CPFF and fixed-price contracts as possible into incentive contracts. Many contractors, however, did not yet have enough production experience to estimate their costs closely and could not negotiate a realistic base price. A few contractors refused to accept an incentive contract because their delivery schedules were often disrupted. In other cases, where the contractors had contracts for different types of products, their accounting systems could not adequately segregate costs. A few were willing to try an incentive contract only when the procurement officers agreed to incorporate a clause exempting their profit from renegotiation.

### *Cost Contracts*

America's war effort could not have succeeded so well without the "cost" contract.[20] World War II demanded brand new equipment and supplies, or required drastic changes to meet modern warfare's requirements. This applied not only to planes, tanks, guns, ammunition, radio, and radar but to rudimentary organizational and personal equipment such as uniforms and

field rations. When the war began, hardly a single item in the government inventory was contemplated in anything like its "final" form at V-J day. In short, the services could not in 1939 specify with any accuracy what their needs would be two years later or even a year later. This lack of sufficient accuracy did not warrant the use of fixed-price contracts. Without cost contracts, the government could not have placed many of its contracts. Estimates of cost-plus-fixed-fee contracts as a portion of the value of all contracts have ranged from about 30 to 45 percent. Army commitments under all types of CPFF contracts for the war exceeded $50 billion and amounted to nearly one third of all army purchases.[21] Cost contracts required rigorous safeguards, however.

Since World War I, the government had issued pamphlets defining "costs," which it had incorporated by reference into its contracts. Under the Vinson-Tramell Act, the secretary of the Treasury prescribed regulations to determine the amount of excess profits. The last set of these regulations in 1940, called Treasury Decision (T.D.) 5000, was in effect for only two months when the act was suspended. Nevertheless, T.D. 5000 was incorporated by reference in army and navy contracts and, in the words of one commentator, "became an unofficial 'bible' on the allowability of costs."[22] The War Department supplemented T.D. 5000 with twenty-four cost interpretations, which it compiled into a War Department Technical Manual to guide contracting officers and auditors.

In April 1942, the War and Navy Departments jointly issued the first set of formal cost principles in government contracting to ensure that contractor extravagances were not being charged to the government. The pamphlet was entitled *Explanations of Principles for Determination of Costs Under Government Contracts*, more commonly known as the "Green Book" because of its cover. T.D. 5000 and the Green Book were superseded by the Armed Services Procurement Regulation, effective March 1, 1949.

### *Reviewing Contractors' Costs*

In early March 1942, the War Production Board, the War and Navy Departments, and the Maritime Commission agreed to establish cost analysis sections to help analyze contractors' costs and profits and to arrange for voluntary refunds of excessive profits. When the war began, however, "the contractors had all the information on their side of the table."[23] To counter this, the navy's practices were the most structured. The navy required

breakdowns of a company's costs and profits, which accelerated the contracting process.

The breakdowns were itemized statements of the contractor's estimated costs on a standard form, first approved in December 1942. Although revised several times, the form adopted in July 1944, entitled "Price Analysis for Navy Contract Negotiation," was used for the rest of the war. A column of figures presented the contractor's estimated costs for Purchased Parts, Direct Prime Material, Direct Productive Labor, Manufacturing Overhead, Engineering Expense, Selling Expense, Administrative Expense, Other Cost Factors, and Contingencies. Since production costs varied with no predictability, contractors often inflated their estimates as much as possible. To prevent this, the navy had contractors list "Other Cost Factors and Contingencies" as distinct items. These items could be easily padded, but the navy demanded an explanation for unusual requests. Next to this column of figures were actual or estimated costs, which were based on a "Previous Contract for Similar Material," if possible.

The navy scrutinized each element of cost and highlighted inaccuracies by comparing past costs and profits of the same company, when possible, or with other companies engaged in similar production. Based on the Total Unit Cost of these factors, the navy estimated the contractor's Profit and then added Federal Manufacturer's or Retail Excise Tax before proposing the Unit Selling Price. For particularly difficult negotiations, price analysts weighed all the factors involved and recommended price goals.

For contracts that allowed price redetermination, the navy devised a similar form. The same cost items (based, however, on accrued costs) used in the original breakdown were submitted for operation up until the time of redetermination. "Estimated Costs" covering the balance of the production under the contract were again submitted to decide the redetermined price.

In June 1943, the navy required contractors to present breakdowns for all contracts over $200,000, except when the purchase resulted from truly competitive bidding; the navy stressed the need for using breakdowns for contracts over $50,000; and the purchasing officer could use the breakdowns on contracts of less than $50,000.

Later, as contracting officers could better anticipate procurement requirements and devote more time to negotiation, they studied price even

more closely, especially prices paid before to the same company, prices paid in similar negotiation to other companies; and any circumstances that affected the price. To facilitate this study, the navy gave negotiators special comprehensive price analyses and price series, which simply grouped all the prices paid for the same or closely similar items, whether to one company or to several companies.

### *Renegotiation*

These cost analysis techniques worked well, but Congress and the public wanted more. In February 1942 the U.S. Supreme Court finally decided *United States v. Bethlehem Steel Corporation*, the case concerning the profits claimed by the corporation under its thirteen World War I contracts. The court upheld the corporation's claim: the government could not vary the terms of a contract freely entered into in accordance with policies fixed by the president under statutory authority. Justice Black noted: "If the Executive is in need of additional laws by which to protect the nation against war profiteering, the Constitution has given to Congress, not to this Court, the power to make them."

Congress decided to enact such a law but recognized that trying to control prices through individual contracts had serious limitations. Many contractors held numerous contracts from War and Navy Department procurement officers who could not possibly know all the contractors' dealings. On March 28, 1942, in a throwback to the 1934 Vinson-Trammel Act, the House of Representatives adopted a bill to limit the profits on war contracts to 6 percent. The War and Navy Departments opposed such uniform flat-percentage-profit legislation because: (1) it placed virtually all contracts on a cost-plus basis; (2) it did not relate the rate of profit to the contractor's performance and contribution to the war effort, (3) it applied unfairly because the same volume of sales in different businesses required entirely different amounts of capital, skill, and work, depending upon the rate of turnover or production, the nature of the article or services, and other factors; (4) contractors using government facilities and funds should receive less than contractors risking their own facilities and capital; and (5) it treated inefficient contractors who operated at high costs more favorably than efficient contractors who operated at low costs.[24]

The Senate defeated the bill, but the House and Senate finally agreed upon the Renegotiation Act of 1942, which the president signed on April 28,

1942. Applicable to all War, Navy, and Treasury Department, Maritime Commission, Defense Plant Corporation, Metals Reserve Company, Defense Supplies Corporation, and Rubber Reserve Company contracts and subcontracts, the act enabled the government to renegotiate the price on any contract that accrued excessive profits. The act applied even if such contracts or subcontracts did not contain a renegotiation or recapture clause, and irrespective of whether they were signed before or after the date of the act, as long as final payment had not been made by April 28, 1942. The act did not apply unless the renegotiable sales of the contractor or subcontractor during any fiscal year exceeded $100,000.

Eleven months later, on March 30, 1943, however, the Truman Committee concluded that to avoid excess profits, the Renegotiation Act needed to be strengthened because higher corporate tax rates encouraged higher costs and discouraged economical production, and no scheme of taxation was flexible enough to provide an incentive for efficient low-cost production. A profit percentage that would fairly reward one war contractor with one type of financial set-up could bankrupt a second contractor with a different financial set-up, and provide inordinately excessive profits for a third contractor with a still different financial set-up.

> War contractors, in most cases, can protect themselves against loss by escalator clauses and other contract provisions for contingencies. The people can obtain protection in many cases only through some procedure such as renegotiation. Experience has shown "cost-plus" contracts to be worse than worthless in the effort to prevent excessive costs. They strongly tend to increase costs instead of the reverse.[25]

The Truman committee was not alone. Business surveys, such as one in the Business Week issue of November 6, 1943, indicated that contractors' profits were unjustifiably high.

On February 25, 1944, Congress amended the Renegotiation Act of 1942. The new Renegotiation Act of 1943 placed renegotiation authority in a new War Contracts Price Adjustment Board instead of the Department secretaries or agency chairmen. This new board could unilaterally determine excessive profits and exemptions. The board delegated its authority to the heads of procurement agencies, who in turn passed on the delegation to the chairmen of their respective Price Adjustment Boards.

The 1943 act also listed factors that the renegotiation officials had to consider in determining excessive profits. Congress sought to treat contractors equally by applying uniform principles to all contracts but recognized that any two contractors were never identical. The factors were (1) the efficiency of the contractor, (2) the reasonableness of its costs and profits, (3) the amount and source of public and private capital employed and new worth, (4) the extent of risk assumed, (5) the nature and extent of its contribution to the war effort, (6) the character of its business, and (7) other factors in the public interest.

After the act was passed, the War and Navy Departments collaborated on ways to recapture high profits on contracts. They first considered the Price Adjustment Boards, which could require future price reductions as part of agreements to recapture excessive profits. Some early renegotiation agreements, in fact, incorporated price reductions on particular items. There were difficulties, however, in combining the recapture of profits with the revision of prices for future delivery. Although renegotiation agreements often contained a clause by which the contractor agreed to periodically review its costs and adjust its prices to eliminate excessive profits, these were ineffectual and derided as "Boy Scout" clauses. Increasingly, the renegotiation boards focused only on recapturing profits. Pricing for future delivery was left to the individual contracting officers.

Boy Scout clauses were used in other forms. Fair and reasonable prices set when a contract started did not always remain so during performance. Mass production reduced costs; consequently, "forward pricing" was introduced. To ensure that the government would benefit from economies in large-scale production, the government required the contractor to promise to reduce his future prices as its cost declined.

### *Enforcement*

The government did not rely exclusively on these Boy Scout clauses. It vigorously enforced its wartime powers through various administrative, civil, and criminal sanctions.

Companies that did not comply with the priorities system could receive administrative "suspension" orders, which prohibited them from making or receiving materials under priority control. Such an order could shut down an entire business if it depended on any commodities subject to priority

regulation. As of October 1944, the War Production Board had issued 635 suspension orders, and had referred about 450 cases to the Department of Justice for civil or criminal action. The board called for "vigorous prosecution" of willful violators. By the end of the war, the board had issued over 900 suspension orders and forced compliance with the priorities system through injunctions in the federal courts.

The most drastic enforcement measures were the seizures of private companies. Pursuant to executive orders issued under the Selective Training and Service Act, the navy seized at least ten industrial facilities during World War II, including shipyards, bearing and cable manufacturers, and explosives makers. Such seizures were specifically based on contractor failures to meet production schedules or the "refusal to deliver items at 'fair and reasonable' prices" set by the secretary of the navy. The navy then operated the plants and eventually returned them to private control and management. Often, just the threat of seizure by the navy was enough to secure cooperation by manufacturers. When a producer of steam turbine castings warned that a price dispute would stop production, the navy responded that it would take over his entire operation. The manufacturer wisely continued production.

Under the act, the secretary of the navy or war could establish reasonable prices by order if they could not be obtained through negotiation. Although the government sent several preliminary notices, it issued only one mandatory pricing order. In one instance, the War and Navy Departments issued a joint order against the Lord Manufacturing Company, a maker of rubber engine and instrument mounts used in aircraft. According to figures released by the services, the company's sales had increased from an average of $238,000 in 1936-1939 to about $29 million in 1943. Profits before taxes reached allegedly about 100 percent in 1942 and about 66 percent in 1943. According to *The New York Times*, September 28, 1944, the services acted only "after attempts to negotiate prices, which have been under way for over a year, proved fruitless. . . . The Lord Company has consistently refused to make any reduction in prices." The company had also refused to voluntarily accept the government's renegotiation proposals covering 1942 profits. The government ordered Lord to reprice all its sales for government end use on both prime contracts and subcontracts. When the company failed to comply with the order, the government issued Executive Order 9493, took over the plant, and operated it for the rest of the war.[26]

Seizure by the government was so common during World War II that contractors included provisions in their subcontracts to govern that possibility. In a November 4, 1941, contract between California Shipbuilding Corp. and Plant Rubber & Asbestos Works, the parties agreed that: "[i]n the event before the completion of this contract the Government shall take over the facilities hereinabove mentioned, this contract shall inure to its benefit and shall be completed in the same manner as if the contract had been made with the Government in the first instance."

### *Guidance*

New forms and procedures forced the services to issue regulations, and the modern sea of paperwork began engulfing the procurement process. On July 1, 1942, the army replaced the Army Regulations and Procurement Circulars with a new series of War Department Procurement Regulations. These regulations jumped from 430 pages in 1943 to nearly one thousand pages in 1944. The navy's regulations on procurement did not change quite so rapidly. Its 1939 procurement regulations were not formally changed for most of the war. Indeed, by 1943, the navy acknowledged that these regulations, acceptable for peacetime, "have given way to wartime procurement procedures." In October 1943, the navy issued a new volume containing all the procurement instructions issued by the navy secretary's office.

To help its contracting personnel, the War Department Purchases Division devised a standard manual of procedures for all procuring offices. The manual covered the entire contracting process, from obtaining proposals, making awards, preparing and distributing contracts, processing contract modifications, supplemental agreements and change orders, and countless other routine but essential activities of contracting officers. Although many of the prescribed procedures were already in effect, the manual's publication simplified and standardized desirable procedures.

The War and Navy Departments proved that joint procurement efforts were possible and often desirable. They convened a joint specifications board, devised uniform clauses for limiting profits, and centralized the procurement of certain products. For instance, the navy procured all fuel products, while the army bought about 85 percent of the navy's nonperishable food as well as all of its own, with navy personnel assisting in the operation. The work of the Army and Navy Electronics Production Agency in 1942–1944 was

another good example of such procurement. There were exceptions, however. The navy had authority to buy all torpedoes, but when the Army Air Corps wanted to buy torpedoes to be dropped from its planes, it simply renamed the device a hydro-bomb and proceeded with the procurement.

To decide the disputes that arose from this mass of hurriedly prepared and often changed contracts, the War Department Board of Contract Appeals, patterned after the World War I boards, was established on August 8, 1942. The navy created a similar board in 1944. The War Department Board of Contract Appeals became the Army Board of Contract Appeals in 1947, then was replaced on May 1, 1949, by the Armed Services Board of Contract Appeals which was created by joint directives of the secretaries of the army, navy, and air force.

## Small Business

Inevitably, manufacturers who converted to war business expanded, while activities not connected with the war effort shrank. The need for speed of manufacture unquestionably tilted the distribution of business toward large companies more than would have been necessary with a more deliberate pace.

The major car makers and their subsidiaries obviously were best equipped to rapidly build planes, tanks, and military vehicles. The fledgling aircraft industry was not yet capable of massive production. Knudsen told Roosevelt: "What I think we should do . . . is to bury the automobile manufacturers under defense orders—three times as much stuff as they can make with their present facilities."[27] Other big firms were not neglected. At the insistence of the military authorities, with whom FDR sided, antitrust prosecutions were shelved for the duration of the war. With more than eighteen thousand prime contractors available, one hundred firms got two-thirds of the war business, just thirty-three got about half, and General Motors alone got 8 percent. The military authorities simply wanted the goods and wanted them fast; price did not matter as much as quality and fast delivery. Big firms had the technical and managerial expertise and the large physical facilities to meet the huge and immediate military demands. Besides, it was easier to deal with a few contractors than with many. If the services of smaller businesses were needed, prime contractors could acquire them by subcontract.

As army and navy orders with the large companies far exceeded the available materials and manpower, industry scrambled for both workers and supplies. The small manufacturer who did not have subcontracts with the big primary firms was shut out. Congress prodded the government to spread contracts to small business, but desperation worked against this.

All the bureaus tended to award contracts to the big firms. The army's Ordnance Corps, for example, fought Truman Committee efforts to have the government buy directly from subcontractors rather than through the "Big Three" auto firms, which would buy spare parts and then sell them to the government. Ordnance argued that the government would duplicate the know-how and administrative network of big corporations in dealing directly with the smaller manufacturers. Counterparts to the "Big Three" auto syndrome existed in other businesses, especially in aviation and shipbuilding. To force the spread of work, the government had to find a company that needed work, determine what type of work it could do, and establish a system under which it could obtain a contract.

The first important development occurred with the creation of the Defense Contract Service in February 1941 under Robert L. Mehornay. Field offices of the new service were established in the main branch offices of the Federal Reserve System. Mehornay believed that the banker in each community could best estimate a community's industrial potential. An industrialist with a technical staff of engineers acquainted with the various industries in the area would direct each branch office. Thus, each office could advise on developing subcontracts and obtaining prime contracts.[28]

In early 1941, Mehornay advised all military and naval bureaus and offices to establish working relations with the Defense Contract Service and the local offices. It did not help.

On July 26, 1941, the Office of Production Management released statistics showing that almost three-fourths of the dollar value of army and navy material contracts had gone to fifty-six companies. Six giant corporations held $3 billion worth—or almost one-third of all contracts. Bethlehem Steel alone held almost one-tenth. The other five great corporations were New York Shipbuilding, General Motors, Curtiss-Wright, Newport News Shipbuilding, and DuPont. This concentration applied only to prime contracts and the data really led to no clear conclusion regarding the extent

of subcontracting. Nevertheless, they did furnish ammunition to Congress, which was urging that the services do more to spread contracts.[29]

In Executive Order 8891, FDR answered the mounting dissatisfaction by abolishing the Defense Contract Service on September 4, 1941, and replacing it with the Division of Contract Distribution in the Office of Production Management under Floyd B. Odlum. The new division was to promote wider distribution of the services' purchases by dividing purchases into small units, promoting conversion of industry, promoting subcontracting, and assisting potential suppliers in various ways. The Navy and War Departments had to assign liason officers to the new division to facilitate its work, but the navy faced problems in spreading contracts around, because it still had some requirements to use competitive bidding.[30] Mr. Forrestal complained to Odlum on September 18, 1941: "For eight months, the Navy, in collaboration with the Defense Contract Service, has been trying to spread work. Limited statutory authority has circumscribed the Navy's complete freedom of action."[31]

The next day, Mr. Forrestal again outlined to Odlum the statutory changes needed by the navy to achieve the objectives of FDR's Executive Order. He felt that negotiated contracts should completely replace the competitive bid system. While the navy could negotiate certain contracts, it could not negotiate for articles classed as "supplies," which the navy purchased in very large quantities and which small manufacturers could most readily produce. Neither did the exemptions cover construction work on naval bases within the continental United States. Forrestal strongly recommended that the navy be permitted, at the discretion of the secretary, to negotiate contracts of all kinds. Without such authority, the navy's success in spreading contracts would be limited.

Less than a month later, on October 7, 1941, FDR authorized the secretary of the navy, without advertising or competitive bidding, to negotiate contracts for acquisition, construction, and repair of naval vessels and aircraft and for machine tools. While prices of items under these contracts had to be fair and reasonable, higher costs because of extensive subcontracting were not necessarily to be considered "unreasonable." Despite this notable advance, "general supply" contracts were not included in the president's order, and in that area, small manufacturers had the greatest chance to become part of the defense program. Within seven months, the competitive bidding system was dropped altogether.

To interest small manufacturers, Odlum sponsored three display trains and several defense clinics throughout the country.[32] Representatives of the army, navy, and Maritime Service showed small manufacturers the articles that were needed for the defense program. Then manufacturers could add their names to bidders' lists. Unfortunately, even when manufacturers saw defense items, they usually did not know whether they could make them. The sole result was that the bidders' lists swelled with thousands of poorly classified "approved bidders."

Odlum also advertised throughout the country that small manufacturers who wanted defense contracts should come to Washington. This was a great mistake. Hundreds of manufacturers responded and military officials in Washington had to spend time interviewing. Most such manufacturers could only operate as subcontractors. The government could do little for these people except to refer them to large prime contractors.

Army and navy contracting offices, however well intentioned, could play only a very small part in aiding small manufacturers. Spreading work could best be done by increased use of subcontracting, but complaints abounded. *Time* magazine complained in its issue of November 17, 1941, that the biggest obstacle to subcontracting was army and navy brass hats. Even the Senate Defense Committee, in its report of that same date, charged that despite instructions of the secretaries of war and navy, procurement officers were not subcontracting because it was easier to do business with the large established firms—which in turn did little subcontracting.

The need to spread war contracts was graphically demonstrated in Florida. In Starke, Florida, the army built Camp Blanding, and the town boomed. Palatka, Florida, on the other hand, received only a small contract for a few packet boats. Wartime regulations on gas rationing and security wiped out the town's tourist and fishing business and so ruined its economy that the local paper joked that the government should build a national cemetery in the town. A similar fate awaited towns across the country, with some fortunate exceptions who had planned adequately. York, Pennsylvania, realized the potential when the build-up started, even before Pearl Harbor. It formed a business committee specifically to plan ways of attracting defense contracts. As a result, the town boomed.[33]

The Senate Committee on Small Business under Chairman James E. Murray investigated contract distribution. Testimony before the committee warned

that small businesses might suffer irreparable injury and be lost to the nation's war effort. The Murray Committee sought a national policy that would check further industrial concentration and foster more contracts for small businesses.

The Murray Committee's bill, the Small Business Act, became law on June 11, 1942. The act authorized the chairman of the WPB "to mobilize aggressively the production capacity of all small business concerns" and determine how they could best augment war production. He could certify that any small concern or group of such concerns could perform specific contracts. Procurement officers had to accept such certification as conclusive and could contract with such concerns without any other proof of capacity and credit. Moreover, since small plants often could not produce as cheaply as larger plants, Congress realized that it might need to pay these small plants a higher unit price than was paid to large concerns. So the act created a Smaller War Plants Corporation, with a capitalization of $150 million, which could contract with any government agency and arrange for the performance of these contracts by subletting. Furthermore, it could lend money, build facilities, buy equipment, or set up such facilities or equipment as needed to provide small plants with production facilities for war or essential civilian purposes.

Small businesses then helped tremendously in the war effort. For example, in the New York area, approximately six hundred small plants became adjuncts to the navy yard in the shipbuilding and ship repair programs. The Charleston, South Carolina Navy Yard, unable to meet the destroyer escort schedule, broke down 90 percent of the hulls erected at the yard into subassemblies, and subcontracted this work to small plants away from the critical labor coastal area. This enabled the navy yard to meet schedules.[34]

Though firms such as General Motors, Ford, Bethlehem, Chrysler, DuPont, and General Electric received the lion's share of the contracts, the portion reaching smaller companies—especially aircraft producers—was far greater than they had ever anticipated.

*Chapter 20*

# Industry Responds

Despite almost constant sniping from both sides over costs, profits, and the use of small businesses, industry's wartime performance, with rare exception, was mind-boggling in terms of the quantity and quality of defense products. The effusive praise of the U.S. war industry by von Hindenburg after World War I had been justified. Goodyear's president, Edwin J. Thomas, exemplified the prevailing sentiment of American industry: "Our attitude was, 'Tell us, Government, what you need most to win the war, and that's what we will do.' "

In a remarkably short time, the United States equipped her forces and her allies with an overwhelming supply of the most complicated weapons and other, innumerable items needed in war. America smothered the enemy in an avalanche of production. Within three years, America was producing more war materiel than all the other combatants combined.

## The Automobile Industry

The automobile industry, in particular, rose to the challenge.[1] The building of the B-24 Liberator bomber by the Ford Motor Company best illustrates that effort. In November 1940, Knudsen went to Detroit to talk to automobile executives about cooperation with West Coast aircraft firms.[2] The next month, Dr. George Mead, Knudsen's aviation assistant on the NDAC, visited Dearborn twice to discuss the possibility of the Ford Motor Company's producing heavy bombers, particularly the Flying Fortress. On the first visit he was accompanied by Major Jimmy Doolittle who, less than seventeen months later, led his raiders from the *Hornet* to bomb Tokyo. Before Mead left, the talk switched to the B-24 Liberator bomber, used later to raid the Ploesti oil fields in Romania. The military liked the bomber developed by Reuben Fleet's Consolidated Aircraft in San Diego, but Consolidated could build only one plane per day, about 350 per year. At that rate, it would take three years to build a thousand bombers, and the army wanted several thousand as soon as possible. The Ford officials agreed to visit the B-24 factory in San Diego on January 8.

The day after visiting the plane factory, Ford Motor Company employees sketched a bomber plant that would produce a B-24 bomber every hour. The building would be a quarter-of-a-mile wide and would include a mile-long moving assembly line, the largest factory of its kind in the world. Henry Ford approved the idea and agreed that the Ford soybean farm on Willow Run Creek west of Dearborn, would be a good site for the bomber factory. The government approved the Willow Run project on February 25, 1941. Builders broke ground on April 18, emplaced the first structural steel May 3, installed the first machine tools August 12, and began production work on subassemblies November 15. By July 1942, plane components, such as the giant wings, were being trucked to Consolidated Aircraft's new plant in Fort Worth. In September, the plant produced its first complete bomber, only nineteen months after the award of the Willow Run contract.

On September 18, 1942, President and Mrs. Roosevelt toured the only place in the world where a bomber was being built in an hour.[3] In a Lincoln parade car (Henry Leland's invention), slowly moving down the mile-long assembly line, Henry Ford sat between the president and Mrs. Roosevelt in the back seat. Donald Nelson of the WPB sat in the front seat. They witnessed the beginning of an amazing achievement. Before the Willow Run plant closed on June 23, 1945, it had produced 8,685 Liberators.

General Motors was America's largest defense contractor in World War II; Curtiss-Wright (the Wright brothers' Ohio plane-making company) was second, Ford Motor Company was third; and Chrysler (the third automotive giant) ranked eighth. By July 1942, the entire automobile industry had accepted contracts equal to its annual peacetime production. Less than a year later, its output had doubled its prewar capacity. By September 1945, the car factories accounted for approximately 20 percent of the total amount of weapons and war materiel produced in the United States: 5,947,000 guns, 600,000 trucks, 50,000 tanks, and 4,131,000 engines. The industry produced 27,000 complete military aircraft, more than 5 million bombs, nearly 3 million rockets, 2.5 million torpedoes, and 12.5 billion rounds of ammunition. All of this represented 100 percent of the military trucks, 100 percent of the armored cars, 92 percent of the scout cars and carriers, 87 percent of the aircraft bombs, 85 percent of the army helmets, 57 percent of the tanks, 56 percent of the carbines, and 47 percent of the machine guns.

Between the wars, General Motors had maintained contact with the War and Navy Departments, revising estimates of General Motors' allotment in case

of war and the kinds of contracts on which it would bid. Its first military order, for 75-mm high explosive shells, went to Chevrolet in April 1940. By the end of 1940, General Motors had undertaken $410 million in defense work for the United States, Great Britain, and Canada. Eight months later, it reached $1.2 billion.

After the last civilian passenger car rolled off the assembly line in February 1942, the GM work force removed the $7 million stamping dies and engine molds for each of the car lines and placed them in storage.[4] Once motorcar production ceased, the research and engineering staffs of the carmakers shifted to designing new weapons. General Motors became the nation's largest single producer of weapons and war materiel. Its engineers designed all or part of 72 percent of the items produced under its wartime contracts, including peacetime products, such as trucks and diesel engines modified for military use, and items made in peacetime that did not require adaptation for war use (spark plugs, for example). Other work was produced from plans other than those of General Motors, such as the Pratt & Whitney plan for airplane engine, as well as the Wildcat Fighter plane, Avenger Torpedo-bomber, and the 20- and 50-caliber Browning machine guns.[5]

Unlike Durant's recalcitrance at the start of World War I, which cost him the Lelands, GM division managers could now bid on any war contract they wished. Saginaw Steering and Frigidaire made machine guns; Olds, artillery shells; Delco, fuses, and Pontiac, anti-aircraft guns. Cadillac's general manager, Nicholas Dreystalt, accepted a contract to produce delicate aircraft gyroscopes. To alleviate the manpower shortage, he hired two thousand older prostitutes. He hired their madames too, because "they know how to manage the women."[6] Within weeks, the women were exceeding quotas.

Only DuPont surpassed General Motors in expansion for the war effort, spending $991 million for new factories and tools. General Motors' total sales of 1942 to 1945 topped $13.4 billion, more than 90 percent in war materiel. GM received one-twelfth of all the contracted funds of the War Production Board and became the country's largest single producer of weapons. This is remarkable, because two-thirds of the war items produced by GM and the other carmakers were entirely new to them.

## The Airline Industry

The airlines' involvement started before Pearl Harbor.[7] When President Roosevelt traded fifty old destroyers to the British for West Indian bases, he asked Pan Am, America's only airline then operating overseas, to build airfields on those islands. Because the United States was not yet at war, the government needed just such a private company as an unofficial go-between to build the fields on foreign soil. Pan Am created a subsidiary, the Pan American Airport Corporation, to do the work. Assistant Secretary of War for Air Robert Lovett complained that the contract was too good a deal for Pan Am. Secretary of War Stimson agreed, but said it was the best he could do because America was not yet in the war.

Despite such grumblings, Pan Am performed so well that FDR asked the company to create a string of airfields across Africa. With these new airfields, planes could fly from Britain to supply the forces in Egypt with goods that would otherwise have to be brought by ship around the Cape of Good Hope. After Pan Am's engineers built eight airports in just sixty-one days, Washington contracted with Pan Am to fly lend-lease bombers from America across Africa to Khartoum. This required a row of airfields that would connect the United States with Natal, in northeast Brazil. Because a South Atlantic crossing was vital, Roosevelt turned to Pan Am, which operated mainly in Latin America.

On November 2, 1940, Pan Am signed a $12-million contract to build airports and seaplane bases, under cover for the War Department, in fourteen Latin American countries. Eventually, Pan Am built forty airfields and bases in twenty Latin American republics for $90 million. These bases helped supply allied forces throughout the war. These same bases also provided the airfields along Pan Am's South American and Caribbean routes: because they lacked these airfields previously, the airline had developed its trademark flying boats. By the time the program was completed in 1943, Pan Am could shift from its flying boats and fly land-based airplanes like any other American airline. The way the original contracts were written, Pan Am or its local subsidiaries held title to these new airports.

Pan Am was not alone. On December 24, 1941, TWA signed a contract that directed it "to hire and train all personnel, procure necessary facilities, materials and supplies, and to secure necessary certificates of convenience and necessity, licenses and permits essential to providing air service on a

world-wide basis to the United States Army." The contract resulted from meetings TWA president Jack Frye had as early as December 1940 with Hap Arnold and Assistant Secretary of War Lovett.[8]

Shortly after Pearl Harbor, FDR issued an executive order nationalizing the entire airline industry for the duration, and Trippe, Pan Am's president, was offered the rank of general, but he declined. The airlines proved indispensable in ferrying personnel and equipment around the globe.

## The Aircraft Industry

The airlines and the military depended on the aircraft industry, which surpassed expectations.

Considered at first to be unrealistic, Roosevelt's goal of 50,000 planes a year was exceeded.[9] The country produced 300,000 war planes in less than five years. Aircraft manufacturing, which only recently had become a cottage industry in America, rushed overnight into mass production and by 1944 was the largest industry in the country. Suddenly, Boeing became the biggest employer in Washington and Kansas. Douglas, Lockheed, North American, and Consolidated spread over southern California, and thousands of subcontractors made innumerable components.

After Roosevelt's call to arms, the aircraft industry faced its biggest challenge. To reach FDR's goals, the industry had to convert to the assembly line from the only manufacturing system it had known, the job shop. This demanded greater standardization of parts and processes which was much more difficult than in the automobile industry because the items were so much more complex. During the war, an airplane's relatively simple wires, pipes, lines, cables, and gunmounts multiplied and became electrical, fuel, hydraulic, heating, and weapons systems. Like virtually every instrument of war, the airplane bounded into a new age with directional systems, navigational aids, electronic gear, and radio-telephone equipment. As Gene Simonson points out in his classic study of the aircraft industry, the 18-foot nose of the B-29 alone had over 50,000 rivets and 8,000 kinds of parts, all supplied from over 1,500 subcontractors.[10] Before Ford produced the Consolidated B-24, it had to break down the assembly process into approximately 20,000 drawings before an assembly line could be set up at Willow Run. "You cannot expect blacksmiths," sneered J. H. Kindelberger, president of North American Aviation and a consistent critic of the

government decision to give plane contracts to the car companies, "to learn how to make watches overnight."[11]

But processes like this were needed to permit sufficient specialization so that aircraft could be made by the less skilled personnel on whom the industry had to rely for rapid expansion. By the summer of 1944, fifteen airframe builders were building twenty-three types of combat aircraft, including light, medium, and heavy bombers, fighters, and transports.[12]

In April 1942, the West Coast manufacturers—Boeing, Consolidated-Vultee, Douglas, Lockheed, Northrop, North American, and Ryan—formed the Aircraft War Production Council to discuss mutual problems and share knowledge. This coordinating group worked so well that the East Coast manufacturers formed a similar group a few months later, and in April 1943, the two groups merged into the National Aircraft War Production Council. The smooth teamwork of these councils, composed of the manufacturers themselves, prevented crippling production delays.[13]

## The Aluminum Industry

Aluminum was in such short supply in 1940 that it threatened to halt the services' aircraft production.[14] To drive the dire situation home, Hap Arnold, the chief of the Army Air Corps, took Army Chief of Staff George Marshall goose hunting in Maryland.[15] While there, he took Marshall to Glenn Martin's aircraft factory, which was only partially in operation. Martin explained that he could not get enough aluminum to start full production. Marshall immediately brought the full pressure of his office to the problem.

Aluminum production, vital for airplanes, tripled by 1944. By 1942, Alcoa developed four new alloys to make planes stronger. Combining aluminum with such metals as beryllium, magnesium, copper and zinc, and with silicon, the company largely overcame metal fatigue and deterioration from high temperatures. (The alloys could withstand temperatures up to 600 degrees Fahrenheit.) Alcoa also came up with an aluminum mat for building advance airfields. The mat was composed of many sections that fit together with a slide lock. Weighing half as much as a steel mat, it could be carried airborne or by small cargo vessels.

## The Rubber Industry

No substance contributed more to winning World War II than rubber. A typical B-17 Flying Fortress used one thousand pounds, a tank two thousand pounds, and a battleship seventy-five tons. Although each World War I soldier used an average of thirty-two pounds of rubber, his World War II counterpart used an average of six times that amount. In 1941, however, the Japanese controlled the areas in Southeast Asia that produced 90 percent of Americas supply.[16]

Fortunately, in 1940, B. F. Goodrich had developed and marketed the first synthetic tires. When war began, the government raced to fund synthetic rubber plants that were leased to private rubber, chemical, and petroleum companies on a cost-plus-fixed-fee basis. Some fifty-one plants were built between 1942 and 1944. One at Institute, West Virginia, run by the United States Rubber Company, could produce 90,000 tons of synthetic rubber annually. By 1944, 800,000 tons produced from all plants could sustain war and critical domestic needs.

The Goodyear Tire and Rubber Company built blimps that patrolled along the coasts. Over 130 navy blimps were used as escorts for convoys to reduce the likelihood of submarine attack.

Goodyear, along with other companies, also supplied the phantom fleet that kept the Nazis confused before the D-Day invasion of France in June 1944. One of the main builders of rubber-balloon figures for New York's annual Thanksgiving Day parade, Goodyear built inflatable copies of American planes, tanks, and boats that were sent to England and positioned at various places at different times in the weeks before the Normandy invasion. They were usually deflated at night, rushed to new coastal locations by dawn, and then inflated again so that German reconnaissance planes could see them.

## DuPont

DuPont, which had supplied gunpowder since the seizure of American vessels by the Barbary Pirates, now produced an array of items totally unrelated to gunpowder.[17] The government used DuPont paints, dyes, antifreeze, and the invaluable cellophane. DuPont produced whole new series of products: insecticides; food preservatives; fire extinguishing fluids; transparent plastic hoses for aircraft, camouflage paints that could not be

detected by infrared photography, explosive rivets for aircraft to speed production, smoke screens, adhesives to replace rubber cement; preservatives for wood, textiles, and metal; and even cold- and heat-resistant clothing that would keep a heavy man afloat. One DuPont factory turned out eighty-six products that went into the Superfortress bomber alone.

None was more important than nylon.[18] DuPont had invented the material after thirteen years of research and $27 million, and introduced it in October 1939 in Washington when four thousand pairs of nylon stockings went on sale. After Pearl Harbor, DuPont nylon replaced Japanese silk in parachutes, was substituted for Chinese pig bristles in paintbrushes, and came in everything from glider tow ropes to tropical mosquito screens to "flak vests." Heavy bombers with nylon-reinforced tires could land on unpaved airstrips, and the product even replaced silk in paper money to make dollar bills last longer.

The war economy consumed 50,929 miles of DuPont 35mm film, 38 million miles of nylon parachute yarn, 92.9 million pounds of cellophane, and 11 million pounds of DDT. But one statistic says it all: at the height of the war, DuPont's daily production of explosives was more than it made for the Union throughout the four years of the Civil War.[19]

## The Shipbuilding Industry

The Six Companies partnership that had built Hoover Dam was also busy. In 1939, the partners joined with Todd Shipyards of New York to form the Seattle-Tacoma Shipbuilding Corporation and won a contract to build cargo ships. Henry J. Kaiser soon took over the Todd-California operation, which became the first yard of his highly productive World War II shipbuilding empire. His production of the Liberty transport ship rivaled the building of the Liberty airplane engine of the First World War. Ten months after Pearl Harbor, he produced a Liberty ship within twenty-four days. In 1944, he was launching a new escort carrier each week. During the first 212 days of 1945, he and his fellow shipbuilders produced 247 Liberty ships—better than one a day. James MacGregor Burns recounts the popular wartime story of the lady who had been invited to christen a new ship. When she arrived, she was taken to an empty launching way and handed a bottle of champagne. "But where is the ship?" she asked in bewilderment. A workman replied, "You just start swinging the bottle lady, we'll have the ship there."[20]

From Pearl Harbor to the war's end, the Bath Iron Works, for example, delivered eighty-two destroyers—about a quarter of all the destroyers built for the navy. Japan in that period built sixty-three. The cost of these Bath destroyers averaged roughly $5 million each. The total production at Bath for the war years came to nearly $0.5 billion.[21]

The socioeconomic programs from the 1930s aided in the war effort. Electricity from Bonneville helped power the shipyards at Portland, Oregon, and Vancouver, Washington. The yards at Portland turned out one Liberty ship each day. The shipyards in Portland employed approximately one thousand ship carpenters, who had been trained at Bonneville, to build the forms for the hull-shaped draft tubes. Power from Bonneville Dam also enabled the Hanford Engineering Works to produce plutonium for atomic bombs.

Historian Allan Nevins, one of the biographers of Eli Whitney, observed. "If we had not developed the mass production techniques and the moving assembly line in our motorcar factories, how would we Americans have defended ourselves in the Second World War?"[22] The usually stoic Joseph Stalin provided even greater praise. At the Teheran meeting late in 1943, he proposed a toast: "To American production, without which this war would have been lost."[23]

## The Atomic Bomb

Although the Manhattan Project has not been thought of as a contract, it did have a great deal of contract support. The complete story of the web of contracts connected with the Manhattan Project is beyond the scope of this book; those interested should consult Vincent Jones' *Manhattan: The Army and the Bomb.*

The army had considered DuPont, Standard Oil Development Company, or Union Carbide and Carbon Corporation as possible candidates for work on the Manhattan Project in the fall of 1942.[24] For security reasons, General Marshall wanted to hold to a minimum the number of firms that would build and operate project facilities. General Leslie Groves, newly appointed as the Manhattan commander, decided on September 26 to contact DuPont. Two weeks later, DuPont agreed to design and procure not only the chemical separation equipment but also part of the pile equipment for the plutonium pilot plant. DuPont had initially resisted taking on any responsibility for the

piles, pleading lack of experience and strain on its facilities because of its other government projects. But Groves finally convinced the company to participate and awarded a letter contract on October 3.

Soon Groves decided to have DuPont build the entire plutonium production plant, and took immediate steps to negotiate the contract. On October 30, he discussed the idea with DuPont officials, who did not relish the idea that their company should assume major responsibility for this phase of the atomic bomb program. DuPont simply had no special experience and competence in this field, in which the technical requirements were formidable and the operating conditions unorthodox. When Groves insisted that only DuPont could build the plutonium plant, DuPont reluctantly agreed to consider the job. DuPont President Walter S. Carpenter, Jr., and other members of the firm's executive committee could only decide after company chemists and engineers had investigated. So, a day or two later, Groves allowed the company to send a team of experts to the Metallurgical Laboratory to see the work.

On November 10, General Groves went to Wilmington, Delaware, to plead further for DuPont's help. Groves emphasized to Carpenter that the project was vitally important to the war effort, adding that President Roosevelt, Secretary of War Stimson, and General Marshall also shared this opinion. Furthermore, he emphasized that Hitler might soon be producing enough fissionable materials to make atomic weapons. The only known defense against such weapons was "fear of their counter-employment." If the United States could develop such weapons before the enemy, it could materially shorten the war and potentially save tens of thousands of American casualties.

After conferring with Carpenter, Groves met the DuPont executive committee and repeated his arguments. Carpenter told General Groves on November 12 that DuPont would take the job, and the Manhattan commander's staff immediately started to draft a contract.

Quickly during the next few weeks, Groves and the Manhattan staff oversaw negotiation of construction and operation contracts. The first of these was a letter contract for DuPont on December 21 (effective December 1, 1942), pending completion of a formal contract. It required DuPont to secure designs, procure equipment, and erect facilities for a large-scale plutonium production plant, which it would also operate. Although the agreement of

December 1 superseded the letter contract of October 3, which had provided that DuPont design and procure equipment for plutonium pilot installations, it did not specify that the firm would build a pilot plant. New location problems had forced the temporary postponement of that aspect.

DuPont did not want to manufacture plutonium after the war and emphasized it would do so now only because of persistent and high-level requests. In the cost-plus-fixed-fee contract, DuPont waived all profits and accepted the assignment on the basis of reimbursement for the company's expenses on the project, plus a fixed fee of $1.00. The government specified that it would hold all patent rights. However, arrangements were made to protect the firm from financial risks that might arise because no one knew the hazards involved with the new process, but everyone realized it could mean catastrophic losses for the company. DuPont asked that the Comptroller General approve the contract, particularly the sections covering reimbursement and indemnification, which the company feared might otherwise be upset by a future ruling. General Groves agreed, and the War Department even sent a letter to President Roosevelt explaining why the government was assuming responsibility for the unique hazards involved in the project.

After the contract was signed, DuPont built all facilities for the bomb's production, which included designing and constructing a small-scale plant at Oak Ridge, Tennessee, and a big plutonium plant at Hanford, Washington, which it also operated. DuPont scientists and engineers became members of the project's research and engineering staffs. Key DuPont men "on loan" staffed the Metallurgical Lab in Chicago.

After the war, Groves failed to persuade DuPont to continue at the Hanford Engineer Works. Groves then negotiated a contract with the General Electric Company, similar in most respects to DuPont's. General Electric insisted, however, that the contract permit the company to be relieved of its obligation if the atomic energy legislation imposed unacceptable conditions. The new contract provided for the operation of Hanford, construction of certain new facilities there, and construction and operation of a government-owned laboratory at the Knolls, some five miles away from the company's home plant at Schenectady, New York. This laboratory, which was separate from the new Brookhaven National Laboratory, would enable the company to pursue its interest in the development of atomic power.

## Terminations

In World War I, the government had not prepared for demobilization. Its abrupt termination of contracts caused chaos and bankruptcies. This time, as early as November 1943, procurement agencies wisely began to prepare for the eventual reductions. They recommended procedures that Congress embodied in the Contract Settlement Act in July 1944. Congress specified that the departments provide termination financing "to assure prime and subcontractors speedy and equitable final settlement of claims under terminated war contracts, and adequate interim financing until final settlement."[25]

Terminations were to be negotiated as orderly and as rapidly as possible. They would be final except for those involving fraud, so contractors could reconvert quickly to civilian enterprises and not have to reserve their capital against unexpected or capricious governmental contract review. Audits were to be kept to a minimum. As Bernard Baruch remarked: "We don't want to audit ourselves into another depression."

To explain the rules on termination and interim financing, on November 1, 1944, the army and the navy issued the Joint Termination Regulations as a handbook for administration of the Contract Settlement Act. The regulations' effectiveness was proven on V-J Day when, within five minutes of the announcement of Japan's surrender, previously prepared telegrams were dispatched directing the procurement districts to terminate war contracts. Within two days, 60,000 contracts, totaling $7.3 billion, had been canceled. Similar actions, although not as large, had occurred three months earlier on V-E Day. In all, the government terminated $20 billion in contracts and minimized litigation. The orderly termination process helped avoid a general post-war depression.

## Aftermath

During World War II, developing new weapons and products and improving older ones became a major element in American defense strategy.[26] The government created a National Defense Research Committee, later expanded into an Office of Scientific Research and Development, to mobilize scientists and engineers in universities and private industry. It contracted for research and development efforts with Bell Telephone Laboratories, RCA, General Motors, and thousands of other corporations. The products that

resulted—the proximity fuze, microwave radar, electronic warfare, and the atomic bomb, to name a few—convinced military leaders that substantial investment in military research and development should not end with the war. Such research, coupled with the ability to mass produce the fruits of that effort, had become crucial to maintaining military strength.

Wartime military programs also created new high-technology industries. The $2 billion investment in radar boosted the electronics industry. The computer industry arose from code breaking and the construction of the atomic bomb. The infant airline industry emerged as an experienced, worldwide business.[27]

Army Chief of Staff Eisenhower said to other army leaders in 1946:

> The lessons of the last war are clear. The military effort required for victory threw upon the Army an unprecedented range of responsibilities, many of which were effectively discharged only through the invaluable assistance supplied by our cumulative resources in the natural and social sciences and the talents and experience furnished by management and labor. The armed forces could not have won the war alone. Scientists and business men contributed techniques and weapons which enabled us to outwit and overwhelm the enemy. Their understanding of the Army's needs made possible the highest degree of cooperation. This pattern of integration must be translated into a peacetime counterpart which will not merely familiarize the Army with the progress made in science and industry, but draw into our planning for national security all the civilian resources which can contribute to the defense of the country.[28]

Fourteen years later, as he left the presidency, Eisenhower warned that his hopes for the "military-industrial" complex had succeeded too well.

Not only had the government shifted its attitude toward business; business had also shifted its attitude toward the government. Many business executives had served as government administrators ("dollar-a-year" men) during the war. They had come to accept, even expect, a degree of government intervention and control which they had deeply resented before the war.[29]

Finally, the Procurement Policy Board of the War Production Board pointed the government toward the next great improvement in procurement. It formed a committee on post-war procurement policy, which recommended that new procurement legislation be enacted as wartime legislation expired.

Its recommendations, designed to improve the procurement process, sowed the seeds for the Armed Services Procurement Act of 1947.

The elation over the news of the Japanese surrender was soon followed by the hard realization that with it would come the mass cancellation of military contracts and a drastic curtailment of operations. Lockheed management, for example, ordered a five-day shutdown for its employees to celebrate the victory, while key officers analyzed the effect on the company and charted a new course for the post-war world.[30]

*Chapter 21*

# Contracting in an Era of New Technology, Paperwork, Litigation

Since World War II, America has ended its traditional feast-to-famine routine of demobilization. Its role as a dominant power has forced it to maintain the large standing army which the Founding Fathers rejected. The nation has developed weapons of such lethality that self-extinction looms as an ominous possibility. The complexity of these weapons, coupled with inflation, has produced contract prices so enormous as to be incomprehensible to the average citizen.

Not surprisingly, considering the amount of money involved, scandals have abounded. Most of these scandals have been recounted in books, serialized in newspapers, and memorialized in congressional hearings. Duplicating such extensive coverage here would require an encyclopedia. More important, such scandals are nothing new.

Nor is it new that Congress has mired itself in the contracting process. The instructions are no more rigid now than in the Civil War, but the level of minutiae has increased, especially in the cascade of reporting requirements. Rather than discussing scandals or congressional oversight, this chapter focuses on those evolutionary changes that have profoundly affected the contracting process but have gone unnoticed by the public.

In the post-World War II era, contractors found their own niche in the marketplace and were content to specialize, regardless of the nature of their arrangement with the federal government. If they were prime contractors, they continued to fill their niche but surrounded themselves with a web of subcontractors or partners. They were also perfectly happy to perform as subcontractors themselves. Specialization became an economic imperative because what the government buys has become increasingly complex. Modern fighters, ships, weapons, and omnipresent computers would have been considered science fiction by the infantry slogging ashore at Omaha Beach.

Yet, more and more, *what* the government buys—computers, Aegis cruisers, or B-2 bombers—is not as important as *how* it buys them. Such items, sophisticated and complicated as they may be, are merely the objects upon which the system operates with relatively little distinction. The contracting process itself has become the issue. What has changed is the quantity of paperwork that now pervades the process, and the dominance of litigation. A system that began with no written guidance now finds itself bound in paper from end to end. Consequently, as symbols of modern contracting, I would not choose a procurement item such as a computer or a sophisticated machine of war. Nor would I choose a $400 hammer or a $7,000 coffee pot. These are merely the latest in a long history of embarrassments. Instead, I would choose the sea of statutes, regulations, and paperwork inundating the process, providing flotation for an infinite number of lawsuits relied upon as life preservers.

## The Post-War Period

By December 1945, demobilization had started and most companies had returned to their former enterprises. The government sold to industry most of the plants and equipment used in the mobilization. By 1946, 250 of the nation's largest firms had bought 70.1 percent of these plants. Just as happened after the Civil War, when Meigs sold surplus material at bargain prices, companies could buy this equipment on very favorable terms.

The excess equipment did not help the aircraft industry, whose profits in World War II had come from long production runs. Because these runs stopped after the war, the aircraft industry declined until, at the end of 1947, it ranked forty-fourth among American industries. Production ended in all but sixteen of the sixty-six airframe plants operating in January 1944. Engine plants still in operation dropped from twenty-three to five, propeller plants from six to one, and glider plants from fourteen to one. The Lockheed modification center in Dallas remained operational but employed only 235.[1] The Air Corps' interest in jets sparked hope for the industry and the commercial airlines, now primed to expand to serve a nation more accustomed to air travel.[2]

After confronting German jet fighters and bombers in battle, the army started developing eight jet fighters and seven jet bombers even before the war ended. It awarded letter contracts for the F-80 (Lockheed), the F-84 (Republic), and the F-86 (North American).[3] The jet technology easily

crossed over to civilian airline applications. The newly-created U.S. Air Force still lacked an arsenal system, so it continued to rely on industry and universities for research. Nevertheless, the aircraft companies needed production orders to remain profitable.

After the war, Congress created the Department of Defense and subsumed within it the Departments of the Army, Navy, and Air Force. This change should have brought about a much more uniform procurement system, but merely passing a law did not accomplish it. The "natural jealousies" of the services remained and even intensified.

Congress passed five important contracting statutes between 1948 and 1950 that continued the wartime powers. The Selective Service Act of 1948 empowered the president, through the head of any government agency, to issue a mandatory order to any manufacturer or producer for supplies or services necessary for defense. The mere existence of this power was more important than its use, since manufacturers knew that it could be invoked if they were recalcitrant. The enactment of such sweeping powers after a war clearly signaled that, while production orders might not be forthcoming, Congress recognized the need not to repeat the lethargy of the 1920s and early 1930s. The Renegotiation Act of 1948 reactivated the wartime devise of renegotiation to prevent excessive profits and required a renegotiation clause in certain contracts. Not as broad as the wartime negotiation system, it covered only army, navy, and air force contracts. The Defense Production Act of 1950 enhanced the ability of the government to set priorities and use other extraordinary powers.

Meanwhile, in 1947, Congress had begun the modernization of the contracting process. The Armed Services Procurement Act (ASPA) of 1947 standardized purchasing methods for all three services and facilitated cross- and single-service procurement among the military departments. It built on the experience of World War II, and aimed to prevent the kind of mobilization fiascoes Ripley's obstinacy had caused at the start of the Civil War. Later, the Federal Property and Administrative Services Act of 1949 engrafted the same principles onto the civilian agencies. With the enactment of ASPA, and based on the experience of the wartime joint regulations, the services issued a new joint regulation, the Armed Services Procurement Regulation (ASPR). This document, through its many changes, became the official bible for defense contracting and the unofficial bible for all government contracting for the next thirty years.

In early 1948, the services created the Armed Services Procurement Regulation Ad Hoc Committee of the Munitions Board to develop the regulation in accordance with the new law. The committee, composed of two representatives from each service, met weekly and proceeded methodically. It decided the general scope of the new regulation and divided it into subcomponents. Subcommittees, composed of representatives from each service, drafted the initial sections under the general supervision of the committee, which resolved any differences between them. The subcommittee members, selected for their expertise in the particular subject, labored to produce guidance on such topics as patents, taxes, insurance, labor, and terminations. The services then reviewed the drafts, circulated some to industry groups for comment, and submitted the first three sections to the General Accounting Office for its views. The edited version was then submitted to the full committee. If the committee could not agree on a particular issue, it referred the matter to the respective procurement secretaries for decision. The committee then discussed each issue with industry.

After final approval, the first three sections were published on May 19, 1948. This first edition of the ASPR stated that it "appreciably change[d] the procurement policies and practices of the three departments under the First War Powers Act." The ASPR had been "established with the idea of being a concise statement of principles to guide Contracting Officers in exercising the powers and judgment granted to them by the Armed Services Procurement Act." This complied with the intent of ASPA, as expressed in the legislative history, to give greater discretion to contracting officers.

> The committee recognizes that much of the existing legislation providing for formal advertising, sealed bids, and award to the lowest responsible bidder could be interpreted as authorizing the exercise of sound discretion by a contracting officer . . . to award a contract in the light of other—and perhaps more important—factors than the lowest initial price. . . . While existing law does not require this result, it is nevertheless a fact. Take, for example, the contracting officer who determines that a low price is less important in a particular procurement than other valid factors, such as urgency of need, quality of product, or lower-ultimate cost. Should he make an award on such a basis to someone other than the lowest bidder he is immediately placed on the defensive and must justify his action or might even be personally charged for the apparent excess cost. The committee is firmly of the opinion that this is not in all cases the best way to conduct a business. During the war, the interest of the Government has been aided time and time again, by procurement officers' having broader authority than that permitted by the permanent laws and interpretations.[4]

Although recognizing this increased discretion, President Truman wanted uniformity and consistency. He remembered the problems he uncovered as part of his wartime committee investigations. So, in a classic example of the executive branch overruling Congress' intent, when Truman signed the ASPA on February 19, 1948, he wrote to the Secretary of Defense:

> This bill grants unprecedented freedom from specific procurement restrictions during peacetime. That freedom is given to permit the flexibility and latitude needed in present day national defense activities. The basic need, however, remains to assure favorable price and adequate service to the Government. To the degree that restrictions have been diminished, therefore, responsibility upon the Defense Establishment has been increased. There is danger that the natural desire for flexibility and speed in procurement will lead to excessive placement of contracts by negotiation and undue reliance upon large concerns, and this must not occur.
>
> For these reasons, I am asking you to specify detailed standards to guide your procurement officers concerning the placing of business with small concerns and the circumstances under which they may waive the general policy of advertising for bids. It is of great importance in procurement matters to establish standards and definitions to guide all personnel who have authority to place contracts. Otherwise, differences in interpretation and policies may result in imprudent contracts and give rise to doubts about the wisdom of this new procurement system.[5]

The early parts of ASPR contained Truman's letter as part of the foreword, which also stated:

> It is believed that the Armed Services Procurement Regulation which is now being issued carries out on a policy level the instructions contained in the president's letter. All procurement personnel are enjoined to follow strictly the standards and requirements set forth in this regulation as well as in such implementing procedures as will be issued under it from time to time by each respective Department.[6]

Thus, even from the beginning, Congress' intent of increased contracting officer discretion was stymied. First, the president called for detailed guidance and then the services made such guidance mandatory. By 1960, the House Armed Services Committee concluded that Truman's admonition had been prophetic. The Defense Department had become "an emergency negotiated-purchasing organization" and had failed to achieve reasonable costs and profits. The committee also found that "there has been a concentration of production facilities in the hands of a relatively small

production base in which the Government is heavily interested. This segment of industry is the beneficiary of public necessity."[7]

### The Armed Services Procurement Regulation

The original ASPR was 300 pages long but not an itemized regimen for all facets of contract formation, administration, and termination; rather, it established uniform policies. Each department head could implement these policies by prescribing detailed procedures not inconsistent with ASPR. The head of any procurement activity within each department could issue detailed operating instructions, not inconsistent with the higher-level policies or procedures. The services soon blurred these distinctions. The army and air force continued to issue their Joint Army and Air Force Procurement Circulars, which supplemented the ASPR, until March 6, 1951. On March 15, 1951, the army issued the Army Procurement Procedure (APP) as its 315-page "supplement" to ASPR. In one fell swoop, the regulatory guidance for army contracting personnel more than doubled. To unify procurement policies and procedures within the Department of Defense, and to force the services (especially the rambunctious navy) into line, Congress centralized regulatory authority in the Secretary of Defense. The Defense Appropriations Act of 1953 directed the Secretary of Defense to issue procurement regulations that must be followed before any funds could be obligated.

### Civilian Procurement After the War

Civilian procurement also changed after the war, although not as fast as its military counterparts.[8] The Treasury Department's Procurement Division continued its work until 1947, when it became the Bureau of Federal Supply within Treasury. Civilian procurement was molded substantially by the recommendations of the Commission on Organization of the Executive Branch, popularly called the Hoover Commission after its chairman, former President Herbert Hoover.

The commission focused much of its time and effort on improving the Federal Supply System. As had critics since the Revolution, it noted the need for central control and recommended that a new agency, the Office of General Services, be created to fill this need. The commission made several other recommendations: first, repeal the often contradicting amalgam of procurement laws and regulations and enact a more comprehensive legal

framework, second, apply the principles of the Armed Services Procurement Act of 1947 to all agencies; third, establish a Supply Policy Committee composed of representatives of the Bureau of Federal Supply and the National Military Establishment to coordinate civilian and military supply operations, and fourth, establish a Bureau of Federal Supply in the Office of General Services with the primary responsibility of assisting the president in formulating procurement policies, regulations, and practices.

Congress substantially enacted these recommendations in the Federal Property and Administrative Services Act of 1949 (FPASA). This act created the General Services Administration (GSA), applied the principles of the Armed Services Procurement Act to the civilian agencies, repealed many obsolete laws, and transferred the Bureau of Federal Supply and all its responsibilities from the Treasury Department to GSA. Alexander Hamilton's dream of Treasury procurement domination ended. The new system would apply to the entire executive branch, except those agencies which derived their procurement authority from the Armed Services Procurement Act of 1947: the Department of Defense and the National Aeronautics and Space Administration (NASA). Even those agencies, however, had to adhere to GSA guidelines regarding standard forms, clauses, and federal specifications and standards.

FPASA brings to mind the General Supply Committee established while Teddy Roosevelt was in the White House. One of the main concerns of the legislation was to control the "natural jealousies" of the various agencies whose functions were being changed. These had surfaced frequently during the legislative process. However, Congress significantly weakened the act's centralized control by allowing sixteen different officials to exempt part or all of their programs from the act if it would impair such programs.

The act adopted an estimated 95 percent of the Hoover Commission recommendations on supply policies, but one major difference remained. The commission had proposed centralizing all civilian procurement within GSA and having GSA coordinate with military procurement officials through a Supply Policy to effect government-wide uniformity. The act placed government-wide responsibility in the GSA, but allowed the secretary of defense to exempt the military for national security reasons. While the military favored the Hoover Commission's plan, it reluctantly admitted that it could work within the framework of the new Act, given the exemption. President Truman limited this exemption on July 1, 1949, when he directed

the secretary of defense not to exercise it without the president's approval. President Eisenhower revoked this restriction on June 8, 1954, "because it was not accomplishing the objective of improving interagency cooperation."[9]

## The Rise and Recognition of the Defense Industry

North Korea invaded South Korea in June 1950, while these changes were being adopted. The entry of China into the war in October 1950 altered the course of events sharply. Defense spending rose from $14.3 billion in 1950 to $45.2 billion in 1951, and to $57.2 billion in 1952. Since only five years had elapsed since World War II ended, the contracting apparatus was not too rusty. Seventy-five aircraft plants remained in reserve, and a large government stockpile of machine tools and materials existed. Contracts for wartime production had already been prepared. Yet the plans were nearly as useless as those for the Second World War, for they were based on mobilization for total war, reflecting the one-war national military strategy of the time.[10]

The automobile industry returned to weapons making, especially producing aircraft. Ford produced Pratt & Whitney's R-4360 in Dearborn; Packard, the General Electric J-48 jet; Kaiser-Frazer, the Wright R-1300; and Chrysler (in a new Detroit-area plant), the Pratt & Whitney J-48 jet. Elsewhere in the established automobile centers, Studebaker produced General Electric's J-47 jet in South Bend, Chevrolet, the Allison J-35 jet in Tonowanda (Buffalo), New York, Buick, the Wright J-65 jet in Flint; and Nash, the Pratt & Whitney R-2800 in Kenosha (Milwaukee), Wisconsin.[11]

By the time the Korean War ended in 1953, the aircraft industry had expanded massively and regained its World War II status as the largest American industry. In 1954, sales of ten aircraft companies totaled about $4.5 billion, nine times the 1947 level. Profits hovered around $170 million in 1954, as opposed to the heavy losses of 1947.

Unlike previous American wars, massive demobilization did not follow the Korean War. The Cold War and America's increased responsibility in the world forced indefinite maintenance of large armed forces without the traditional dismantling of the wartime military industrial alliance. Although support for defense spending fluctuated in the 1960s, defense spending after 1951 never again approached its lows before or immediately after World

War II. In the 1950s and early 1960s, after it had exploded its atomic bomb, the now-defunct Soviet Union did what the Kaiser had done in 1913–1917 and Hitler had done in the late 1930s: it provided the bogeyman. The 1950s resembled the 1939–1941 years: a period of preparation in case the nation had to fight an aggressor. In the 1950s, the Soviet threat blunted the drive by members of Congress to reinstate their 1920s and 1930s quest for efficiency. They and their constituents wanted results and did not want to hamstring the military.

In late summer 1952, *Business Week* reporters announced the transformation after interviewing corporate executives building armaments for the Korean War: "For the first time in its history, the U.S. is getting a full-time, national-scale arms industry—an industry that's about as individual and experienced as automobile manufacturing or food processing." Like the long-time arms manufacturers in Europe (such as Krupp), many American firms now considered substantial defense production a normal business, and they meant to capture a piece of the new market. "Many of them created separate divisions, headed by key executives, to work exclusively on government contracts," *Business Week* reported. "Some of them have even built separate munitions plants. What it all adds up to is that the U.S. now has a functioning, experienced arms industry—not merely a group of commercial plants that with much sweating and straining, can be twisted into military production in case of war."

That industry did not spring up overnight; it evolved. That is why this section is entitled, "The Rise and Recognition of the Defense Industry." A defense industry had existed in one form or another since 1808, when the semi-official armories existed. For example, for its first forty years, the aircraft industry rose or fell depending on government contracts. What changed after World War II is the virtual exclusivity of the customer. Previously, a civilian market had existed for almost all products—modified or not. Frontiersmen and state militia bought Whitney's muskets and Colt's revolvers; railroads bought DuPont's powder, the fledgling airlines bought planes, at first in small numbers but with the promise of large quantities later. The shipbuilders could always sell ships to transport companies. But Sears or J. C. Penney do not buy Abrams tanks or ICBMs.

The system had become the opposite of a monopoly—that is, a monopsony, with only one buyer rather than one seller. That buyer, through the Arms Export Control Act and similar legislation, had even constrained the ability

of the modern-day arms merchants to diversify their business, as Colt and Remington had done, by selling overseas. The change affected how the contracting industry was configured. As William Gregory points out,[12] defense contractors in the early 1950s behaved like construction contractors. To keep their overhead as low as possible, they kept a skeleton staff, hired production workers and engineers for specific programs, and laid them off when the job ended. Except for a core of technical and administrative people, defense contractors often had few permanent employees or fixed assets. They did not invest in capital equipment beyond that essential for the immediate job, so the government often had to furnish equipment for specific programs.

A permanent defense industry could not last in that way, especially one entering the age of complicated specialization and complex weapons systems. The government wearied of buying plants and tooling for what had grown into large enterprises with good credit ratings. It began to sell off what it had or made contractors buy their own factories—or quit competing. Moreover, the talent and reputation of an engineering or research staff and the extent of facilities could be a big plus in winning contracts. The contractors became top-heavy with engineering and technical staffs, and invested heavily in fixed assets.

Investment in people and equipment tends to shackle a company to the government market. Each engineer, technician, chemist, and laser robotic machine carries a price tag that is encrusted onto the cost of every item the company makes. The high overhead, which accountants descriptively call "burden," hampers firms from successfully penetrating the civilian market. For example, North American's president, E. H. Kindelberger, related that when his company tried to diversify into related fields, it examined the Sears, Roebuck and Montgomery Ward catalogs to find products it could make. After selecting the items, North American determined that its production costs would run 30 percent higher than retail prices. So it abandoned the whole idea.[13]

Once these companies made the initial tremendous investment, they were wedded to the system and the system was wedded to them. The government could not replace a General Dynamics or a Lockheed except on a very long-term, multi-billion dollar basis and, in the interim the mobilization capability would be severely damaged. Recall the problems Jesup had in buying wagons for the Mexican War and imagine the difficulties involved in buying

nuclear submarines. Only two companies could build nuclear submarines, only five could build a strategic bomber, and only five would even try to build a fighter. Many are, in reality, agents of the government.

This permanent defense industry has further blurred the already hazy distinction between public and private functions. The "dollar-a-year" men, formerly confined to wartime, now shuttle regularly between the boardrooms of defense contractors and the E-ring of the Pentagon. Retiring generals and admirals routinely swap their stars for corporate directorships. In Democratic and Republican administrations, a regular part of the Senate confirmation process is to pore over the nominee's possible disqualifications because of conflicts of interest.

What also changed was the incredible complexity of the items being procured. Whitney's firearms, the *Monitor*, even the P-40 are mere Lego constructs compared to the modern amalgams of space-age alloys and electronics, which tax not only the ability of engineers and technicians but even the imagination of the most avid science-fiction enthusiast. Consider the phenomenal escalation in electronic components alone. The B-29 and B-50 bombers contained about 10,000 electronic components; the B-47 doubled that number to approximately 20,000, the B-52 had 50,000; and the B-58 increased it tenfold, to nearly 100,000.[14]

Modern weapons have become so complicated that no defense conglomerate, no matter how sophisticated its research and engineering staff or how extensive its capital assets, can even hope to build them alone. Before, subcontracting was done reluctantly and at government urging; now it has become accepted and vital. During World War II, Lockheed subcontracted only 18 percent; in 1951 it subcontracted 40 percent. This subcontracting is not merely with small businesses to meet government socioeconomic quotas; it is the type seen on the *Monitor* and Hoover Dam when recognized leaders, even giants in the field, work together.

Subcontracting also has enabled the permanent defense industry to develop an amazing array of political power. As we have seen, political power is nothing new in government contracting. Having a patron in authority, whether Robert Morris, Oliver Wolcott, or Abe Lincoln, has certainly facilitated the contracting process, but that localized influence was always dependent on the ability of those one or two individuals to sway their colleagues.

Subcontracting multiplied that influence one hundredfold or more. As we first saw in the navy shipbuilding contracts at the turn of the century, the government spread contracts geographically to stimulate congressional support. The modern defense industry has raised this to an artform. Jacques Gansler cites the classic example of lobbying for the B1-B bomber, after the election of President Reagan.[15] Acting on the premise that "all politics is local," the lobbyists trumpeted that the program represented 140,000 jobs, "with parts being built by 5,200 subcontractors—in every state except Alaska and Hawaii." The forward fuselage would be built in Columbus, Ohio, the offensive avionics in Wichita; the cockpit in Palmdale, California, the defensive avionics in Deer Park, New York; the air-conditioning in Windsor Locks, Connecticut, the tires, wheels, and brakes in Akron; the wings in Nashville; the engines in Avondale, Ohio, the emergency electrical power system in Jackson, Mississippi; the aft fuselage in Dallas, the main landing gear in Cleveland; and the tail in Baltimore. With 3,200 suppliers distributed around the country, most states and congressional districts had jobs depending directly on this $20.6 billion program.

Some commentators have argued that this modern defense industry with huge peacetime defense budgets represents a fundamental change. They maintain that, for much of our history, the peacetime arms procurement effort was too small to warrant prolonged attention, while wartime problems were often solved with ad hoc arrangements relaxing the traditional norms. That certainly was true for the first 100 years of our national existence, but not after the 1880s, when the navy decided to modernize the fleet, and not after WWI given the five-year aircraft programs of the 1920s and 1930s. Since then, America's peacetime procurements have been substantial. Certainly, they cannot compare with the bloated military budgets a world war engenders, but for the relatively small federal government of the time, they represented a sizable investment.

As in Eli Whitney's day, government contracting fostered one of the most important manufacturing technologies of the century. David Noble describes how, in 1952, the air force contracted with the Massachusetts Institute of Technology (MIT) to develop the numerical control of machine tools.[16] The first machine equipped with such controls came into use in 1956. During the 1950s, the air force created a market for numerically controlled machine tools by buying, installing, and maintaining "over 100 numerically controlled machines in factories of defense prime contractors." The air force

actually paid aircraft manufacturers and various parts suppliers to learn how to use the technology, which proved to be a major improvement and soon produced 80 percent of all machined parts. It especially facilitated aerospace work, consisting of complex parts made in small lots. It has been estimated that this technology has been four times as productive as nonnumerical control. During this same period, as Thomas Misa has recounted,[17] the Army Signal Corps played a central role in developing the early transistor industry. It sponsored research, subsidized engineering development and plant construction, standardized practice, and disseminated the results of such work. But the public's attention focused on the development of two literally earthshaking industries—aerospace and nuclear power.

## The Aerospace Industry

Increased defense spending after the Korean War, plus the dramatic rise in the civilian market for airplanes, ensured that the aircraft industry would not return to its cottage-industry status.[18] By 1959, aircraft and associated electronics firms accounted for over 75 percent of the Defense Department's major contracts. Two developments converted the industry of the Wright brothers into the aerospace industry: guided missiles and space exploration.

In 1953, as in World War II, General Motors was the nation's largest defense contractor, with $5.7 billion in military orders. By 1955, however, it had slipped—and not only because it returned to full-time carmaking. The Soviet threat caused the government to develop intercontinental and intermediate-range ballistic missiles (ICBMs and IRBMs), which GM lacked the ability to produce without a heavy investment, which it did not want to make.[19] The government regarded missiles, with their greater speed and destructive power, as superior to most types of manned military aircraft. Soon after World War II, the military began work on the ballistic missile.[20] Hitler's V-1 and V-2 rockets had proven their effectiveness, and the atomic bomb had given them a frightening lethality. The army contracted with Convair in April 1946 to produce an ancestor of the Atlas ICBM, but canceled it fourteen months later in June 1947. The company, however, continued to develop an ICBM. When the program was restored, Convair (now merged with General Dynamics) was ready with Atlas. By then, the interest was so great that the air force also financed the Martin Company's Titan. So, from 1950 to 1958, the missiles market grew to comprise one quarter of total aerospace industry sales. As the government bought more

missiles, the industry adapted. As East-West tensions heightened with such episodes as the 1956 Suez crisis and the invasion of Hungary, the government realized that an IRBM could be operational earlier, so both the air force with its Thor and the army with its Jupiter entered production.

The competition for missiles contracts was as fierce as anything in the 1920s and 1930s. Companies tried to win the design competitions that led to production contracts.[21] For example, the winning design of what became the Polaris missile provided Lockheed a steady flow of business. Convair succeeded in its Atlas design as well as several lesser missiles projects including the Terrior, Mauler, Tartar, and Typhon missiles. Martin based its success largely on the Titan program and its contracts for the LaCrosse, Pershing, Mace, and Bullpup missiles; it was also the prime contractor for Vanguard. Boeing's growing missiles sales grew from its Bomarc and Minuteman designs, while North American received contracts for the Hounddog missiles and the Minuteman guidance system. These missile contracts positioned the winners well for the other leg of the aerospace industry-NASA contracts.

### NASA Contracts

The second major change in government procurement that transformed the aircraft industry was the space program, which is an even more recent development than missiles. NASA's official histories[22] have chronicled the contracting effort, which exemplifies the government's modern multi-billion dollar procurement process. All the aerospace firms sought NASA contracts, especially for the Apollo project (the race to the moon), which dominated NASA's effort in the 1960s. North American won the biggest contracts in the Apollo project—for the spaceship and the Saturn rocket's second stage—and received 40 percent of its more than $2 billion in sales in 1964 from NASA.[23] Other major NASA contractors included McDonnell with Mercury and Gemini, Grumman with the Lunar Module, and Boeing and Douglas with other Saturn stages. Building liquid-fueled boosters (all of which, except Agena, were former ballistic missiles) gave business to Douglas with Thor, General Dynamics with Atlas, Lockheed with Agena, and Martin with Titan.

Project Mercury, the first Americans in space, and Project Gemini had one feature in common: both cost about double the original estimate. NASA had estimated that Mercury would cost $200 million, but it reached $400 million.

Gemini started at $531 million to build what was supposed to be an improved Mercury, and wound up costing $1.147 billion, including many new developments.[24]

On December 7, 1961, twenty years after Pearl Harbor, Project Gemini was officially approved. Between that date and November 15, 1966, when the program's last two astronauts returned from orbit, the project significantly advanced space exploration. Gemini's techniques, equipment, and experience, including space walks and dockings, enabled NASA to bridge the gap from experimental, Earth-orbiting Project Mercury to ambitious, lunar-landing Apollo.

Although the government did not approve the Gemini project until December 1961, much of the design work had been done and many of the major decisions had already been made.[25] Just a week after project approval, on December 15, the first major contract went to McDonnell Aircraft Corporation. Since the contract required a "Two-Man Spacecraft" to be developed from "the present Mercury Spacecraft, retaining the general aerodynamic shape and basic system concepts," seeking competitive bids was impractical. The choice clearly fell to McDonnell Aircraft Corporation, which had not only developed and was building Mercury but had also been active in drawing the new design. The company's president, James S. McDonnell, Jr., whose career spanned biplanes to space vehicles, signed the new contract on December 22.

By March 1962, all major Gemini systems—spacecraft, booster, target, and paraglider—were under contract. North American Aviation had already begun work under a separate contract on the paraglider landing system that would let Gemini alight on land rather than water. Other key contracts soon followed for the project's several rocket boosters: to Martin Company for the Titan II to launch the spacecraft, to Lockheed Missiles & Space Company for the Agena to serve as rendezvous target, and to General Dynamics Corporation for the Atlas to boost Agena into space.

In early 1964, NASA launched the first of Gemini's twelve missions, a flawless unmanned test of spacecraft and booster. The second unmanned mission, in January 1965, showed that Gemini was ready to orbit with humans on board. Some two months later, Virgil I. Grissom and John W. Young flew Gemini 3 through three circuits of Earth. In striking contrast to Project Mercury's frequent delays, Project Gemini came close to achieving a

routine launch every other month throughout 1965 and 1966. Gemini XII closed out the program in November 1966.

Even before the Gemini program started, the Apollo program to land a human being on the moon began. On July 28 and 29, 1960, the first in a series of NASA-industry planning sessions was held, with 1,300 representatives from government, the aerospace industry, and academia attending. During these two days, twenty NASA officials outlined the agency's plans for launch vehicle development and potential projects for manned and unmanned spacecraft. Many of the invitees returned on August 30 to learn about plans for a circumlunar, manned spacecraft program and three six-month feasibility contracts to be awarded later. NASA invited any interested companies to a bidders' conference on September 13. Eighty-eight firms sent representatives to the briefing, but only sixty-three picked up the requests for proposal, which had been published the day before. Proposals for the study contracts were required four weeks later. By October 9, NASA had received fourteen offers, many from aerospace firms who had teamed up as partners or subcontractors to vie for the awards: Boeing, Convair/Avoco, Cornell/Bell/Raytheon, Douglas, General Electric/Bell, Goodyear, Grumman/ITT, Guardite, Lockheed, McDonnell, Martin, North American, Republic, and Vought. NASA, almost unnecessarily, told all offerors that even the losers should continue their efforts, thus strengthening their chances to compete for the hardware phase of Apollo. NASA assured them that the agency would not limit its choice of the designer and builder of the spacecraft to the three selected study contractors.

NASA prepared a detailed plan for the orderly evaluation of proposals to begin on October 10. On October 25, after five technical panels had compared the bidders' proposals in trajectory analysis, guidance and control, human factors and radiation, onboard systems, and systems integration, NASA selected the winners: Convair/Astronautics of San Diego, General Electric of Philadelphia, and the Martin Company of Baltimore, each receiving contracts of $250,000. NASA personnel met later with representatives from the losing firms, discussed the weaknesses in their proposals, and offered to work with them informally to overcome these failings. In early May 1961, the first reports from the completed study contracts began arriving at the Space Task Group. All three contractors had invested considerably more than the $250,000 NASA paid them.

In the summer of 1961, NASA was ready to negotiate the spacecraft hardware contract. NASA announced it would need contracts in six major areas: (1) the launch vehicles; (2) the spacecraft command center, which would double as the return vehicle, (3) the propulsion module, with extra duty as the lunar takeoff section; (4) the lunar landing stage, which would be both a braking rocket and a lunar launch pad, (5) the communications and tracking network, and (6) the earth launch facilities. Project Apollo would have three phases: earth-orbital, circumlunar and lunar-orbital, and lunar landing. The prime spacecraft contractor would develop and build the command module, service propulsion module, adapter (to fit the spacecraft to a space laboratory for earth-orbital flights and to the lunar landing propulsion section for lunar missions), and ground support equipment. Although the prime spacecraft contractor would not build the lunar landing module, it would integrate that system into the complete spacecraft stack and ensure compatibility of the spacecraft with the launch vehicle.

By the end of July, Administrator James Webb had approved the procurement plan, and NASA's contracting officer had mailed out the requests for proposals to fourteen aerospace giants: Boeing, Chance Vought, Douglas, Astronautics Division of General Dynamics, General Electric, Goodyear Aircraft, Grumman, Lockheed Missiles & Space Company, Martin, McDonnell, North American, Radio Corporation of America, Republic Aviation, and Space Technology Laboratories (STL).

NASA used a formalized selection process which had become standard in major government contracts. For any NASA contract expected to exceed $1 million, a source selection board would evaluate all proposals; for any contract that might cost more than $5 million, a special source evaluation board appointed by the NASA associate administrator would judge all proposals. The board's findings would then go to the administrator himself for final selection. The deadline for the submission of proposals was October 9, 1961, giving prospective offerors more than ten weeks to prepare their proposals. NASA held a conference on August 14, to explain in detail the guidelines for the contract. Companies asked almost 400 questions; the answers were recorded and distributed. NASA then appointed an eleven-member source evaluation board to direct the technical assessment teams, and a business subcommittee to prepare a numerical scoring system for comparative analyses of the proposals.

On October 9, 1961, General Dynamics/Astronautics with Avco; General Electric with Douglas; Grumman and STL; McDonnell with Lockheed Aircraft; Hughes Aircraft and Chance Vought, Martin; and North American of the aerospace industry brought their proposals to the Chamberlain Hotel, Old Point Comfort, Virginia. During the first two days of a three-day meeting, these documents were distributed among the members of the NASA assessment teams. More than a hundred specialists evaluated the massive technical proposals, plus those on business management and cost. On the third day, each group of offerors made an oral presentation and answered questions. The assessment teams ranked the proposals after several weeks of intensive study. On November 24, 1961, the source evaluation board summarized the scoring and rated Martin 6.9, General Dynamics tied with North American at 6.6, and General Electric and McDonnell each with 6.4. The board unequivocally issued its final recommendation:

> The Martin Company is considered the outstanding source for the Apollo prime contractor. Martin not only rated first in Technical Approach, a very close second in Technical Qualification, and second in Business Management, but also stood up well under further scrutiny of the board.

If Martin were not selected, however, the board suggested North American as the most desirable alternative.

> North American Aviation [NAA) . . . rated highest of all proposers in the major area of Technical Qualifications. North American's pertinent experience consisting of the X-15, Navajo, and Hound Dog coupled with an outstanding performance in the development of manned aircraft (F-100 and F-86) resulted in it[s] being the highest rated in this area. The lead personnel proposed showed a strong background in development projects and were judged to be the best of any proposed. . . . The Source Evaluation Board is convinced that NAA is well qualified to carry out the assignment of Apollo prime contractor and that the shortcomings in its proposal could be rectified through further design effort on their part. North American submitted a low cost estimate which, however, contained a number of discrepancies. North American's cost history was evaluated as the best.

Someone tipped Martin that it had scored highest in the evaluations. The company then prematurely announced to its employees over the public address system on November 27, 1961, that they had won the contest to build the spacecraft. The next day, their euphoria ended abruptly. NASA announced on November 28 that North American won the spacecraft contract. The NASA management apparently chose North American for its

experience in the development of manned flight, and was convinced that its record of containing costs would neutralize its low cost estimate.

That award did not end Apollo's contracting effort. NASA also needed a lunar landing vehicle. North American had vied strongly for the lander. Although NASA sent the company a request for proposals in July 1962, it first discouraged, and then precluded, the company from bidding on this contract. NASA evidently believed that North American already had all the Apollo development work it could handle. North American did not concede easily the loss of the glamour associated with landing its own craft on the moon. It appealed its case to Administrator Webb, arguing that the company should be selected as the sole-source contractor for the lander and merely subcontract most of the actual hardware work This arrangement would have made North American the systems manager, responsible for integrating all the payload vehicles. NASA's lawyers and procurement officers rejected this approach. To permit a contractor to take over this task without competition, even though NASA would have final approval authority over selection of the subcontractors, "might be regarded as a delegation of NASA's inherent responsibility to perform its procurement function." Webb agreed.

NASA issued a request for proposals on the lander on July 25, 1962, and held a briefing in Houston on August 2. On September 5, barely five weeks after the issuance, NASA announced that nine companies had submitted proposals, and that the agency planned to award the contract in six to eight weeks. Of the eleven companies originally invited, only McDonnell and North American had not submitted proposals. Evaluations began at Houston as soon as the proposals were received and ended on September 28. At Ellington Air Force Base in mid-September, company officials made formal presentations to the source evaluation board. NASA teams then made one-day visits to the company plants to see what facilities each bidder had to support the development program. Early in October, officials from Houston presented their findings and recommendations to NASA Headquarters. On November 7, NASA announced that the Grumman Aircraft Engineering Corporation of Bethpage, New York would build the lunar landing vehicle.

Grumman then expanded from an aircraft producer into a major aerospace concern. (For almost three decades, the name "Grumman" and carrier-based aircraft had been virtually synonymous.) This transition reflected a long-term goal and a considerable investment of funds on the part of the firm's senior

management to penetrate the space market. The company had competed for every major NASA contract and, except for the unmanned Orbiting Astronomical Observatory satellite, had never won, although it had come heartbreakingly close. Late in 1958, when NASA sought a contractor for the Mercury spacecraft, Grumman had tied with McDonnell in the competition. But Grumman had won several new navy aircraft development programs only a short time before. To avoid disrupting navy scheduling and to ensure its contractor's concentration on Mercury, NASA had selected McDonnell.

Once Grumman had been selected for the lunar lander, NASA agreed that a definitive contract could be written immediately. Conferences between NASA and Grumman began on November 19. About eighty people from Grumman—separated into a dozen technical teams and several program management, reliability, and support groups—traveled to Houston for the talks. The NASA and contractor teams defined details, reviewed subcontracting plans, worked out a technical approach, and spelled out management procedures. They examined requirements for facilities and determined the number and kinds of test articles, roughly equivalent to North American's boilerplate spacecraft, to avoid the need for building complete vehicles for testing specific subsystems. They agreed eventually on a cost-plus-fixed-fee contract for $385 million, including Grumman's fee of more than $25 million. On January 14, 1963, NASA told Grumman to begin developing the lunar module, although the contract was not signed until early March, at a revised cost of $387.9 million.

Meanwhile, in late 1961, NASA had issued a letter contract to North American, to be extended as necessary, describing the spacecraft in general terms. When all of Apollo's pieces were finally picked, NASA sought to agree with North American on the precise details of the spacecraft. On January 7, 1963, because the Manned Spacecraft Center was crowded in temporary locations along the Gulf Freeway, the government team met the contractor representatives in sixteen rooms on the 13th floor of the Rice Hotel in downtown Houston. Signaling the start and finish of fifteen-hour work days, Monday through Saturday, with a cow bell, the groups completed on January 26 the "basic contract package," which Webb then had to approve. When it was finally approved in August, the price, with $50-million fixed fee, was $934.4 million. For this sum, NASA would receive eleven mockups (facsimile models), fifteen boilerplate capsules (test vehicles), and eleven flight-ready spacecraft. Under the letter contract, many

of these items had gone into the manufacturing cycle, with scheduled delivery dates.

At the end of April 1964, 100 people gathered at North Americans plant to watch as several astronauts simulated operating the vehicle. Next, they examined the spacecraft mockup and such special displays as wiring, cutaway models of subsystems, parachute packing, and electrical connectors. Managers and engineers from NASA and the manufacturer then split up into small groups to evaluate each piece. More than a hundred requests for changes were written on the spot for consideration by the board, seventy were approved, fourteen were designated for further study, and twenty-six were rejected.

Meanwhile, the Manned Spacecraft Center and Grumman began designing and developing a vehicle that would land two men on the moon and take off again. When NASA selected Grumman in late 1962 to build this crucial item, the landing craft was still far from the huge, spidery-legged spaceship that later landed on the moon. Grumman soon hit snags and its cost and delivery schedule slipped. To resolve the problems, NASA tried to convert Grumman's cost-plus-fixed-fee contract to an incentive agreement, such as the navy had used in World War II. NASA believed that with incentives to meet, Grumman would overcome deficiencies. NASA's drive for incentive contracting was simultaneous with Defense Secretary McNamara's similar goal.

In September 1965, Grumman submitted a proposal to convert to an incentive contract. Negotiations lasted until December and culminated in a contract with enough incentives to spur the contractor to maintain costs and schedules and to meet performance milestones. This arrangement, announced in February 1966, carried the lander program through 1969 at a cost of $1.42 billion. NASA and North American negotiated a definite incentive contract (at an estimated $2.2 billion) during the second half of 1965.

The contracts were in place, but disaster awaited. On January 27, 1967, three astronauts were incinerated in a cockpit fire in the spacecraft at Cape Canaveral while rehearsing for a launch of the first Apollo spacecraft. A NASA investigation and a congressional committee blamed NASA and North American for deficiencies that fostered an unnecessarily hazardous

situation. Corrections were made, and new management was brought in to both NASA and North American.

On July 29, 1969, Neil Armstrong descended from the Grumman lunar module and left his footprints on the moon. As spectators had watched the Wright brothers at Fort Myer, and Lincoln and his cabinet had anxiously awaited news on the *Monitor* and *Merrimac*, millions watched the moon landings in the early morning on their televisions sets.

### *Development of the Nuclear Navy*

A third important new area affected defense procurement: the continued development of atomic power. After the war, the government began developing a nuclear submarine.[26] It contracted with General Electric, which had succeeded DuPont on the Manhattan project, to design a nuclear propulsion plant. Then, on December 10, 1948, the Atomic Energy Commission signed a letter contract with Westinghouse to build a propulsion plant for a submarine "within the shortest practicable time" that would meet navy specifications. Westinghouse would "do all detail engineering, produce the working drawings, procure the necessary materials, and construct the Mark I [reactor] plant," which would be a land-based prototype.[27] While Westinghouse worked on Mark I, it would research and develop subsequent models that could be installed in submarines.

The letter contract allowed Westinghouse to obtain suitable office space, laboratories, and shop facilities at government expense and specified interim financial arrangements until a definitive contract could be signed. It described the company's obligations only generally, because no one knew exactly what they were. The company would need almost a year to train staff and build new facilities. No one knew what would result from the studies and what Westinghouse would do in designing the reactor. The parties could not even begin to precisely define their obligations against all the possible contingencies. Instead, the contract incorporated broad, general language "that this agreement shall be carried out in a spirit of partnership and friendly cooperation with a maximum of effort and common sense in achieving [the] common objective."[28] These phrases expressed the spirit of the arrangement and were common in the commission's contracts.

The vagueness of the scope and nature of the work compelled the use of a cost-plus-fixed-fee contract, which had been used since early Manhattan

project days. Both parties would estimate the costs Westinghouse would incur during the coming fiscal year. The commission would then determine the fee from a fee schedule, which was not part of the contract: 5 percent on the first $5 million of cost, plus 4 percent on the second $5 million, plus 3 percent on the next $10 million. On an estimated cost (exclusive of fee) of $2,431,430 for fiscal year 1950, the commission set a fee of $121,570. To avoid any suggestion that this was an illegal cost-plus-a-percentage-of-cost contract, the draft stipulated that the amount of fixed fee would not be adjusted even if actual costs increased over the estimate. The parties signed the definitive contract on July 15, 1949.

The story of General Dynamics and its legendary association with Hyman Rickover has been detailed in numerous books and articles.[29] For some time, the Portsmouth Naval Shipyard had built submarines fitted with Westinghouse equipment, and the Electric Boat Company had built submarines using General Electric machinery. Hyman Rickover, the navy captain who headed the project, wanted a similar arrangement, so that Westinghouse and Portsmouth would constitute one partnership and General Electric and Electric Boat the other.

In early January 1950, he broached the idea of building the world's first nuclear-powered submarine with Electric Boat. They welcomed the prospect. During World War II, Electric Boat delivered sixty-four submarines to the navy, more than any other shipbuilder. At its peak in 1944, the company employed more than twelve thousand men and launched a submarine every two weeks. But when the war ended, so did business. By 1949, the company was building highway bridges and accepting any work it could find in order to survive. Its only submarine work was on the snorkel, in partnership with Portsmouth. So, a week after his suggestion, Rickover and a delegation from General Electric inspected the drafting rooms, shops, and shipway facilities at Groton. During the visit, Rickover explained how each company could aid the other through mutual education, even an exchange of personnel. Because General Electric knew little about submarine design, Electric Boat could help in laying out the machinery in the reactor compartment and steam generating system and in building the radiation shield. Electric Boat, in turn, would have to learn reactor technology from General Electric. Electric Boat would become a subcontractor to General Electric on a cost-plus-fixed-fee basis.

Rickover, anxious to get an agreement, wanted to have a letter of intent signed by January 20, 1950, but it was delayed until February 23, 1950. President Truman signed the authorization for the first nuclear submarine in August 1950. It was named the *Nautilus*, the same as Robert Fulton's submarine a century and a half earlier, which he had tried unsuccessfully to sell to the government. The efforts of that contract and its authorization came to fruition four years later.[30]

On the morning of January 17, 1955, Rickover with a few of his staff, officials from Electric Boat and other contractors, and officers from various navy commands were on the *Nautilus* for the trials. At 11 a.m., the crew dropped the mooring lines; the commanding officer, Captain Eugene Wilkinson, on the bridge with Rickover, gave the command, and the sub eased into the Thames River in Connecticut. The ship had just cleared the pier when the engineering officer in the maneuvering room reported that he had switched to electrical propulsion after a loud noise in the starboard reduction gear. Normally, the sub would have returned to the dock immediately, but, in full view of the press boats, Rickover refused to stop the trials before all options had been explored.

While the ship proceeded down the river on the port propeller alone, engineers inspected the noisy gear and in a few minutes replaced a loose locking pin on a retaining nut. Wilkinson then shifted back to steam propulsion. As the *Nautilus* slipped down the Thames past the breakwater into Long Island Sound, a signalman on the submarine blinked a message to the escort tug *Skylark* "Underway on nuclear power." It was a triumphant moment. "*Nautilus* did not mark the end of a technological road," Rickover declared, "it marked the beginning. It should be compared with the first airplane that flew at Kitty Hawk."[31]

Most impressive of all was the performance of the *Nautilus* in operations with the Atlantic fleet.[32] In July and August 1955, the *Nautilus* and some conventional submarines simulated attacks on an antisubmarine force consisting of a carrier with its aircraft and several destroyers. Even against conventional submarines, the task force had difficulties, but the *Nautilus* was almost invulnerable. It could locate the hunter-killer group at great ranges yet remain undetected. Because the ship did not have to surface, it was almost immune to air attack. With its high submerged speed, the submarine could overtake a surface force making 16 to 18 knots and, in certain conditions, even evade a standard torpedo attack. The participants evaluated

the first data and realized that in combat, one nuclear submarine was worth more than several conventional ones. In a tone reminiscent of the British admiral after reading of the *Monitor-Merrimac* battle, Admiral Jerauld Wright, commander in chief of the Atlantic Fleet, exclaimed: "It is urgent that countermeasures be developed for the true submarine and that no future combatant submarine be built that is not nuclear powered." Just as with the *Monitor*, the navy had entered a new age.

Four years later, in July 1959, the nation's first atomic-powered surface ship, the cruiser *Long Beach*, was launched at the Bethlehem Steel Company's Quincy Shipyard in Massachusetts. Captain Eugene Wilkinson, the first skipper of the *Nautilus*, was its first commander.

Rickover imposed two demands that would have made Charles Schwab of the Emergency Fleet Corporation proud. First, he intended to award all contracts on a lump-sum or fixed-price basis after competition. The navy and the AEC normally used cost-plus-fixed-fee contracts for all development until manufacturing techniques and specifications had been sufficiently proven to warrant contracting on a fixed-price basis. In the middle 1950s, virtually all contracts for reactor components were cost-plus contracts. But Rickover did not want to use the cost-plus system even at this early stage of core fabrication. The fixed-price contract would save money and let him buy more nuclear ships. Even more important, it would force the efficiency needed to create a nuclear core industry in the United States.

This mandate for fixed-price contracts hurt General Dynamics in the 1970s when it bid low in 1973 to win a $300 million fixed-price contract for the first *Trident* submarine. Within three years, the company admitted publicly to cost overruns of more than a half billion dollars, which had been caused by frequent changes in the navy's design requirements, it argued. Rickover responded, castigating the firm for breaching its contract.

Rickover's second demand stemmed in part from the same consideration. He required that every core manufacturer do all work in company plants without any reliance on government-owned facilities or financial assistance. This restriction, seldom invoked in ordinary defense procurement, saved millions of dollars in government investment. Not only did it force the core fabricators to perform without government help, it also gave Rickover strong negotiating leverage. If, on a later procurement, an established producer did not submit a competitive proposal, Rickover could take the work elsewhere

without having to dispose of an expensive government plant that had been built to meet the needs of a particular contractor.

Rickover had one other concern. In his last testimony to Congress before he retired in 1982, he urged the United States to perform more work in its own yards to set a benchmark so the government could determine what was a reasonable cost. Callendar Irvine would have agreed completely.

### *The Truth In Negotiations Act*

With all this expensive contracting, the government needed some way of controlling prices.[33] In the late 1950s, GAO criticized the air force for allowing excessive profits in its negotiated procurements because it did not have access to the contractor's cost and pricing data. Based on this criticism and congressional concern, the air force amended its procurement regulations to require cost and pricing data-the cost breakdown that the navy used during World War II. DOD followed suit in October 1959 by amending ASPR to require that certified cost and pricing data be submitted to government negotiation teams. Stirred by the GAO report, Congress considered a bill to require certified cost and pricing data. DOD objected to the bill, stressing that the recently adopted regulations required such data and had also expanded and strengthened the regulations on subcontractor cost and pricing data. The comptroller general admitted that he could not make specific legislative recommendations until he had evaluated the effects of the new regulation. While the House labored to "fine-tune" the bill, the Senate forestalled action because it wanted to give GAO more time to study the regulation's effect. The Senate Armed Services Committee recommended a change in the regulation to close a loophole but concluded that "[m]ost if not all of the procurement problems in the Department of Defense can be solved administratively."[34]

The bill was reintroduced in the 87th Congress. The DOD general counsel, Cyrus Vance, opposed it. He contended that a statute was not feasible if regulations could be adapted to changing circumstances. In response to the Senate committee's earlier recommendations, he emphasized that the ASPR had been changed to require a price reduction clause, and further changes would be made as experience warranted. The comptroller general countered that because ASPR now incorporated several of the bill's provisions, they should be made mandatory by legislation. The House Armed Services Committee considered both views and agreed with the comptroller general

but not without a dissenting report issued by three minority members, who stated that Congress had the responsibility to ensure that these regulations were followed to the letter. They believed, however, that the proper course was to permit the secretary of defense to pursue his delegated power of managing his department in the most efficient manner possible. Such arguments failed. The bill then easily passed the House, especially after GAO showed that many army and navy negotiations were conducted without the required cost and pricing data.

In the Senate, Representative Carl Vinson, still a dominant figure in contracting after thirty years, personally appeared before the Armed Services Committee and argued "that if it is good regulation, it will be good law." This time the Senate passed the bill, apparently swayed by GAO's evidence that the regulations were not being followed. As Chairman Richard Russell declared, "If the departments are not complying with these regulations. . . . I see no alternative for us but to undertake to make it mandatory by passing a law on the subject."[35] The Truth in Negotiations Act became law in 1962. The process leading to its enactment illustrates the sparring that goes on between the executive and legislative branches over procurement initiatives. Although not a criminal statute, the act served as the basis for many criminal prosecutions and other lawsuits when litigation exploded in the 1970s and 1980s.

### *McNamara*

While Congress debated the Truth in Negotiations Act, even more sweeping changes were being shaped. Defense Secretary Robert S. McNamara, who served under Presidents Kennedy and Johnson, had a tremendous effect on defense procurement. McNamara, who received his master's degree at the Harvard Graduate School of Business Administration and later taught there, had served as a statistician to improve management in the air corps during World War II. When President Kennedy appointed him Defense Secretary in 1961, McNamara began applying modern management techniques at the Defense Department.

Supported by a group of systems analysts, he introduced cost-effectiveness considerations and long-term resource planning into decisions on strategy, tactics, and weapons selection. The famous "Planning, Programming and Budget System" (PPBS) was the principal legacy of this era. To focus management attention on planning and developing major new weapons

systems, in 1965, Secretary McNamara introduced a process with three principal phases: concept formulation, contract definition, and acquisition. During concept formulation, managers analyzed a proposal's basic technical, economic, and military factors and conditionally approved development. In contract definition, they set final specifications. During the acquisition phase, equipment was manufactured, tested, and added to the government's inventory after meeting all specifications. Actually, the process formalized and systemized what people like Jesup and Ripley had been doing over a hundred years before.

Finding the army's arsenals too cautious in their approach to technology, McNamara closed some and encouraged the services to turn to industry, just as the air corps had done in the years after World War I. Although his decision may have been right, these arsenals, which had contributed so much, deserved a more ceremonious departure. The government lost the ability to produce items in-house to serve as a yardstick to gauge contractor costs. Like Rickover, McNamara sought to force the contractor to make the investments in plants and equipment but, unlike Rickover, he decided to prohibit the government from owning them.

McNamara emulated Rickover in one other respect: he wanted to stop cost-based contracts. He believed they encouraged waste because they do not link profits to how well the job is done. McNamara blamed the so-called buy-in on the cost-plus contracts used so extensively during the 1950s. To buy in was to deliberately submit low initial estimates in the hope of winning an award, and then recoup losses later in the production phase (known as "getting well"). These tactics were also aptly called "iceberg procurement." McNamara prescribed more fixed-price contracts and the incentive-type contracts the navy had pioneered in World War II. Thus, contractors had to pay for any optimism, but also reaped a greater reward for being more realistic about development costs at the start. The use of cost-plus contracts declined sharply under McNamara, while the use of incentive-type contracts rose commensurately. The percentage of military procurement dollars awarded by cost-plus-fixed-fee contracts fell from 39 percent in 1960 to 14 percent in 1964, while dollars awarded through fixed-price and fixed-price-incentive contracts rose from 45 percent in 1960 to nearly 54 percent in 1964.

McNamara did not hesitate to overrule the services on the selection of a major weapon system. Soon after he took office, he canceled the air force's

cherished B-70 bomber project, but the most celebrated case was the TFX decision.[36] McNamara forced the navy and the air force to build a common tactical fighter. He supposedly got the idea after accompanying President Kennedy on a tour of a carrier during which he and Kennedy were overwhelmed by the diversity of aircraft. Shortly afterward, McNamara evaluated a well-advanced air force requirement for a follow-on to the F-105 and a less well-developed navy requirement for a new fleet interceptor. He argued that "the cost of two new aircraft . . . was not justified by the performance improvements over existing aircraft" and concluded "that the essential operational requirements of the two Services could be met with one plane and that a great deal of money could be saved in that way."[37]

McNamara combined the two requirements in a single development project, essentially a shotgun marriage of the two designs. McNamara refused to believe (as stated by the services) that a bi-service program was not feasible. The navy wanted a plane that could operate at high altitudes from aircraft carriers and that could carry air-to-air missiles. The air force wanted a plane that could fly close to the ground, using terrain contour matching radar, and destroy ground targets with either conventional or nuclear bombs. In the resulting design competition, the military favored a design by the Boeing Aircraft Company. However, McNamara liked the less expensive design of General Dynamics, which won the contract for the TFX. Although the plane was built, it met the air force's specifications but weighed too much for the navy's aircraft carriers. The navy ended up buying the F-14, the TFX (renamed the F-111) became an air force plane later used to bomb Kadaffi in Libya. After McNamara left the Pentagon, the air force got the plane it really wanted, the F-15.

Commentators have argued whether McNamara's judgment was correct, but he clearly changed the process. Before the F-111, the military's multilayered selection and review process had controlled procurement. Civilian leaders had been loath to reverse military opinion. After the F-111, the defense secretary's role changed from merely saying yes or no to a plan to deciding what that plan should be.

McNamara's next innovation almost ruined Lockheed and Grumman.[38] He adopted a new contract form, the Total Package Procurement Concept (TPPC), to end buying in, improve specifications, cut costs, and raise profits. This system required contractors to bid, in their original proposals,

for the entire development and production of an aircraft or missile—"womb to tomb."

The first total package contract was for the C-5A aircraft, and it included another McNamara plan. He wanted as much definition as possible in the earliest design work. Previously, in the F-111 competition, McNamara sent the designers "back to the drawing board" three times for more details, the proposals ran about fifteen hundred pages and cost Boeing, General Dynamics, and Grumman $25 million in the runoff period. The corresponding C-5A costs exceeded that; the three competitors' proposals weighed thirty five tons, enough to have loaded fourteen DC-3s. Finally, the government and Lockheed agreed on the TPPC contract, which incorporated a fixed fee, incentive provisions, and a repricing formula.

During Vietnam, shortages developed in manpower, tools, plants, subcontractors, and suppliers—and inflation escalated. However, the C-5A contract rate had been set at the peacetime level, so the estimates were low. But the TPPC failed for a more basic reason: the parties had assumed that the C-5A could use existing technology. Lockheed had easily extrapolated the 67,000-pound C-130 into the 132,000-pound C-141 and expected to repeat the process for the 320,000-pound C-5A. Instead, Lockheed struggled with unexpected technological problems resulting from the C-5A's huge size. Finally, the government did not adequately monitor progress, so huge cost overruns occurred. Neither the Defense Department nor the air force itself were forthcoming in disclosing these costs, and their eventual exposure greatly embarrassed the Pentagon.

Lockheed nearly went under because the C-5A debacle coincided with disasters in all the fields into which it had diversified. It suffered the cancellation of the army Cheyenne helicopter, shipbuilding losses, and the bankruptcy and receivership of Rolls-Royce, which delayed the engines for the L-1011. The government had to bail out Lockheed, an essential contractor, much like Secretary of War Floyd had bailed out Russell in the 1850s. Fortunately, the Lockheed bail out, although extraordinary, was legal and done in accordance with legislation similar to the First War Powers Act.

A later TPPC contract for the F-14, which Grumman believed would be almost a state-of-the-art airplane, had similar results.[39] Both the C-5A and F-14 programs, together with the F-111, were marked by exactly what McNamara sought to prevent: massive cost overruns.[40] Public concern

prompted newly elected President Richard M. Nixon to appoint a blue ribbon commission to study the acquisition process, this one dubbed the Fitzhugh Commission after its chairman, Gilbert W. Fitzhugh of Metropolitan Life Insurance Company.

With its broad charter to examine defense management, the Fitzhugh Commission focused on "defense procurement policies and practices, particularly as they relate to costs, time and quality." Congress and the Fitzhugh Commission thoroughly criticized McNamara's total package approach to procurement. "There is only one approach [to weapons acquisition] that the Panel thought should be generally rejected, as being inconsistent with sound acquisition principles. That is the concept of total package procurement. . . It is difficult to imagine total package procurement of a large weapon system which would be either in the Government's interest or the contractor's interest."[41]

The Nixon administration abandoned the total package contract and dropped the emphasis on incentive contracts, which had not been as effective as McNamara had hoped. The nation returned to cost-reimbursement contracts for development and price-redetermination contracts for initial production with periodic price reviews called "milestones." Just as in the Revolution, the nation searched for the right procurement instrument.

### *The Contractors Change*

The disaster that befell Lockheed with the C-5A was unique in its cause and effect, but other disasters eliminated some defense contractors or caused others to merge to avoid extinction. As people like Charles Bright have noted,[42] the demand for military aircraft slowed during the 1950s. Some traditional aircraft companies began to have difficulty getting contracts for military aircraft and feared that manned combat aircraft would soon go the way of the musket, or at least be less important in sales volume. Curtiss-Wright could not win prime contracts and withdrew from aircraft design. The Martin Company had to be rescued by a loan from the Reconstruction Finance Corporation in 1947. A second government rescue, made mostly with wartime V-loans, occurred when Martin had cash-flow problems during the Korean War. It repeatedly lost bids on military aircraft, and its business evaporated. With the end of flying-boat production in 1959, Martin was, except as a subcontractor or rebuilder, out of the airplane business.

Others tried to develop an expertise in specialty military aircraft to dominate that niche in the market. None of the aircraft companies dared to abandon government contracting altogether, their patron since 1908, but dependence on one or two military products could cause bankruptcy if one or both were suddenly canceled. Boeing and Douglas began producing relatively more and more commercial aircraft. Boeing especially feared the end of its traditional, heavy-bomber business. So, reduced sales for manned combat aircraft plus a fickle customer in a monopsony market forced companies to diversify in the late fifties to gain huge portions of the procurement pie. Diversification swept the industry.

During its struggle to survive, the Martin Company went into the missile and R&D fields and secured a contract for the back-up liquid-fueled ICBM, the Titan. In 1961, it acquired American Marietta Company, a construction and construction materials firm. The new organization became Martin Marietta.

North American entered the missile, R&D, and space exploration fields immediately after World War II. As this penetration of new markets prospered in the 1950s, the company diversified and virtually abandoned the military aircraft market, at least for well over a decade. On September 22, 1967, North American Aviation merged with Rockwell Standard (primarily engaged in the automotive business) into a single company, North American Rockwell Corporation, which was then divided into two major elements, the Commercial Products Group and the Aerospace and Systems Group.

Douglas Aircraft had sold aircraft to the Post Office Department for its airmail service and acquired its first substantial military order of seventy-five observation planes right after the Morrow board convinced Congress to initiate the five-year programs. Douglas survived the 1920s and 1930s because of the five-year programs and later prospered on the basis of its World War II fighter-bombers and transports. After the war, its military aircraft line shrank and crippled profits, but its postwar commercial jetliners enabled it to survive. The military business remained slow. In 1966, Douglas sold only 22 percent of its products to the government, of which one-third was aircraft. Douglas' commercial airliner business skyrocketed in 1966, causing cash problems that its reduced government sales could not offset. Thus, a lack of sufficient diversification contributed to Douglas' failure and its absorption by McDonnell.

McDonnell Aircraft Corporation began as a subcontractor and became a prime contractor in the last years of World War II when it developed the FH Phantom 1, the navy's first jet fighter. From sales of $7 million in 1946, it reached nearly $3.7 billion in 1968. McDonnell entered the missile field and saw the opportunity for manned space flight. It soon worked on a spaceship, and when NASA asked for bids, McDonnell had done the most in design and therefore won the competition for Project Mercury. Concerned over diversification, McDonnell bought up Douglas' shares in 1963 hoping to merge into the commercial airliner field. Douglas repulsed its efforts then, but when Douglas collapsed in 1966, McDonnell tried again and beat the other bidders by offering the largest sum at the earliest time. With the acquisition, McDonnell restored in one company the balance of government and commercial business that Douglas had lost in the fifties.

The biggest diversification story, however, was General Dynamics. In 1947, Electric Boat had acquired Canadair, Limited of Montreal, the largest aircraft manufacturer in Canada. No longer exclusively a submarine builder, in 1952, Electric Boat changed its name to General Dynamics Corporation, retaining the name Electric Boat for its submarine division. In 1954, Convair merged into General Dynamics to build a General Motors of the defense industry. The resulting conglomerate's principal products were military and commercial aircraft, missiles, ships, electronics, and R&D. In 1955, 97 percent of its sales went to the government, but its participation in five product lines for two government markets represented the greatest degree of diversification up to that time. Later to diversify even further, it bought Chrysler's Tank division and created the General Dynamics Land Systems Division, thus making it a major seller to all three services.

General Dynamics and Martin entered the construction business through merger because construction was expected to be countercyclical to defense. As we have seen, Lockheed emulated General Dynamics and tried to become more of a general defense contractor, with almost fatal results.

### *Vietnam and After*

The individual American soldier in Vietnam received about ninety-six pounds of supplies per day, more than twice the amount per man in World War II. An average of 850,000 short tons of supplies arrived each month in Vietnam to supply troops with 10 million field rations, 80,000 tons of ammunition, and 80 million gallons of petroleum products. The army even

contracted some of its construction work in Vietnam to U.S. civilian firms. For two reasons, all this occurred without the traditional mobilization panic that other wars had generated: first, the country had never really demobilized from the Korean War; second the war escalated incrementally and de-escalated the same way. Other than causing increased budgets, its effect on the history of contracting constituted little more than a ripple.

After Vietnam, foreign military sales became more important than in any period since Colt and Remington first breached that market in the 1850s.[43] Although domestic defense procurements dropped from $44 billion (in constant dollars) in 1968 to only $17 billion in 1975, foreign military sales jumped in the first half of the 1970s from about $1.5 billion dollars per year to well over $10 billion per year. Moreover, the sales shifted from old equipment to new first-rate equipment and even manufacturing capability and full "turnkey" plants. Thus, the United States defense industry became dependent on foreign military sales because their magnitude often equaled and sometimes exceeded that of government expenditures. For example, in 1976, 70 percent of Army Missile Command procurements were for foreign military sales; that same year, U.S. military aircraft production was greater for foreign sales than for domestic military needs. By 1988, the Missile Command was buying $8.8 billion worth of foreign military products for forty-nine different countries. The government imposes some political restrictions on such sales, but with the balance of payments problem they have become a tool of fiscal as well as defense policy since 1963.

After Vietnam, the 1970s and the Carter administration represented the calm before the storm in government contracting. Certainly, plenty of huge contracts were awarded, but not as many as the Pentagon wanted. The 1980s and the Reagan administration changed all that. Defense spending soared. The navy benefited most because it had fallen in the late 1970s to pre-World War II levels. So much money was spent that waste and fraud inevitably occurred. Stories of $400 hammers and $7,000 coffee pots infuriated Congress and the public more than anything in contracting since the "Merchants of Death" stories in the 1930s. With each new scandal, Congress, as it has done since the Revolution, held widely publicized hearings and reflexively imposed more rigid controls over the entire process.

Computers now dominated federal contracting and ushered in what Martin Crewald called the Age of Automation. Computers simulate battle conditions, direct fire, and record personnel actions. They are found in

missile cruisers, tanks, aircraft, and on the desks of the lowliest clerk. Contracts to buy, maintain, repair, upgrade, and dispose of them are big business and have spawned their own regulations, commercial publications, and forums. Like aircraft in the 1920s and 1930s, the technology is advancing faster than the procurement system can cope with. Fortunately, the speed of the procurement system itself has increased. Just as the telegraph speeded communications during the Mexican War, now telephones, word processors, fax machines, and electronic mail speed the ability of the government to procure. Ironically, however, despite all these inventions that should speed the process, it takes longer and longer to contract. To paraphrase Lewis Carroll's *Red Queen*, the faster technology could push it, the slower the process got. The reasons for that slowness are the hallmarks of the modern era.

*Chapter 22*

# The Modern Era: A Sea of Paperwork

The military had the gargantuan ASPR, but the civilian agencies lacked a cohesive body of regulation.[1] In a May 1956 letter to Arthur F. Burns, chairman of the Council of Economic Advisors, President Eisenhower created a cabinet committee on small businesses with the duty of "making specific recommendations for administrative actions and, when necessary, for additional legislation to strengthen the economic position of small businesses and to foster their sound development." The committee, chaired by Dr. Burns, included the secretary of defense, the director of the Office of Defense Mobilization, the secretaries of commerce and labor, and the small business administrator. After the committee gave its report on August 7, 1956, the president directed the GSA administrator to review government procurement policies and procedures. The administrator created an interagency task force, composed of two members from GSA, two from the Department of Defense (DOD), and one from the Small Business Administration. That task force recommended the codification of civilian procurement regulations, modeled after the ASPR. These would ensure Government-wide uniformity as much as possible.

GSA announced the establishment of this new system on March 10, 1959. The GSA administrator issued the new Federal Procurement Regulations after coordination with the other federal agencies, which could issue implementing regulations. At a meeting of the agencies on March 19, 1959, Dr. Raymond J. Saulnier, chairman of the Council of Economic Advisors, speaking on behalf of the president, stressed the importance of cooperation to ensure the success of the new system. Since NASA was within the jurisdiction of the Armed Services Procurement Act of 1947 and its own unique statutes, it issued its own set of procurement regulations rather than adopt the ASPR verbatim

Unlike the ASPR, the government designed the FPR to apply to about forty-five independent, often idiosyncratic, civilian agencies. So, the new code spoke in general policy statements or suggestions and left implementation to the various agencies—exactly the reverse of what the ASPR was then

encouraging. Because the eleven-year-old ASPR was already highly sophisticated and complex, however, the fledgling FPR mirrored it, including its numbering system. Therefore, the transformation of the ASPR in its size and purpose was emulated throughout the government. Probably McNamara's most lasting effect on contracting was not the PPBS system. Rather, his pique at the proliferation of regulations and his emphasis on "centralized management" wrought a significant change in the size and contents of the ASPR. The change actually started before McNamara.

The 1960 ASPR was already triple the size of the original ASPR, but two of Secretary McNamara's decisions tripled it yet again. First, he wanted to eliminate unnecessary differences between the procurement policies and procedures of the services. So, in 1963, he created the Reduction in Implementation Plan (RIP) and directed that the individual army, navy, air force, and Defense Supply Agency publications be consolidated in the ASPR. In 1964, work began to eliminate these regulations by doubling the ASPR. Although the separate regulations were not eliminated, they were drastically reduced.

Second, McNamara decided in 1964 to create a single service for all of DOD: the Defense Contract Administration Service (DCAS). This required standardizing contract administration policies and procedures. Critics condemned McNamara's assumption that if purchasing were thoroughly "systematized," it could be conducted with almost precision from the top chair in the Pentagon E-ring. Hypothetically, in any given situation, purchasing agency officials had only to select the appropriate formula, plug in the unknown, and complete the equation.

The size of the ASPR, renamed in 1977 the Defense Acquisition Regulation (DAR), dramatically increased because of Secretary McNamara's centralized management. One commentator stated in 1974 that, of the three thousand pages in the ASPIR, approximately two thousand resulted from McNamara's efforts to consolidate.

ASPR's growth spurt was only the tip of the iceberg. The proliferation of federal agencies, multiplied by the voluminous procurement guidance each felt obliged to promulgate, produced a sea of paperwork. The President's Commission on Government Procurement discovered in 1969 that a typical contracting officer in one echelon of DOD had to consult over five linear feet of procurement regulations and instructions to guide and constrict his

activities. While such a statistic focused on the paperwork engulfing one particular department's contracting officers, the Office of Federal Procurement Policy several years later discovered how widespread this problem had become. In a study of 19 different agencies, in 1978 and 1979, it uncovered 877 different sets of procurement regulations, including directives, bulletins, and instructions, comprising 64,600 pages of regulations (nearly one-half in DOD), 29,900 pages of which were promulgated or revised annually. Eighty-three percent of these were issued from levels below agency headquarters. The authority was so diversified that DOD had 79 different offices issuing procurement regulations, NASA had 22, and the Agriculture Department had 236.

The system was saved from chaos by the strong but unofficial leadership of two entities: the Comptroller General and the ASPR Committee. Their role, however, was part problem and part solution. They drastically increased the number of regulations; at the same time, they enforced or enhanced uniformity, which made the increase more palatable. The Comptroller General's regulatory role was not new. He had been represented on the Interdepartmental Board of Contracts and Adjustments and on the original committees to establish the ASPR. His power stemmed from the ability to resolve bid protests and issue opinions on the legality of payments. This enabled GAO to enforce uniformity despite the welter of regulations. Originally, Congress had intended GSA to be the capstone in the regulatory structure, but it was unequal to the task. Its experience, resources, and power in the area paled beside that of the military. Uniformity resulted only because GSA and the other agencies followed ASPR's lead or complied with GAO recommendations. Although a great deal of interagency coordination occurred before an ASPR provision was promulgated, and the ASPR often adopted provisions from the FPR or NASA, it became the bellwether. The ASPR, FPR, and NASA regulations were often identical or substantially similar. In 1969, the Court of Claims stated that the FPR repeated the ASPR almost verbatim, and the NASA regulations repeated it at least two-thirds verbatim.[2] Industry often appreciated the adoption of ASPR principles, because it required less learning and could, therefore, be implemented more readily.

Although many provisions were identical, the government-wide procurement regulations became so numerous that, even if a small percentage differed, confusion resulted. While the main regulations were basically the same,

differences abounded in the departmental regulations. One prime difference was that ASPR covered matters on which the FPR was silent—for example, options, multiyear contracting, expert and consultant services, production surveillance, and reporting. Not only did differences exist between the military and the civilian agencies, between the civilian agencies themselves, and between the major divisions of the same agency, but even within the same division. For example, some procuring activities of the Public Health Service of the Department of Health, Education, and Welfare included a clause putting ceilings on the overhead rate, while other PHS activities did not.

The size of the regulations and their many differences, however, could not be blamed on the regulators. Approximately four thousand procurement-related statutes, some permanent and some temporary, existed that required implementing regulations. Often these statutes contained "a welter of disparate and confusing restrictions and grants of limited authority." Indeed, the Commission on Government Procurement would later find more than thirty "troublesome" inconsistencies between ASPA and FPASA.

The explosive growth of procurement regulations "literally suffocated" the discretion of contracting officers, because they were told in minute detail how to perform their duties. One effect of the proliferation was described by AEC Commissioner Ramey:

> If you have a system of contracting or administrating where everything is written out on what a fellow should do, and there isn't any room for judgment or discretion . . . over a period of time, you don't tend to get good people that are doing your administration or carrying out your contracts.[3]

Procurement regulations had become a quagmire. Besides their many obvious problems, the DOD noted one other. Revisions 8 and 9 to the 1969 ASPR (published over a seven-month period) totaled 1,664 pages and represented about 53 percent of the total ASPR. DOD estimated the internal costs of posting these changes at $482,000 (72 labor years).[4]

Nor was this proliferation of regulations a boon to contractors, the Office of Federal Procurement Policy admitted. When contracts were only three-and-a-half pages long, as the Wright brothers' contract was, they obviously could not cover all the situations that would arise during performance. In the nineteenth and early twentieth centuries, with so few statutes, regulations,

and standard clauses, courts traditionally had to look to the common law of contracts for guidance. When the government stepped down from the position of sovereign and entered the domain of commerce, it submitted to the same laws that govern businesses.

After World War II, as regulations proliferated, they governed every imaginable situation. Traditional common law concepts and allocations of risk dwindled until, by 1971, one commentator noted that only incidentally did the common law of contracts play any part at all in government contracts.[5] The study of government contract law became a study of public law: how the government, especially the bureaucracy, operates.

More and more clauses continued the trend that had begun gingerly in the nineteenth century, accelerated during the Depression, and pervaded the process in the post-war era. They dealt with socioeconomic matters not directly related to contract performance. The nation now routinely used the tremendous economic leverage of procurement to advance social, economic, or political goals ranging from small business, to contracting in Soviet-controlled areas, to the humane slaughter of livestock.

Many clauses shifted risks to the contractor and used the government's power—with its multibillion-dollar budget—to impose numerous reporting and paperwork requirements. Industry complained that such regulations seemed to emphasize how to prevent the recurrence of a problem rather than how to repeat a success. The focus was more on the process than on the product of acquisitions. The Stanford Research Institute reported in 1963 that the aerospace industry complained that "its technical performance, costs, income, and reputation are being affected adversely by over-regulation, conflicting regulations, ineffective administration of regulations, close and not always capable government surveillance of its activities, and burdening of the procurement process with socioeconomic objectives." As a result the process had become adversarial. This stultifying "over-regulation" made many firms less eager for government business, while some bowed out entirely. "The detrimental impact on government contracting efficiency of the current multiplicity of in-house regulations is exceeded probably only by the detrimental impact on business, small companies in particular, and their ability and desire to do business with the Federal Government."[6]

Contractors particularly despised how the government now intruded on their inner workings. Although the attorney general had advised the president in

1890 that he could not lawfully require contractors to limit the work day to eight hours, by 1970 numerous clauses dictated how contractors should deal with their employees, compute their costs, and manage the workplace. Probably the clearest example of this internal control is the cost regulations, which contain a host of minutiae. They are vitally important to contractors because, despite their guise as instructions to government personnel, they affect how the contractor structures the contract and accounts for costs. Statutes and clauses now enable the Comptroller General and department auditors to prevent a recurrence of the outright refusal of the steel companies to share their cost data. This greater access, plus the Truth in Negotiations Act, have caused great consternation to contractors. In 1967, in response to a DOD request to identify ASPR provisions that generated excessive paperwork, the Aerospace Industries Association filed a long and detailed list but noted that it was by no means complete. Some of its nine member companies, however, did not think that the ASPR itself generated any significant amount of unnecessary or redundant paperwork They unanimously agreed that the individual services generated unnecessary paperwork. As one frustrated contractor testified to Congress: "We are wrapped in paper from end to end and some of it must not be necessary."

The contract form itself changed. The Wright brothers' simple three-and-one-half-page contract is today as much a museum piece as one of Whitney's muskets. Contracts now incorporate, by reference, numerous specifications, clauses, and other requirements. One attorney took all the specifications included by reference in a government contract and had a stack six feet high.

The basic charter of the ASPR has changed, too. Originally, it contained mainly policy, leaving procedures to the departments. Now it includes policies, procedures, instructions, and even subjects that truly are in the nature of "guidance" and "suggestions." Because of ASPR's lodestar position, when it changed from its originally intended purpose, the other regulations soon followed.

All these changes resulted in a growing concern that the typical government contract had become a "contract of adhesion," reflecting a power relationship, not a consensual agreement. As noted earlier, many companies committed themselves entirely to government business. That commitment, including capital equipment, personnel training, tooling, and inventory, all but eliminated the possibility of shifting to other business—which explains

the industry's displeasure with the government's method of enforcing its regulations. Standard clauses in many contracts allowed the government to terminate for default for failure to perform any of its provisions, including those mandated by regulations.

Congress and the agencies lavished attention on contracting statutes and regulations because contracting itself had changed dramatically. Once, peacetime procurement was "essentially a housekeeping activity of minor national significance."[7] Recall the parsimony of contracting in the nineteenth century, when soldiers were ordered to tend gardens to grow their own food. Now contracting had become an "economic leviathan." In 1951, an economist stated that for more than a decade "military appropriations and expenditures have been the principal exogenous factors affecting the levels of employment, output, and expenditure in the economy." Certainly, the bulk of that economic stimulus came from World War II, but America's increased defense commitments and the space program guaranteed the huge influence of government contracting for the foreseeable future.

By 1967, it involved a substantial number of America's major industries, employing at least one-third of the nation's work force. Excluding Atomic Energy Commission or NASA contracts, defense work occupied one-fifth of America's civilian electrical and mechanical engineers, two-fifths of the physicists outside teaching, and three-fifths of aeronautical engineers. Nor did work go to prime contractors only. The use of "flow down" clauses now imposed the government's increasingly specific requirements on various levels of subcontractors.

The products of contracting also expanded. Since the abolition of the contract system in 1819, contracts had been the means by which the government performed its sovereign duties, such as providing ammunition for its soldiers and gasoline for Forest Service vehicles. Now, more and more, the government was "contracting out" such duties, including operating ammunition plants and providing services at military bases, which it believed contractors could do just as well. The Department of Defense initiated the "contracting out" program in 1952. Two years later, in his first budget message to Congress, President Eisenhower announced the use of more "private enterprise Federal activities." The Bureau of the Budget then issued BOB Bulletin No. 55-4, which stated: "It is the general policy of the administration that the Federal Government will not start or carry on any commercial activity to provide a service or product for its own use if such

product or service can be produced from private enterprise through ordinary business channels."[8]

By the 1960s, this use of contracts to fulfill sovereign responsibilities, especially through the extensive use of consulting, had become so advanced that, according to one wag, "if the USAF will tell us their targets, we will deliver the bombs on a cost-plus-fixed-fee contract."[9] Some called government contracting "federalism by contract" or the "Administrative Contract" patterned after the European Contrat Administratif. Thus, the government returned to the broad authority imposed on contractors in the French and Indian War and the colonial period. The perennial question of whether the government should produce or buy what it needed was decidedly answered in favor of buying.

## Commission on Government Procurement

In 1969, the government established the Commission on Government Procurement to scrutinize federal contracting. After the Armed Services Procurement Act of 1947, the commission ranks as the second major event affecting government contracts in the post-war period. It rivals the Dockery Commission in the 1890s and the 1905 Keep Commission. The commission was specifically designed to be bipartisan. Under its enabling statute, President Richard Nixon, the president of the Senate (Vice President Spiro Agnew), and the speaker of the House (Rep. John McCormack) each appointed four members from among the legislative and executive branches and the private sector, with the Comptroller General as a statutory member. The commission set up numerous study groups, including many open meetings held nationwide, and after three years issued a four-volume report.

This study discovered a "burdensome mass and maze of procurement regulations" emanating from too many primary sources, with numerous levels of supplementing and implementing regulations, plus numerous collateral regulations independent of, but still affecting, the procurement process. According to the commission, the Federal Procurement Regulations staff and the Interagency Procurement Policy Committee could not control such a colossus. It recommended a system of uniform procurement regulations, coordinated on a government-wide basis, under the direction of an Office of Federal Procurement Policy (OFPP).

The commission emphasized that a single, government-wide procurement regulation was not required. On the contrary, it concluded that reform could be accomplished through the existing structure, augmented by the direction and control of the OFPP. The commission noted that it had not resolved whether the ASPR or the FPR should predominate, rather, "a working accommodation" had been achieved in areas of mutual interest. The commission recognized that besides the ASPR and the FPR and their implementing regulations, the Atomic Energy Commission, the Central Intelligence Agency, the National Aeronautics and Space Administration, the Tennessee Valley Authority, the Bonneville Power Administration, and the Coast Guard all issued semiautonomous procurement regulations, all somewhat independent of the FPR.

Within the executive agencies, a jungle of regulations stymied procurement efficiency. For example, some regulations issued by subordinate commands, sometimes down to the fourth and fifth levels, imposed several linear feet of instructions for contracting personnel to follow. These not only repeated but also rephrased the higher regulations. Complications also arose from intra-agency collateral policies and procedures governing the funding, source selection, or supply process; these were issued by high-level nonprocurement elements such as comptrollers, auditors, and logisticians. Finally, regulations issued by nonprocuring agencies, although not classified as "procurement regulations," significantly affected the process. These were issued by the Department of Labor, the Small Business Administration, the Environmental Protection Agency, the Office of Management and Budget, and the General Accounting Office.

With no central manager, the commission noted, the various regulations overlapped and conflicted, although some uniformity resulted from the wholesale incorporation of ASPR by the other departments. Any lack of uniformity, however minor, could have serious consequences for the unwary contractor who, accustomed to dealing with one agency, assumed that another agency used exactly the same procedures. Moreover, the potential confusion was not limited to contractors. The Defense Contract Administration Service, which supported all DOD departments plus other agencies, had to adapt to the vagaries of each set of regulations. These differed not only in substance, but also in format, method of publication, and paragraph numbering—which made comparison and analysis especially difficult. The commission concluded that any government-wide coordination

of regulations required extending ASPR coverage to other agencies. It cautioned that, while greater uniformity would be beneficial, without proper management interagency coordination would handicap all agencies in filling their unique needs.

The commissioners made a series of other fundamental recommendations. They said that the two primary procurement statutes, the Federal Property and Administrative Services Act and the Armed Services Procurement Act, should be consolidated to provide a common statutory basis for procurement policies and procedures applicable to all executive agencies. Although the consolidated statute should express a preference for formal advertised procurement, it should not stigmatize negotiated procurement, including other contract types such as cost-reimbursement or incentive contracting.

To avoid the uncoordinated contracting that had plagued the nation since the Revolution, procurement funds should be made available to procuring agencies on a more timely basis—for example, by making greater use of multiyear appropriations. The government should pay contractors faster to avoid costly delays. Uniform government-wide guidelines should be established for determining profit objectives on negotiated contracts.

To eliminate the differences among the various agencies regarding the reimbursability of contract costs, the commission decided that it should establish a set of government-wide cost principles. The Comptroller General should remain a forum for deciding protests against contract awards, but more expeditious deadlines for processing such protests should be established. The procuring agencies' contract appeals boards should be retained and receive subpoena and discovery powers and authority to decide all contract-related disputes, including breach of contract claims. Contractors should have the option to take their disputes directly to the court of claims and federal district courts and obtain a full hearing. Both the government and contractors should be permitted to obtain judicial review of adverse board decisions. Interest should be paid on board and court awards to contractors.

Within six months of the January 1973 release of the commission's report, four bills were introduced in Congress to effect its recommendations. Not all the recommendations were adopted, and certainly not all at once. For example, the Office of Federal Procurement Policy Act was not enacted until several years later. The Contract Disputes Act, which adopted most of the

recommendations of the commission in that area, was not enacted until 1978. The Competition in Contracting Act did not become law until 1984. Nevertheless, for the next ten to fifteen years, the commission's findings and recommendations served as the bedrock upon which all major statutory and regulatory changes were based.

Congress created the Office of Federal Procurement Policy and directed it to establish a system of uniform procurement regulations coordinated on a government-wide basis. The OFPP Administrator also had to prescribe policies and regulations that would be followed by the executive agencies and to establish procedures for public participation in procurement rulemaking.

On July 10, 1980, OFPP established the Federal Acquisition Regulation (FAR) system, with regulations to be issued jointly by GSA, DOD, and NASA pursuant to their own statutory authority. All future regulations would be uniform and agencies were prohibited from issuing any regulations inconsistent with the OFPP act or OFPP policy directives. It created a FAR council, consisting of the senior acquisition officials of eight major procurement departments and the Small Business Administration, to oversee the development, maintenance, and operation of the FAR system. The FAR became effective on April 1, 1984. The day before, on March 30, DOD, GSA, and NASA issued the first Federal Acquisition Circular (FAC) (84-1), amending the FAR.

The "natural jealousies" were still apparent. DOD's FAR Supplement contained almost one thousand pages, more than the FAR itself, excluding those pages reserved for future use. There was no overall civilian agency implementation similar to the FPR, but soon more than twenty agencies had issued interim or final FAR supplements. These supplements added some twelve hundred pages to the seven hundred pages of the FAR. By January 1985, members of Congress were complaining that the agencies' supplements exceeded the FAR in volume. Not only was there a DOD supplement, but each of the services had also issued one. FAR did increase uniformity, but diversity still existed, often caused by statutes aimed solely at the Defense Department.

## The Age of Lawyers and Litigation

The proliferation of procurement rules caused government contracting to gain recognition as a subject specialty. The first book devoted to it came out in 1920. Until World War II, very few volumes added to that body of knowledge, but after the war the floodgates opened. Numerous books, magazines, and newsletters explored the subject, with more appearing every day. Whole companies are devoted entirely to publishing and lecturing on government contracts; colleges and law schools have courses on it and grant degrees in it. The American Bar Association even has a separate section devoted to it. One commentator estimated that from 1938 to 1963 approximately five thousand court decisions, boards of contract appeals rulings, and Comptroller General opinions were issued modifying this relatively new and specialized field of law.[10] The boards of contract appeals, which had been started informally during the Civil War, now existed as statutorily recognized creations with full-time judges, elaborate procedures, and published decisions.

When rules are concise, confusion, and disputes are minimal. As rules increase, however, the odds for confusion and disputes also increase—hence the need for lawyers, who make their livings off the mistakes, inconsistencies, and ambiguities of others. That brings us to the other symbol of modern contracting the lawsuit. Contractors or unsuccessful bidders now have a specific vehicle with which to attack procurement decisions. By alleging a violation of certain procurement regulations, they have greater access to the courtroom. In trying to ensure the maximum possible competition and avoid favoritism, Congress has given contractors a variety of judicial remedies for violations of procurement statutes and regulations.

When the procurement regulations were only several pages long, it mattered little whether they were viewed as law or instructions. Contracting officers, fettered by so few regulations, operated with extremely broad discretion, and their decisions were fairly invulnerable to attack. Now, regulations became not only more numerous but more important.

For over a hundred years, properly authorized regulations had had the force and effect of law. That status, apparently, did not apply to procurement regulations. These were viewed as proprietary, instructional, housekeeping directives issued solely for the use and benefit of the government, imposing

conditions to which the public had no standing to object and affording the public no right to participate in their promulgation, because no one had a legal right to a government contract. Although many other cases and events illustrate and support this concept, it is best embodied in *Perkins v. Lukens Steel Co.*,[11] one of the comparatively few Supreme Court decisions that have profoundly affected government contract law. Lukens Steel, issued in 1940, definitized the notion that procurement regulations were proprietary and instructional, stating that "the Government may for the purpose of keeping its own house in order lay down guideposts by which its agents are to proceed in the procurement of supplies, and which create duties to the Government alone." The court continued that Congress did no more than instruct its agents by the Walsh-Healey Public Contracts Act, and Revised Statute 3709 conferred no enforceable rights upon prospective bidders. For a violation of these instructions, "the agent is responsible to his principal alone because his misconstruction violates no duty he owes to any but his principal."[12]

That belief eroded slowly until, in 1963, the Supreme Court in *Paul v. United States*[13] and the Court of Claims in *G. L. Christian & Assocs. v. United States*.[14] pronounced that procurement regulations have the force of law. As a result, contractors could attack decisions of contracting officers that violated regulations. Issuing a solicitation became not merely the excuse for a lawsuit but the starting gun for a series of lawsuits spread over years, in different forums, asking for different contractual, civil, and criminal remedies by a host of parties. Contractors and other interested parties could protest the solicitation and challenge the award in a variety of forums. The winning contractor could then dispute performance issues in other forums. Even after the (supposedly) final payment, the parties could litigate many other issues, such as whether cost or pricing data were properly submitted. In addition to the government and the contractor, third parties could sue, under laws established during the Civil War, for a portion of whatever money the government ultimately collected. Also, more than ever, the process became criminalized. One commentator has estimated that government contracts lawyers now spread their time evenly among protests to contract awards, contract performance disputes, and criminal prosecutions over contract matters. This sea of paperwork and the way in which litigation has encrusted itself like a barnacle onto the contracting process are the major factors that differ today from the way it has been practiced for over two hundred years.

Notwithstanding these changes, striking similarities persist. For example, according to a report in the *Washington Post* of December 17, 1989, the navy contracted with a Charleston, South Carolina, firm to develop a common language that would allow every part of the manufacturing process to be guided by computers. The government and industry were vitally interested in this technology that would lead the country into a "new realm of sophistication in the world of computerized machinery." Compare that with the role of the Ordnance Department in developing the American system of mass production.

On June 14, 1988, federal agents stormed into the offices of fourteen defense contractors, served search warrants, and seized evidence in the nationwide "Ill Wind" investigation. Compare that with the seizure by federal agents of the records of aircraft companies regarding the Spoils Conference in the 1930s.

In 1985, the army issued a regulation implementing the Logistics Civil Augmentation Program (LOGCAP) for contractors to perform combat support and combat service support activities in wartime, augment army forces, and relieve military units for other missions. Compare that with the tremendous responsibility imposed on contractors in the French and Indian War, the Revolution, and up until the 1820s.

After the Fitzhugh Commission came the Grace Commission and the Packard Commission. Compare their findings with the Doçkery Commission of the 1890s. You come to the realization that, although items have become more expensive and complicated, the procurement process itself—with all its successes and scandals—has remained remarkably the same.

*Chapter 23*

# The Modern Age—The 1980s and 1990s

In the last 15 years, Americans have become accustomed to a furious pace (who knew in the 1970s what "nanosecond" meant?). Computers, faxes, and advances in travel have accelerated all human activities, including the contracting process. The last decade and a half witnessed almost a microcosm of the history of government contracts: from scandal, to reform, to moderation from the reform. Pendulum swings that used to take decades now occurred within two to three years.

I have divided these years into three segments: 1983–1989, 1989–1993, 1993–1998. Such divisions are obviously subjective, arbitrary and artificial but do, I think, reflect that each period had a vastly different theme.

From 1983 to 1989 the country experienced a collective angst that fraud and inefficiency permeated government contracting. Acting on that premise, Congress and the agencies tried behavior modification on a grand scale, adding dramatically to the process' paperwork, complexity, and risks to institute enough safeguards to thwart mistakes and criminal actions. Professor William Kovacic, one of the most astute observers of government contracts, points out that the 1980s revisions made three basic assumptions about the procurement system: (1) government purchasing officials lacked the ability to choose suppliers as wisely as their private sector counterparts; (2) government purchasing officials needed greater tools to identify and prosecute contractor misconduct; (3) contractors were beset by sloth and corruption.[1]

Between 1989 to 1993 came the recognition that such harsh medicines caused some unpleasant side effects. Government contracting had become so paperladen and fraught with financial and criminal risk that contractors shunned federal business or inflated their bids to compensate.

To redress these problems, reforms came from 1993 to 1998 in which streamlining and simplifying the process became the goal.

## 1983–1989—Huge Amounts, Big Scandals, Fearsome Remedies

The federal government spent more than half of its discretionary budget on buying goods and services from the private sector. Between fiscal years 1972 and 1982, the dollar value of government contracts had almost tripled from $57.5 billion to $158.9 billion[2] and then skyrocketed from there.

By the mid-1980s, the Pentagon was spending more than ever before in peacetime as the Reagan buildup was in full steam. The Defense Department was disbursing some $30 million dollars every hour, twenty-four hours a day, seven days a week.[3] It soon became obvious that not all of those huge sums were spent wisely.

In 1983 the country read news accounts and watched congressional hearings about procurements of $400 hammers, $700 toilet seats, $2,000 pliers, and $9,000 wrenches. The Pentagon was paying $18 for a $.67 cent bulb and five hundred percent markups on aircraft engine parts. An ashtray for a Navy Hawkeye Radar Plane cost $600. A coffee brewer on the C-5A Transport cost $7,400, because Air Force specifications required it to be sturdy enough to survive a crash; the commercial version cost $283.[4] Explanations sometimes existed but did not matter. The disclosures made lawmakers and taxpayers apoplectic.

Congress saw inadequate competition as the root cause of such inflated prices. Out of $146.9 billion awarded by government agencies in fiscal year 1982 for contracts over $10,000, only $54.4 billion was awarded competitively.[5]

Alarmed by the huge sums and appalled by the scandals, Congress prescribed a cure.

### *The Competition in Contracting Act*

In 1984, Congress enacted the Competition in Contracting Act (CICA),[6] which implemented many of the recommendations of the Commission on Government Contracting from the 1970s.[7] CICA required agencies to obtain "full and open" competition—the new hallmark of government contracting—so taxpayers received the best possible value for their funds. To ensure that all responsible sources could submit sealed bids or competitive proposals, Congress mandated extensive requirements for advertising, and struck down

obstacles to competition. This completed a philosophical shift from the earliest days of the country. Now, while no one had a right to a government contract; everyone has a right to know about and compete for government contracts.

Believing that a strong mechanism was needed to enforce competition, Congress enlisted a powerful and unlimited army—disgruntled competitors! CICA strengthened the protest process, providing (for the first time) a specific statutory basis for the General Accounting Office to hear bid protests and provided a separate forum, the General Services Administration Board of Contract Appeals, for protests of automatic data processing equipment.

If Congress thought more protests would check abuses and assure the health of the system, it got its wish. The number of protests filed with the General Accounting Office set a record each year: 2,891 in fiscal year 1986; 2,941 in fiscal year 1987; 2,943 in fiscal year 1988. But the result was slower procurements, more paperwork, and more expense for both contractors and the government.

### *The Packard Commission*

CICA did not cure all the perceived ills. A GAO report entitled "DOD Fraud Investigations—Characteristics, Sanctions, and Prevention" analyzed several hundred fraud cases referred for prosecution during fiscal years 1984 and 1985. The report named theft as the most common procurement fraud, followed by defective pricing. Over half of the top 100 defense contractors were enmeshed in approximately 200 fraud investigations and nearly 100 individuals and companies had been indicted in the product substitution area alone.[8]

To restore public confidence in the effectiveness of defense contracting, President Reagan and Congress created the President's Blue Ribbon Commission on Defense Management.[9] To head the Commission, President Reagan selected David Packard, Chairman of the Board of Hewlett Packard Company and former Deputy Defense Secretary.[10]

The Packard Commission, as it was known, delivered its massive report in June 1986. Chapter Four of the report listed the concerns that it hoped to address. Those concerns, derived from a survey conducted for the Commission, provide a snapshot of America's perception of the process.

Americans had lost faith in the system which produced World War II's arsenal of democracy. On average, the public believed almost half the defense budget was lost to waste and fraud, split about evenly between the two evils. Both sides, but especially contractors, were perceived as dishonest and incompetent.

To combat such impressions, the Commission urged a massive overhaul of the process.[11] Two recommendations were paramount: DOD should buy more "off the shelf" systems and services and Congress should simplify the federal procurement laws. The report stated:

> The legal regime for defense acquisition is today impossibly cumbersome. . . . At operating levels within DOD, it is now virtually impossible to assimilate new legislative or regulatory refinements promptly or effectively. For these reasons, we recommended that Congress work with the administration to recodify federal laws governing procurement into a single, consistent, and greatly simplified procurement statute.[12]

Presented with this blueprint, DOD implemented only a portion of the report—sections on industry accountability and suspension and debarment.[13] That fit a pattern that worried Congress.

A 1988 Congressional Report lamented that the Packard Commission marked the sixth major study of defense acquisition over four decades and was merely the latest to address recurring problems. House Armed Services Committee Chairman Les Aspin stated in his foreword to the report, "Perhaps the next executive commission on acquisition should be created, not to propose the reforms, but to implement them."[14]

### *Operation Ill Wind*

As if to confirm the fears of the critics, the astronomical sums being spent produced an equally huge scandal.

At nine a.m. on June 14, 1988, hundreds of FBI agents, spread over 44 sites, from trendy southern California suburbs to corporate marketing offices a few blocks from the White House, from military facilities to private homes, received a radio signal to begin a search and seizure operation.[15]

The government thus unveiled Operation Ill Wind—its investigation into defense contract fraud, bribery, and improper disclosure of competitive

information. The two-year effort culminated in search warrants and grand jury subpoenas for some of the most prominent government contractors.

The Justice Department grabbed well over two million documents; intercepted more than seventy-six thousand phone calls on more than three dozen court-approved wiretaps from California to New York. Truckloads of seized evidence jammed leased warehouses. The FBI had to develop a sophisticated computer network to keep track of it all. At the peak of the effort, United States Attorney Henry Hudson led an army of nearly one thousand investigators and prosecutors.

Operation Ill Wind snared numerous executives, and led to the imprisonment of an assistant secretary of the navy, a top procurement official. The scandal, while not as large as other disgraces in government contracting history, sent a shock wave through the system.

The scandal exposed two flaws. Government officials improperly steered contracts to preferred contractors (often favored solely because they had hired the right consultant). A second aspect was the free-wheeling way that consultants and industry marketers could acquire classified information regarding what the Pentagon planned to buy, when it planned to buy it, and how much money was available to buy it—well in advance of the data being publicly available. Some of these disclosures included their competitors' bids.

### *The Procurement Integrity Act*

Operation Ill Wind sparked the response that has occurred so often in the history of government contracts. Congress passed the Office of Federal Procurement Policy Act Amendments of 1988.[16] Much of what the act did was salutary, but much was punitive and provided criminal, civil, administrative, and contractual remedies against contractors who violated its tenets.

Since World War II, Congress had sought to make procurement uniform throughout the executive branch. Section 4 of the Act continued that trend. It established a Federal Acquisition Regulatory Council composed of the Office of Federal Procurement Policy (OFPP) Administrator, the Secretary of Defense, and the Administrators of the National Aeronautics and Space Administration and GSA to assist in directing and coordinating government-wide procurement policy. The Act directed the OFPP Administrator to assure

that agency procurement regulations were consistent with the Federal Acquisition Regulation.

In Section 6 of the legislation, known as the Procurement Integrity Act, Congress addressed "the seedy trade of favors and information."[17] Senator John Glenn of Ohio was more specific—the purpose of the Act was to break the back of the "old boy" network where consultants garnered information and favors to give individual contractors an unfair advantage over their more scrupulous competitors.[18]

The Procurement Integrity Act sought to slam the door on improper disclosure of procurement information. It imposed prison terms not exceeding five years, plus fines of $100,000 for individuals and $1 million for contractors, for knowingly and willingly soliciting or obtaining proprietary or source selection information from an agency employee during the conduct of a procurement. The Act also provided criminal penalties of up to five years imprisonment on government personnel who improperly disclosed procurement information.[19]

The Act had a chilling effect on communications between industry and government officials at a time when such communications were most needed, i.e., when the electronics and information revolution was in full swing. GAO reported that one well-known national contractor required its procurement personnel to ask government officials good faith inquiry questions from a Miranda-type warning card before every meeting.[20]

Nor was that all Congress planned. The Procurement Integrity Act intersected two trends that dominated this period: criminalization of the process and intensive management.

### *Criminalization*

Fraud appeared rampant in government contracting. So, it was attacked at several levels.

Several developments accelerated the criminalization of government contracting. First, as the Packard Commission confirmed, in overwhelming numbers, Americans supported imposing serious penalties on contractors to reduce waste and fraud. So, secure in the knowledge that the public supported them, more prosecutors aggressively went after procurement misconduct. Addressing the Federal Bar Association on September 12, 1985, the former

United States Attorney for the Eastern District of Virginia acknowledged that "We are treating as criminal, [conduct] that ten years ago was not considered criminal."[21] Prosecuting contractors became such a top priority that Government auditors were urged to "think fraud" whenever they audited a contractor.[22]

Second, the courts expanded corporate criminal liability to an unprecedented level through the use of the collective knowledge doctrine.[23] Several courts found corporations liable for an employee's misdeeds, even when the corporation received no benefit from the conduct, so long as the employee intended to benefit the corporation.[24]

Third, after hearing the testimony of the DOD Inspector General that 45 of the 100 largest defense contractors were under investigation for multiple fraud offenses,[25] Congress gave agency Inspectors General and auditors expanded audit power and authority to issue subpoenas to further Justice Department probes.[26]

Fourth, Congress gave prosecutors more statutory weapons and amended older statutes to make them more severe. Every year from the mid-1980s to 1992 seemed to bring more federal statutes criminalizing certain activities and implementing more stringent audit requirements, including making it a felony to obstruct a federal audit.[27]

The 99th Congress broadened the criminalization of the process by increasing the maximum criminal and civil penalties for false claims,[28] enacting the Program Fraud Civil Remedies Act of 1986 and the 1986 Anti-Kickback Enforcement Act.[29] That Congress then passed the baton to the next Congress.

The 100th Congress passed 10 major procurement laws, including one which created an offense called "Major Fraud Against the United States."[30] The new law applied to contractors, knowingly trying to defraud the United States on a contract valued at $1,000,000 or more. Significantly, Congress extended the statute of limitations to seven years after the offense is committed.

To enforce all these new laws and ferret out the layers of fraud assumed to be endemic in the system, Congress recruited and unleashed a second army. It amended the old Abraham Lincoln Act[31] especially its bounty hunters section.[32]

### False Claims Act Amendments

On October 27, 1986, President Reagan signed the False Claims Amendments Act of 1986 (FCA)[33] which escalated the war on fraud against the government. In passing the amendments, Congress meant to provide the government with "a more useful tool against fraud" and "to encourage any individual knowing of government fraud to bring that information forward."[34]

Besides raising the civil penalty for presenting a false claim, plus treble the damages sustained by the government, the FCA eased the government's burden of proof; and increased the number of investigators/prosecutors. It stated that "no proof of specific intent at fraud is required" intending to eliminate the "ostrich with his head in the sand" defense.[35]

Congress also enhanced the Qui Tam provision to make it more attractive for plaintiffs to bring actions under the Act. The FCA increased a private plaintiff's share of recovery to between 15 and 25 percent (up from 10 percent) if the government continues in the case and between 25 and 30 percent (up from 25 percent) if the government does not proceed with the action.

Lawsuits accelerated. Between the passage of the 1986 FCA and August 1991, more than 350 Qui Tam actions were filed. The government recovered $260 million under the FCA in fiscal year 1990 alone.[36] In 1989, the Act created its first millionaire. The Justice Department settled for $14.3 million, charges that a contractor had overcharged the Air Force and Navy for ball bearings. As a result, the contractor's former employee who started the case received a reward of $1.4 million.[37]

In 1994, criminal fines and civil recoveries from the defense industry reached a record $1.2 Billion, eleven times the annual rate during the mid-1980s. In one nine-month period, suppliers returned some $1.4 billion in overpayments to the Pentagon.[38] Nearly 70 of the top 100 Pentagon suppliers were under investigation by the Inspector General's staff, a larger percentage than ever before.

No one can dispute that the amounts recovered are substantial, but the trauma to the system was tremendous. As with protests, intermixed with the genuine substantive lawsuits that garnered the recoupments were many frivolous

lawsuits often initiated by plaintiffs with ulterior motives. Many were simply disgruntled employees anxious to inflict pain on the companies.

### *Intensive Congressional Management*

Besides enacting more criminal laws, Congress intensively managed the process to save it from the assaults of criminals and incompetents. Agency officials often castigated Congressional efforts to "micro-manage" the federal procurement system—but that is pejorative and self-serving. The agencies brought it upon themselves by not heeding the recommendations of the post World War II commissions. Even before Ill Wind, one Congressional member stated: "The drumbeat of new stories about $600 ashtrays and $700 toilet seats is symptomatic of another failure of the Defense Department to exercise proper oversight of Pentagon procurement contracts and the failure of all of us in the House to perform our oversight responsibility."[39]

Professor John Whelan listed 22 major procurement statutes enacted between 1984 and 1989.[40] (I emphasize that these are major procurement acts, not merely appropriations or authorization statutes with some piddling reference to procurement.) Indeed, so many changes were coming so fast that the President, the Packard Commission, and the commentators recommended at least a brief period without new procurement reform legislation.[41]

Congress did not take the hint. Congress channeled its efforts in two directions: (1) closing the "revolving door" between government and industry by toughening the safeguards for employment of government personnel; and (2) costs.

The 1987 DOD Authorization Act,[42] the 1988 Procurement Integrity Act, and the 1990 Ethics Reform Act[43] all imposed "revolving door" restrictions for government employees and detailed who contractors could or could not hire.

In reaction to allegations of contractors improperly charging expenses, such as the cost of kenneling dogs, to the government, Congress took special interest in contractor's costs, both direct and indirect, and made expressly unallowable many costs legitimately incurred and even deductible under income tax regulations. These could range from employee morale funds, advertising, and a host of other expenses.[44] Such actions succeeded in increasing the risks and lowering the profits.

The avalanche of new rules required an army to keep track. One management consulting firm estimated that in the 1980s more than 500,000 government officials monitored the defense industry besides the 50 or so Congressional subcommittees that were supposed to be ride herd on the entire procedure.[45] As the head of one defense company once declared in frustration: "Government regulators, not company managers, are running the shop. . . . The only real freedom I have is the freedom not to bid."[46]

Many officials recognized the danger. Undersecretary of Defense John A. Betti complained that there "has been the creation of an army of lawyers, auditors and inspectors that act as if behavior can best be controlled and monitored through rules and regulations. . . . We've learned that process . . . won't work for ethics."[47]

One other problem became obvious especially at the start of the Bush and Clinton administrations. Finding people willing to accept high level positions became difficult because the restrictions on post government employment were so great that many feared they would be functionally unemployable after government service.

## 1989–1993 The Pendulum Swings

Technology changed government contracting and not only because the government was buying more and more computers.

Remember in the 1920s and 1930s, the government first purchased a technology that was advancing faster than its procurement process could handle. That technology was airplanes. In the 1970s, 1980s, and 1990s, information technology exploded so quickly, it simply outpaced the most efficient acquisitions. Often, when the technology was delivered, but sometimes even by the time the contract was awarded, (especially including the time for the proliferating protests) the specified items had become outdated. The process had to be accelerated.

The information technology industry changed government contracting in one other striking fashion: it was the primary (but by no means sole) example of an industry that decided government contracting was not worth the trouble. In the late 1960s, approximately 75 percent of the microchips produced in this country were for the Defense Department. By the 1990s, less than one-half of one percent were made for the government. Numerous contractors found they

could sell their wares very profitably without dealing with the federal government and all its hassles.

There were two reasons for this. Government contracting fell victim to its own success. From the early 1800s, one of its goals was to diffuse information throughout society. Its earliest success was machine tools and the concept of mass production when only the government bought enough for a seller to mass produce. After the civil war, industry used its newly developed mass production techniques to start the huge department stores and mail order houses such as Sears & Roebuck.[48]

After World War II, the confluence of an incredible mass production capacity and piles of cash stockpiled during the war by consumers meant the greatest and longest boom in history. Gradually, many contractors, especially sellers of commercial items, found other customers, including many who made larger purchases than government agencies and without all the extra risks and hassles. The government's share of the market shrank while the amount it had to spend also decreased—a double whammy!

### *The Procurement Budget Shrinks*

From fiscal year 1985, the height of the Reagan buildup, to fiscal year 1993, the procurement budget declined 57 percent in real terms, falling from $127 billion to $54 billion.[49] The defense budget (the perennial driver of government contracting) dropped substantially because the main adversary had imploded. The collapse of the Soviet Union resulted in the "downsizing" of the defense industry with major programs and contracts being reduced, delayed, or terminated.

In its July 15, 1991 issue, *Newsweek* spotlighted a problem. "With the cold war over and budget pressures intense, the Department of Defense faces a long-term financial squeeze. Procurement . . . funding was halved from 1985 to 1991 and is projected to drop 12 billion in the next three years."[50]

The emphasis shifted from the 1980s "Reform" as every year major legislation changed how the government bought its goods and service to "Cuts" as both the legislative and executive branches tried to carve up the procurement budget to reflect the changing world scene.

In the first session of the 102nd Congress, Congress passed only (only!) eight new laws directly affecting government contractors out of nearly 200 that were introduced, and five of those were appropriation acts. When Congress reconvened for the second session, President Bush had designed his budget request to reduce defense spending by at least $50 billion over the next three fiscal years but many members of Congress wanted to trim it even further.

The *Wall Street Journal* of May 2, 1994, reported that the net income of leading aerospace and defense firms declined 55 percent in the first quarter of 1994 compared to the first quarter of 1993.

Government business became much less attractive.[51] The government was not only no longer the biggest customer, it was more trouble than it was worth!

### Paperwork

The government had less money to spend while the purchases of other customers grew larger. Besides the criminal and financial risks imposed, the process was cumbersome and discouraged many from government contracting. Seventy-nine separate offices issued voluminous acquisition regulations. The volume of rules equaled five times the length of Leo Tolstoy's novel *War and Peace*. The Army had fifteen pages of specifications for sugar cookies. And Lockheed, when it submitted a bid to build a new transport plane, delivered a package of papers weighing three tons.[52]

Almost 70 percent of the respondents to one survey[53] identified burdensome paperwork as a leading problem in dealing with the Government. They specifically cited multiple forms, all the documentation needed to qualify as a bidder, the need for special office arrangements and specialized personnel to process paperwork, the lack of relevance of documents to the firm's product, the particularly constraining levels of bidding, inspection, and quality assurance requirements, and the recurring inconsistency between specifications and statements of work. One respondent stated that a recent quote on a government job required three weeks and 100 pages of paperwork in contrast to a similar commercial job that required three hours and 10 pages of paperwork.[54]

A 1992 study by the American Defense Preparedness Association found that acquisition laws represented the apex of a "cascading pyramid" of stricter regulations, overly-detailed military specifications, and common procurement

practices that typically added 30 percent to 50 percent of the costs of doing business with the Department of Defense.[55] The problem had become so widespread that many contractors and government officials searched for ways to use vehicles other than procurement contracts to acquire needed goods and services.[56]

Many of the high tech industries were not interested in dealing with the government. "I don't know anybody who is anxious to do business with the Department of Defense other than people who are in effect captive," said Thomas Murrin, Dean of Duquesne University's Business School.[57] Alcoa, the aluminum giant, had developed special alloys for airplane manufacturing, but Alcoa wasn't eager to trade with the Pentagon because it feared the disclosure of its technology.[58]

Jacques Gansler, a former electronics industry executive and Pentagon official, stated, "In the past, defense in most areas was really a leader in technology. . . . Today I would say that in many areas of electronics, defense is no longer the leader." To prove Gansler's statement, in the Persian Gulf war, a tank crew was so dissatisfied with the Army's navigational gear that it had their families send global positioning systems—satellite receivers—from electronic stores back home. Reporters covered the action with newfangled satellite telephones while many troops were using old field radios.

Agency officials argued that the ever growing body of law and regulation plus the spiraling investigations and audits impeded even modestly efficient operations by contractors. The unprecedented confrontational atmosphere among Congress, the agencies and industry had led to gross mistrust and a significant erosion in the number of reputable companies willing to enter the defense marketplace.

The combination of these factors: greater criminal and civil risks, cost limitations, decreased purchases, a greater consumer demand and increased paperwork had two effects: many contractors simply left the business and those that remained merged for survival. The result fewer contractors. Ironically, the Congress which had touted full and open competition had enacted laws to scare competitors away.

The problems did not only affect contractors but government officials who also had to be assured of complying with the laws or risk violating those same criminal laws. This affected the ability to function.

Donald A. Hicks, Undersecretary of Defense for Research and Engineering, told the U.S. Army during the Gulf War to place an emergency order for 6,000 commercial radio receivers, waiving all military requirements and specifications. However, because of the ever-present threat of second guessing once that urgency had faded, no responsible government official could be found who would waive the requirement for the company to certify that the Army was being offered the lowest available price. Since the radio was widely marketed and any mistake might constitute a felony, no company official would make the certification. The impasse was resolved only when the Japanese government bought the radios without a price certification, donated them to the U.S. Army, and credited the purchase against Japan's financial contribution for operation Desert Storm.[59]

Knowledgeable observers in the agencies and Congress realized it was time to stop pointing fingers at each other over who caused the problems and agree to work together to solve them.

### *Loss of Contractors*

Even during the Reagan buildup, contractors had started to peel away from government business to other more profitable and less stressful customers. On May 17, 1989, the Center for Strategic and International Studies reported that the number of domestic firms willing to sell to the Department of Defense shrank by two-thirds from 1982 to 1987, even though procurement funding nearly doubled in the same period from $43.3 billion to $80.7 billion.[60]

By 1991, the problem had become so acute that a journal article compared defense contractors to an endangered species, spotted owls.[61] The article discussed the specific losses being suffered by prime contractors as a result of the fixed price development contracts and total package procurements that were pushed on industry during the past six years. Over half of the firms that were part of the defense industrial base had disappeared from government contracting over the preceding three to four years. Experts projected that two in five of the nation's 1.5 million defense manufacturing workers would lose their jobs in the next decade and that few blue collar workers can match their defense industry wages in the commercial sector.

A study by the Air Force Association noted that the industrial base that supported Desert Storm so well no longer existed. "Even as the nation watched the war on television, the companies that produced the impressive

weapons were releasing workers, closing plants, and searching for nondefense business."[62] The same study found that the change in the marketplace was not due solely to the downturn in defense spending.

> Firms, particularly subcontractors and suppliers of system components, are moving from defense to the commercial market, where the profits are better and where business is conducted in a more stable, less adversarial manner.[63]

Assistant Secretary of the Army Stephen Conver bluntly warned that "There is a significant danger that the industrial base that supports the Army will erode to the point that when it comes time to build the next generation of systems . . . in the late part of this decade, the industry won't be there to support us."[64] Deputy Defense Secretary William Perry (later Defense Secretary) projected that the "defense industrial base would contract to one-third of what it was in the mid-1980s."[65]

The industrial base was not only shrinking; it was transforming. To survive in the marketplace, more contractors merged and acquired other companies than at any time since the 1950s. One study estimated that more than 75 percent of defense contractors would either merge into other firms or exit the industry before the end of decade.[66] In the early 1990s, IBM Federal Systems, General Electric Aerospace, General Dynamics Corporation, Northrop Grumman, and Lockheed Martin to name only a few had been the subject of mergers or acquisitions.[67] Antitrust law became a necessary sub specialty for many government contracts lawyers.

### *Service Contracts Predominate*

The federal marketplace had been transformed. There were fewer sellers and a less affluent buyer. More important for long range planning, what was bought and sold in that marketplace had changed fundamentally.

The nature of the procurement in many cases has become infinitely more complex. As Deputy Defense Secretary Donald Atwood stated, "The electronic revolution is upon us." The Pentagon expected to do more with less because of high technology that would make the heralded hardware of the Persian Gulf War "look like yesterday's toys."[68]

The procurement statutes and regulations and the mind set of many procurement officials had focused on a manufacturing environment.

Contractors were given detailed specifications and the government verified that they had followed these exactly, often with the go/no gauges developed early in the history.[69] That had changed.

In 1990, the Government purchased more goods than services. In 1995, however, the Government purchased $80 billion of services but only $65 billion of goods.[70] By 1996, total government spending on commercial support service contracts had exceeded $114 billion. DOD prime contracts declined 35 percent from 1988 to 1997 and prime contract awards shrank from $164 billion to $107 billion. Despite that drop, the award of prime contracts for services rose from $40 billion to $42 billion. One reason was the downsizing of the federal workforce from 2.25 million civilian workers in 1990 to approximately 1.9 million in 1996. The decades old philosophy of relying more on civilian services had accelerated, especially after 1987.

President Reagan issued Executive Order 12615 on November 23, 1987,[71] directing government agency heads to insure that new government requirements for services be obtained from private industry except where (a) statute and national security required government performance, or (b) private industry costs were unreasonable. The services ranged from the mundane (janitorial, maintenance) to the sublime (consulting contracts for the most sophisticated analytical projects).

Imposing the traditional procurement rules on such a changing marketplace resulted in a system that was so inflexible, it straitjacketed the ingenuity of the problem solvers it was now hiring via its contracts.

## Reform—1993 to the Present

The combination of all these different forces had a drastic effect. In most of the studies done by the Defense Department and others, Congress discovered that many contractors, including many good contractors, simply refused to take government business. Those that would, routinely inflated their bids to cover unique federal rules, such as the Truth in Negotiations Act, that added nothing to the value of the good or service being provided, but encrusted numerous costs onto the price, possibly as high as fifty percent.

Professor Kovacic notes that the 1990s reforms reveal a long overdue awareness that procurement regulation is not free. One cost is that idiosyncratic procurement strictures discourage commercial firms from

government business. A second cost is the expense associated with complying with the demands of the regulatory state.[72]

In June 1989, Secretary of Defense Richard Cheney had ordered a Defense Management Review to dust off the recommendations of the Packard Commission and implement them. The DMR specifically endorsed one Packard Commission finding—the need for broad changes in the acquisition statutes:

> With the enactment of additional major legislation since 1986, when the Packard commission finished its work, there is increased urgency to addressing the body of procurement laws in its totality in order to simplify and clarify the framework under which DOD and other departments operate, and more broadly . . . to make the acquisition process fundamentally more effective.[73]

### *Section 800 Panel*

In Section 800 of the National Defense Authorization Act for Fiscal Year 1991.[74] Congress directed the Department of Defense to establish an advisory panel of at least nine experts in procurement law and policy (with diverse experience in the public and private sectors) to recommend how best to repeal, amend, streamline, and codify the defense acquisition laws.

With the implosion of the Soviet Union, the panel concentrated on streamlining the process in the 1990s "when dollars were expected to be fewer, work forces smaller, and superpower security threats less urgent." It considered nearly 900 laws and selected 600 for thorough review.

On January 12, 1993, the Section 800 Panel released a nine-volume report entitled "Streamlining Defense Acquisition Law." Besides recommending numerous reforms, particularly in the area of commercial item acquisition, the panel recommended amending 163 statutes and repealing 135 others. To overhaul the federal procurement system, it recommended that Congress enact new laws in a manner that "[reverses] a perceived trend toward the incremental enactment of procurement statutes without a clear analysis of their impact on the overall acquisition system."[75]

The report might have suffered the same fate as did so many other such reports; but eight days later, a new administration took over that proved very receptive to its recommendations. One month after becoming president and

frustrated over the way the Government operates, Bill Clinton was quoted as lamenting that the federal procurement system "would have broken Einstein's brain."[76]

### National Performance Review

1993 was a watershed year for procurement reform. The Section 800 report was the first of three events which coalesced to transform the system.

On March 3, 1993, President Clinton announced that Vice President Al Gore would lead an effort, called the National Performance Review (NPR), to improve the federal government's operations. Clinton stated: "Our goal is to make the entire federal government both less expensive and more efficient, and to change the culture of our national bureaucracy away from complacency and entitlement toward initiative and empowerment."

On September 7, 1993, Vice President Gore's Report on the National Performance Review stated that "federal procurement officers frequently purchase low quality items, or even wrong items, that arrive too late or not at all, and that the government spends too much for needed supplies and equipment." The NPR severely criticized many acquisition practices and recommended a number of legislative and regulatory measures to reform the acquisition system.

The report committed the Clinton Administration to rewrite the 1,600 page Federal Acquisition Regulation and the 2,900 pages of agency supplements that accompany it. The new regulation would, among other things, shift from rigid rules to guiding principles, promote decisionmaking at the lowest possible level, end unnecessary regulatory requirements, and facilitate innovative contracting approaches.

To implement these reforms, the movement needed a champion. Two months after the September 1993 publication of Gore's National Performance Report came the confirmation of Steven Kelman as the new OFPP Administrator. Kelman had started his 1990 book, *Procurement and Public Management: The Fear of Discretion and the Quality of Government Performance* with "the procurement system and the federal government is in trouble." Now he had the apparatus and the movement to put his theories into practice.

Kelman kept the momentum for change. One of his proposed changes to the procurement system involved granting more discretion to public officials. In keeping with that philosophy, the OFPP in 1994 commenced the FAR rewrite project. As a first step, Kelman established an eleven member "Board of Directors" composed of senior level executive branch representatives to "convert the FAR from rigid rules to guiding principles." The board published a set of core guiding principles intended to define and guide the government's general vision and goals for the federal acquisition process.[77]

The rewrite underscored the reform movement and highlighted three reactions to the 1980s. First, contracting personnel should be given more discretion, not less. Second, dialogue between the parties had to be encouraged for industry to best meet the government's needs. Third, in order to be efficient, contracting had to be more flexible and innovative.

One recurring and pervasive problem that needed immediate fixing was the labyrinth of rules and risks that had scared away many excellent contractors.

### *Quest for Commercial Contracting*

Throughout the history of government contracting, especially in the twentieth century, studies have touted that the government should buy more commercial items (rather than reinvent the wheel every time) and use commercial practices to do it. That move then intensified to replace the terrible morass of rules and regulations.

In November 1986, in response to the Packard Commission's recommendations, Congress established a statutory preference for the acquisition of "non-developmental items" and required DOD to report to Congress within one year on all statutory and regulatory impediments to their acquisition.[78]

Armed with that information, Congress furthered this process in the Office of Federal Procurement Policy Act Amendments of 1988, in which it established the position of Commercial Products Advocate within the OFPP to make recommendations regarding the acquisition of commercial products by the Federal Government.[79]

Section 824 of the 1990 DOD Authorization Act[80] required the Defense Secretary to propose regulations concerning commercial product procurement

and rescind any regulations inconsistent with that goal; develop a simplified uniform contract for buying commercial items, and require that the simplified contract be used for commercial items to the maximum extent practical; adopt a modified inspection clause with streamlined inspection procedures and require and use "in appropriate circumstances" a commercial contractor's standard commercial warranties.

The National Performance Review agreed, stating:

> In general, the nation could reap many benefits by moving federal procurement practices closer to the private sector's best commercial practices. Elements include increased use of standard commercially available products, expanded use of electronic data interchange and electronic commerce, more emphasis on excellence in vendor performance, and greater reliance on best value (not just least cost) procurements. . . . In general, the more we rely on commercial techniques in the commercial marketplace, the more economical benefits will accrue. The government, and hence the taxpayers, will pay less to buy better products faster.[81]

All such talk was encouraging but unfulfilling. A March 1991 report of the Steering Committee of the Center for Strategic and International Studies (CSIS) applauded the efforts and urged far more reliance on commercial products, processes and buying practices to ensure economic competitiveness and to maintain a viable defense industrial base in the face of declining defense budgets.[82] Doing that, however, would require profound changes in the laws and regulations governing procurement.

The procurement laws and regulations created four barriers: (1) burdensome requirements unique to federal procurement which lead to inefficiencies and high administrative costs with no added value; (2) over-reliance on specifications and standards that were often outdated; (3) restrictive technical data rights requirements; and probably most importantly, (4) unique government accounting and pricing requirements.

A 1991 industrial-based study of the Office of Technology Assessment explained that unique government-imposed accounting practices and the requirement to open their books to government audits isolated the defense industry from the rest of the economy and deterred commercial contractors from entering the federal marketplace.[83]

The combination of accounting practice and government access forced companies that do both military and commercial work to set up special

government-products divisions to do the defense work. This happened for several reasons, even when the military and civilian technology is similar enough to foster economies of scale by keeping production under one roof.

First, not only does government accounting practice differ from commercial standards of accounting but accounting errors can bring criminal charges against business executives. For that reason, they devote inordinate efforts to matters of no commercial consequence. Commercial firms cannot achieve consistency by adopting government standards company-wide because the added cost of government accounting procedures must be borne ultimately by the customers, placing the firm at a commercial price disadvantage compared to firms that do no government work. Furthermore, if a company integrated commercial and military production, then virtually no company information would be excluded from government audits and possible disclosure. In the end, most companies choose to set up separate government-products division rather than try to untangle overhead and other charges between commercial and government work or to allow government inspectors access to their commercial books.

Until those core problems were addressed, commercial contracting was a dream. The Section 800 Panel concluded in its January 1993 report that "the history of commercial product acquisition efforts is one of good intentions that have failed to bear fruit because none of the efforts to date have created a complete, systematic, statutory, and regulatory structure for buying commercial products."

The commercial items themselves was not the problem. Often the government buyers knew and preferred these items. Adopting standard contract principles would mean fundamental changes in the way the government forms, administers, and terminates contracts. The adoption of standard contract principles could not be reconciled with the Competition in Contracting Act, the Truth in Negotiations Act, the Contract Disputes Act, the Cost Accounting Standards, the cost principles, and the socioeconomic laws and clauses. The entire fabric of federal contracting would have to be re-examined.

### *The Federal Acquisition Streamlining Act*

In The Federal Acquisition Streamlining Act of 1994[84] (FASA), enacted on October 13, 1994, Congress did just that and did not like what it saw. The FASA's legislative history states that "when all of these laws—and hundreds

more requirements that are imposed by regulation—are added together, the result is a complex and unwieldy system."[85]

During one FASA debate, Senator Byron Dorgan of North Dakota testified as follows:

> In September 1993, Vice President Gore's report of the National Performance Review [NPR] determine that significant procurement reform could save as much as $22.5 billion over a five-year period. Just as important as the projected savings are the increased efficiencies that will result across the entire Federal Government. This bill will help achieve NPR's stated goal of creating a Government that works better and costs less.[86]

FASA substantially overhauled the laws governing federal acquisition. It increased the government's access to products developed in the commercial sector, created a new simplified acquisition threshold, changed protest and dispute procedures, revised cost principles, gave an expansive definition of "commercial item" that included the services which are now the lion's share of the federal budget (as opposed to the 1930s, 1940s, and 1950s when hardware was the driver) and streamlined and consolidated acquisition laws.

Fully embracing this reform legislation and the recommendations of the National Performance Review and the Section 800 Panel, President Clinton issued Executive Order 12931,[87] on the same day he signed FASA.

The Executive Order directed procurement agencies to replace procurement rules and policies with "Guiding Principles" that encourage and reward innovation; increase the use of commercially available items and place more emphasis on past contractor performance and best value selections; use simplified acquisition procedures to the maximum extent practicable; and establish career educational programs for procurement professionals. The President also tasked executive agencies to identify "major inconsistencies in law and policies relating to procurement that impose unnecessary burdens on the private sector and federal procurement officials."[88]

FASA evidenced an intent to remove most of the barriers to the government's acquisition of commercial items. It was soon followed by the Federal Acquisition Reform Act (FARA)[89] designed to make the government contracting market more user friendly. Commercial contractors were freed of the audit, recordkeeping and inspection requirements that had proliferated

over the last 50 years. Large exceptions were carved out of the Truth in Negotiations Act.

### *Electronic Commerce*

The government also tried to harness computers to increase the speed and flexibility of the system. Vice President Gore's NPR stressed the need to use computers to make government more efficient. It estimated that the government makes some twenty million purchases totally $200 billion each year. A three year test of electronic commerce (EC) by the Air Force illustrated that that cost could be reduced by almost ten percent while lead time could be cut by one third and buyer productivity doubled. Applied government wide, the NPR concluded the use of EC could save up to $500 million dollars per year.[90]

In the wake of that recommendation, on October 26, 1993, President Clinton issued a presidential memorandum, "Streamlining Procurement Through Electronic Commerce"[91] in which he directed federal agencies to complete government-wide implementation of electronic contracting by January 1997 "to the maximum extent practicable."[92]

FASA directed the Office of Federal Procurement Policy to supervise the creation of a federal acquisition computer network (FACNET). The FACNET was designed to provide the solicitation, award and payment of all federal contracts for goods and services under $100,000 by the year 2000. The Act called for the gradual implementation of this network over five years.[93] While FACNET's implementation was more problem prone than expected, the day of the "paperless contract" is coming.

## Conclusion

FASA, FARA and other 1990s reforms represent a realistic look at the problems caused by incompetence, fraud and a knee-jerk reaction to such maladies. The government recognized that focusing on individual ills can cause a cumulative buildup of side effects that incapacitates the patient. These reforms took a comprehensive approach and made fundamentally different assumptions regarding the participants. Where the 1980s had assumed government personnel were lazy, incompetent or inefficient, the 1990s saw them as innovative hard workers who should be freed of the restrictions placed on their ability to devise flexible solutions to individual problems.

Where the 1980s had assumed contractors were greedy criminals, the 1990s recognized that most contractors are industrious resources willing to fulfill the government's needs with ingenious solutions for a fair price.

The situation is as healthy as any I can recall in the history of peacetime government contracting. That is not to say it is idyllic. Protests and lawsuits still abound. Government contracts still dwarf their non-government counterparts in size, minutia, and risks. Contracting officers trained in the old system still refuse to change and many contractors still try to cheat. But, all in all, the 1990s have improved the process.

My fear is that laws can not change human nature. Some contracting officer somewhere will make a stupid or corrupt decision. Some contractor somewhere will pounce on the situation to defraud the government. Headlines will blare; Congress will overreact; and the cycle of government contracting reforms will continue.

# Epilogue

If someone were asked to devise a contracting system for the federal government, it is inconceivable that one reasonable person or a committee of reasonable people could come up with our current system. That system is the result of thousands of decisions made by thousands of individuals, both in and out of government. It reflects the collision and collaboration of special interests, the impact of innumerable scandals and successes, and the tensions imposed by conflicting ideologies and personalities.

Since the 1750s, the period in which this narrative begins, the basis of wealth has gradually changed. In the eighteenth century, all wealth was based on the land. Although they amassed large fortunes from their mercantile activities, even such colonial merchants as Robert Morris or Comfort Sands were not considered truly wealthy until they had acquired estates. During the nineteenth century, land became less important as the country converted from an agrarian to an industrial economy. Capital, in the form of machinery and machine tools, became the prime creator of wealth.

In the twentieth century, capital has become less hardware-oriented and more dependent on talent and ingenuity. Beginning about 1955, white collar and service workers outnumbered blue collar workers for the first time. Some of the most financially successful companies in today's world do not own large factories with bellowing smokestacks or raging furnaces. They may only occupy floors in office buildings, where people skilled in computer science or other technical fields can develop new software or new processes.

Some of the industrial giants that once dominated the economy could not adapt—and became dinosaurs. Conversely, the upheaval caused by new ideas was viewed as an opportunity by entrepreneurs who took advantage of the shifts in economic and social power: farmers and partnerships in the eighteenth century, industrialists and corporations in the nineteenth century, and multinational conglomerates in the twentieth century.

As Alvin Toffler has observed, throughout this process, government was the great accelerator. Because of its coercive power, its voracious appetite for supplies and services, and its tax revenues, it was able to accomplish things that private enterprise could not afford to undertake. Government was able

to speed up the industrialization process by creating the need for vast quantities of goods and by intervening to fill emerging gaps in the economic system. If government had not become involved, industrialization would have come much more slowly, if indeed it would have come at all.

Over the past two centuries, economic change has opened many new paths to power, but one constant path has been the government contract.

# Notes

## Introduction

1. Merritt Roe Smith, ed., *Military Enterprise and Technological Change, Perspectives on the American Experience* (Cambridge: MIT Press, 1985), 4.

2. *Ibid.*, 5.

3. *Ibid.*, 176.

4. Thomas L. McNaugher, *New Weapons, Old Politics: America's Military Procurement Muddle* (Washington, D.C.: Brookings Institution, 1989), 6.

5. Quoted in Alvin Toffler, *The Third Wave* (New York: William Morrow & Co., Inc., 1980), 33.

## CHAPTER 1 French and Indian and Revolutionary Wars

1. Geoffrey Perret, *A Country Made by War: From the Revolution to Vietnam—The Story of America's Rise to Power* (New York: Random House, 1989), 67.

2. See Theodore Thayer, "Contractors for the Niagara Campaign, 1755–1756," *William and Mary Quarterly*, 3d ser., 14 (January 1957): 31.

3. *Ibid.*, 32.

4. E. Wayne Carp, *To Starve the Army at Pleasure* (Chapel Hill: University of North Carolina Press, 1984), 110.

5. *Ibid.*, 110.

6. James Joy, "America's First Contracting Officer," *Government Contractor Chronicle* (September 1, 1971): 3.

7. Carp, *To Starve the Army*, 65–66.

8. *Ibid.*, 22–23.

9. *Ibid.*, 23.

10. Joy, "America's First Contracting Officer," 2.

11. Erna Risch, *Supplying Washington's Army* (Washington, D.C.: Center for Military History, 1981), 8.

12. E. James Ferguson, "Business, Government, and Congressional Investigation in the Revolution," *William and Mary Quarterly*, 3d ser., 16 (July 1959): 293.

13. *Ibid.*, 300.

14. *Ibid.*, 297.

15. *Ibid.*, 311.

16. Carp, *To Starve the Army*, 99.

17. Risch, *Supplying Washington's Army*, 160.

18. *Ibid.*, 163.

19. *Ibid.*, 164.

20. *Ibid.*, 166.

21. *Ibid.*, 166.

22. Ibid., 204–05.

23. Ibid., 167.

24. Ibid.

25. *Ibid.*, 166.

26. Carp, *To Starve the Army*, 42.

27. Risch, *Supplying Washington's Army*, 41–42.

28. Carp, *To Starve the Army*, 45–46.

29. Risch, *Supplying Washington's Army*, 42; Ferguson, "Congressional Investigation," 309.

30. Ferguson, "Congressional Investigation," 310.

31. Risch, *Supplying Washington's Army*, 427.

32. Ferguson, "Congressional Investigation," 312.

33. *Ibid.*, 313.

34. Carp, *To Starve the Army*, 173.

35. Risch, *Supplying Washington's Army*, 48.

36. Ferguson, "Congressional Investigation," 315.

37. *Ibid.*

38. Risch, *Supplying Washington's Army*, 59.

39. *Writings of George Washington*, 9 (Washington, D.C.: Government Printing Office, 1933), 72.

40. Harry Carman, Harold Sysett, and Bernard Wishy, *A History of the American People*, Vol. 1, 1877 (New York: Knopf and Company), 218.

41. Carp, *To Starve the Army*, 106.

42. *Ibid.*, 107.

43. Richard Kaufman, *The War Profiteers* (Garden City, New York: Doubleday, 1972), 6.

44. Risch, *Supplying Washington's Army*, 109.

45. Carp, *To Starve the Army*, 108.

46. James F. Nagle, *Federal Procurement Regulations: Policy, Practice and Procedures* (Chicago: American Bar Association, 1987), 13–18.

47. Ferguson, "Congressional Investigation," 299.

48. Risch, *Supplying Washington's Army*, 244.

49. Carp, *To Starve the Army*, 213–14; Nagle, *Federal Procurement Regulations*, 13–18.

50. Carp, *To Starve the Army*, 213–14.

51. *Ibid.*, 211.

52. Nagle, *Federal Procurement Regulations*, 14.

53. *Ibid.*, 15.

54. Risch, *Supplying Washington's Army*, 252.

55. Carp, *To Starve the Army*, 215; Risch, *Supplying Washington's Army*, 254.

56. Carp, *To Starve the Army*, 216.

## CHAPTER 2 The Young Republic

1. Maurice Matloff, ed., *American Military History* (Washington, D.C.: Center for Military History, 1968), 107.

2. Erna Risch, *Quartermaster Support for the Army, 1775–1939* (Washington D.C.: Center for Military History (1962), 78–79.

3. *Ibid.*, 78–79.

4. *Ibid.*, 80–81.

5. Oliver W. Holmes, "Shall Stagecoaches Carry the Mail? A Debate of the Confederation Period," *William and Mary Quarterly*, 3d ser., 20 (October 1963): 555.

6. *Ibid.*, 560.

7. *Ibid.*, 561.

8. *Ibid.*, 562.

9. *Ibid.*, 566.

10. *Ibid.*, 568.

11. *Ibid.*, 568–69.

12. *Ibid.*, 569.

13. *Ibid.*, 571.

14. *Ibid.*, 571–72.

15. James W. Booth, *Interest and Federal Contracts: A Perspective* (Washington, D.C.: Arthur Andersen, 1982), 9.

16. Risch, *Quartermaster Support for the Army*, 83–84.

17. Howard Chapelle, *The History of American Sailing Ships* (New York: Norton & Company, 1935), 179.

18. David A. Armstrong, ed., *History of Public Works in the United States 1776–1976* (Chicago: The American Public Works Association, 1976), 638.

19. Risch, *Quartermaster Support for the Army*, 85–87.

20. *Ibid.*, 90–91.

21. *Ibid.*, 91–92.

22. Russell F. Weigley, *History of the United States Army* (New York: MacMillan, 1967), 91.

23. Perret, *A Country Made by War*, 112.

24. Lt. Col. Marvin A. Kreidberg and 1st Lt. Merton G. Henry, "History of Military Mobilization in the United States Army 1775–1945," *Department of the Army Pamphlet No. 20-212* (Washington D.C.: Center for Military History, 1955), 29.

25. Perret, *A Country Made by War*, 86–87; Risch, *Quartermaster Support for the Army*, 108.

26. Leonard White, *The Federalists: A Study in Administrative History* (Westport, Connecticut: Greenwood Press, 1948), 162.

27. Chapelle, *History of American Sailing Ships* 87–89; Perret, *A Country Made by War*, 89–90.

28. Matloff, *American Military History*, 116.

29. "History of Military Mobilization," 35.

30. Risch, *Quartermaster Support for the Army*, 117–18.

31. *Ibid.*, 118–19.

32. *Ibid.*, 122–23.

33. Matloff, *American Military History*, 17; Risch, *Quartermaster Support for the Army*, 130.

## CHAPTER 3 Start of the Arms Industry

1. I relied here on chapter two of the dissertation by Dr. Jacques S. Gansler on which his book, *The Defense Industry*, is based. (Copy on file with author.)

2. *Ibid.*, 33; Matloff, *American Military History*, 108; Constance McLaughlin Green, Harry C. Thomson, and Peter C. Roots, *The Ordnance Department: Planning Munitions for War* (Washington D.C.: 1955),14–16.

3. Matloff, *American Military History*, 108.

4. Gansler, dissertation, 36.

5. Spencer Tucker, *Arming the Fleet, US Naval Ordnance, and the Muzzle Loading Era* (Annapolis, MD: The Naval Institute Press, 1989), 58; James Huston, *The Sinews of War, A Study of Army Logistics* (Washington D.C.: Center for Military History, 1966), 98.

6. Joseph and Francis Gies, *The Ingenious Yankees* (New York: Crowell and Company, 1976), 76; Perret, *A Country Made by War*, 95–99.

7. Claud E. Fuller, *The Whitney Firearms* (Huntington, West Virginia; Standard Publications, 1946), 45.

8. James Joy, "Eli Whitney's Contracts for Muskets," *Public Contract Law Journal* 8 (1976): 140, 142.

9. Joy, "Eli Whitney's Contracts for Muskets," 43.

10. Benjamin Franklin Cooling, ed., *War, Business and American Society, Historical Perspectives on the Military-Industrial Complex* (Port Washington, New York: Kennikat Press, 1977), 25–27.

11. Smith, *Military Enterprise*, 47–49.

12. Fuller, *The Whitney Firearms*, 4; Benjamin Franklin Cooling, *War, Business and American Society*, 25–27.

13. Fuller, *The Whitney Firearms*, 40–43.

14. *Ibid.*, 42–43.

15. Cooling, *War, Business and American Society*, 25–27.

16. *Ibid.*, 26–27; Perret, *A Country Made by War*, 96.

17. Fuller, *The Whitney Firearms*, 67.

18. *Ibid.*, 102.

19. *Ibid.*, 106.

20. Helmuth Carol Engelbrecht and Frank Cleary Hanighen, *Merchants of Death, A Study of the International Armament Industry* (New York: Mead, Dodd & Co., 1934), 24–25; Leonard Mosley, *Blood Relations, The Rise and Fall of the DuPonts of Delaware* (New York: Atheneun, 1980), 26.

21. Gerard Colby Zilg, *DuPont, Behind the Nylon Curtain* (Englewood Cliffs, New Jersey: Prentice-Hall, 1974), 19.

22. Mosley, *Blood Relations*, 28.

23. Huston, *The Sinews of War*, 96–97, 115–18; Fuller, *The Whitney Firearms*, 85.

24. Joy, "Eli Whitney's Contracts," 155.

25. Huston, *The Sinews of War*, 115–18.

## CHAPTER 4 The War of 1812

1. "History of Military Mobilization," 56–59; Risch, *Quartermaster Support for the Army*, 144–45.

2. Kreidberg and Henry, "History of Military Mobilization," 56–59.

3. Risch, *Quartermaster Support for the Army*, 145.

4. Cooling, *War, Business and American Society*, 28–29; Matloff, *American Military History*, 124.

5. Risch, *Quartermaster Support for the Army*, 139.

6. *Ibid.*, 146–47.

7. Kreidberg and Henry, "History of Military Mobilization," 56–59.

8. Zilg, *DuPont, Behind the Nylon Curtain*, 20–21.

9. *Ibid.*

10. Joy, "Eli Whitney's Contracts," 147–54.

11. *Ibid.*, 147.

12. *Ibid.*, 148.

13. *Ibid.*, 149.

14. *Ibid.*

15. *Ibid.*, 149–50.

16. *Ibid.*, 150.

17. *Ibid.*

18. *Ibid.*, 151.

19. Kreidberg and Henry, "History of Military Mobilization," 56–59.

20. Risch, *Quartermaster Support for the Army*, 150–51.

21. Kreidberg and Henry, "History of Military Mobilization," 58–59.

22. Risch, *Quartermaster Support for the Army*, 150–51.

23. Kreidberg and Henry, "History of Military Mobilization," 58–59; Risch, *Quartermaster Support for the Army*, 155–57.

24. Perret, *A Country Made by War*, 107–58.

25. Risch, *Quartermaster Support for the Army*, 157–58.

26. Perret, *A Country Made by War*, 109.

27. Huston, *The Sinews of War*, 104–05.

28. Risch, *Quartermaster Support for the Army*, 159–60.

29. *Ibid.*, 161.

30. *Ibid.*, 161–64.

31. *Ibid.*, 166.

32. Huston, *The Sinews of War*, 114–15.

33. *Ibid.*, 104–05.

34. Risch, *Quartermaster Support for the Army*, 154–55.

35. Kreidberg and Henry, "History of Military Mobilization," 59.

## CHAPTER 5 The Nation Expands: 1815–1861

1. Matloff, *American Military History*, 151–52.

2. Risch, *Quartermaster Support for the Army*, 182.

3. Huston, *The Sinews of War*, 113.

4. Risch, *Quartermaster Support for the Army*, 189–93; see also Chester Kieffer, *Maligned General, The Biography of Thomas Sidney Jesup* (San Rafael, California: Presidio, Press, 1979).

5. Risch, *Quartermaster Support for the Army*, 191.

6. *Ibid.*, 193.

7. Marie Cullerton, "History of the Food and Forage Act," *Resource Management Journal* (Summer 1983): 20.

8. *Ibid.*, 22.

9. *Ibid.*

10. Cooling, *War, Business and American Society*, 28–29; Smith, *Military Enterprise*, 43–44; Green, Thomson, and Roots, *Planning Munitions for War*, 16.

11. Green, Thomson, and Roots, *The Ordnance Department*, 18–19.

12. Smith, *Military Enterprise*, 43–44.

13. *Ibid.*, 51–52.

14. Cooling, *War, Business and American Society*, 27–28.

15. *Ibid.*

16. Smith, *Military Enterprise*, 60–61.

17. *Ibid.*

18. Merritt Roe Smith, *Harpers Ferry Armory and the New Technology: The Challenge of Change* (Ithaca: Cornell University Press, 1977), 209–11.

19. Smith, *Harpers Ferry Armory*, 196; Gies, *The Ingenious Yankees*, 176; Smith, *Military Enterprise*, 61–64.

20. Smith, *Harpers Ferry Armory*, 209–11.

21. Huston, *The Sinews of War*, 115–18.

22. *Ibid.*

23. Fuller, *The Whitney Firearms*, 152.

24. Smith, *Military Enterprise*, 8–9.

25. *Ibid.*, 76–77.

26. Perret, *A Country Made by War*, 195.

27. Toffler, *The Third Wave*, 26.

28. Huston, *The Sinews of War*, 115–18; Cooling, *War, Business and American Society*, 31.

29. *Ibid.*

30. Fuller, *The Whitney Firearms*, 194.

31. W. Turrentine Jackson, *Wagon Roads West: A Study of Federal Road Surveys and Construction in the Trans-Mississippi West, 1846–1864* (Berkeley: University of California Press, 1952), 319.

32. Perret, *A Country Made by War*, 137.

33. Prucha, *The Sword of the Republic: The United States Army on the Frontier, 1783–1846* (London: The MacMillan Company, 1969), 187.

34. Jackson, *Wagon Roads West*, 11–12; Forest G. Hill, *Roads, Rails & Waterways: The Army Engineers and Early Transportation* (Norman, Oklahoma: University of Oklahoma Press, 1957), 41.

35. Jackson, *Wagon Roads West*, 7–8.

36. Hill, *Roads, Rails & Waterways*, 120.

37. *Ibid.*, 111.

38. *Ibid.*, 87.

39. *Ibid.*, 92.

40. Jackson, *Wagon Roads West*, 100–01.

41. *Ibid.*, 102.

42. *Ibid.*, 135.

43. *Ibid.*, 235–37.

44. *Ibid.*, 170–71.

45. Risch, *Quartermaster Support for the Army*, 247.

46. *Ibid.*, 247–48.

47. Kreidberg and Henry, "History of Military Mobilization," 77–80.

48. Risch, *Quartermaster Support for the Army*, 269–70.

49. Kreidberg and Henry, "History of Military Mobilization," 77–80.

50. Risch, *Quartermaster Support for the Army*, 307.

51. *Ibid.*, 256.

## CHAPTER 6 Freight and Stagecoaches

1. Robert W. Frazer, *Forts and Supplies, The Role of the Army in the Economy of the Southwest, 1846–1861* (Albuquerque: University of New Mexico Press, 1983), ix.

2. *Ibid.*, 100, 111–12.

3. *Ibid.*, 1–2.

4. *Ibid.*, 57.

5. LeRoy R. Hafen and Francis Marion Young, *Fort Laramie* (Lincoln: University of Nebraska Press, 1984), 171.

6. Raymond W. and Mary Lund Settle, *War Drums and Wagon Wheels, The Story of Russell, Majors and Waddell* (Lincoln: University of Nebraska Press, 1966), 26–28.

7. *Ibid.*, 34–35.

8. *Ibid.*, 38.

9. Risch, *Quartermaster Support for the Army*, 38–39, 310–11.

10. *Ibid.*, 310–11.

11. *Ibid.*

12. Settle, *War Drums and Wagon Wheels*, 32.

13. *Ibid.*, 44–45.

14. *Ibid.*, 132; Risch, *Quartermaster Support for the Army*, 312–13; Nevin, *The Old West—The Expressmen*, 105–10.

15. Settle, *War Drums and Wagon Wheels*, 53.

16. *Ibid.*, 50–52.

17. *Ibid.*, 70–71; Nevin, *The Old West—The Expressmen*, 83.

18. Cullerton, "History of the Food and Forage Act," 23.

19. *Ibid.*, 24.

20. Settle, *War Drums and Wagon Wheels*, 80.

21. *Ibid.*, 83; Risch, *Quartermaster Support for the Army*, 312–13.

22. Settle, *War Drums and Wagon Wheels*, 83.

23. *Ibid.*, 92.

24. *Ibid.*, 103–04.

25. *Ibid.*, 104–05.

26. Hafen and Young, *Fort Laramie*, 260; Settle, *War Drums and Wagon Wheels*, 105.

27. Settle, *War Drums and Wagon* Wheels, 121–22.

28. *Ibid.* 122–23.

29. *Ibid.*, 132–33.

30. *Ibid.*, 135.

31. *Ibid.*, 135–36.

32. *Ibid.*, 137.

33. *Ibid.*, 143–44.

34. *Ibid.*, 148.

35. *Ibid.*, 149.

36. *Ibid*, 150–51.

37. *Ibid*, 152.

38. *Ibid*, 153; Risch, *Quartermaster Support for the Army*, 312–13.

39. Nevin, *The Old West—The Expressmen*, Time Life Books 1974, 23–24.

40. *Ibid.*, 23.

41. Alexander Adams, *Sunlight and Storm, The Great American Plains* (New York: G. P. Putnam's Sons, 1977), 277–78; Hafen and Young, *Fort Laramie*, 171; John Unruh, *The Plains Across: The Overland Emigrants of the Trans-Mississippi West, 1840–60* (Chicago: University of Illinois Press, 1979), 240.

42. Unruh, *The Plains Across*, 240.

43. Hafen and Young, *Fort Laramie*, 211–12.

44. *Ibid.*, 263–64; Unruh, *The Plains Across*, 241.

45. John Hawgood, *America's Western Frontier: The Exploration and Settlement of the Trans-Mississippi West* (New York: Knopf and Company, 1972), 161; Unruh, *The Plains Across*, 241.

46. Adams, *Sunlight and Storm*, 242; Ralph Moody, *Stagecoach West* (New York: Crowell & Co., 1967), 69.

47. Adams, *Sunlight and Storm*, 249–50; Unruh, *The Plains Across*, 240–41.

48. Nevin, *The Old West—The Expressmen*, 25–26.

49. Moody, *Stagecoach West*, 73.

50. Adams, *Sunlight and Storm*, 278.

51. Hawgood, *America's Western Frontier*, 250–31.

52. Marshall Trimble, *Arizona, A Panoramic History of a Frontier State* (Garden City: Doubleday and Company, 1973), 125.

53. Settle, *War Drums and Wagon Wheels*, 115.

54. *Ibid.*, 125.

55. *Ibid.*

56. *Ibid.*, 162.

57. *Ibid.*, 163.

58. *Ibid.*, 169.

59. Nevin, *The Old West—The Expressmen*, 192–93.

## CHAPTER 7 Contracting Trends as the Nation Approached Civil War

1. Act of March 3, 1845, 5 Stat. 794.

2. Nagle, *Federal Procurement Regulations*, 32.

3. Rudolph Sobernheim, "Contracts for the Highway Transportation of the Mails," *Public Contract Law Journal*, 8 (1976): 157.

4. *Ibid.*, 167.

5. *Ibid.*

6. Nagle, *Federal Procurement Regulations*, 28.

7. *Ibid.*, 30.

8. Cooling, *War, Business and American Society*, 32–33; Fuller, *The Whitney Firearms*, 62.

9. Perret, *A Country Made by War*, 192; Engelbrecht and Hanighen, *Merchants of Death*, 38–39.

10. Gies, *The Ingenious Yankees*, 176, Engelbrecht and Hanighen, *Merchants of Death*, 39.

11. Cooling, *War, Business and American Society*, 39–40.

12. Adams, *Sunlight and Storm*, 268.

13. Engelbrecht and Hanighen, *Merchants of Death*, 40–41.

14. Perret, *A Country Made by War*, 193.

## CHAPTER 8 The Civil War

1. Risch, *Quartermaster Support for the Army*, 339.

2. Kreidberg and Henry, "History of Military Mobilization," 29.

3. Risch, *Quartermaster Support for the Army*, 343–45.

4. Huston, *The Sinews of War*, 180–82.

5. Fuller, *The Whitney Firearms*, 200–03; Richard D. Goff, *Confederate Supply* (Durham, N.C.: Duke University Press, 1969), 5–6, 11–12.

6. Gies, *The Ingenious Yankees*, 279.

7. Kreidberg and Henry, "History of Military Mobilization," 127.

8. Armstrong, *Bullets and Bureaucrats, The Machine Gun and the United States Army, 1861–1916* (Westport, Conn.: Greenwood Press, 1982), 10–11.

9. Gies, *The Ingenious Yankees*, 274, Armstrong, *Bullets and Bureaucrats*, 8–11; Perret, *A Country Made by War*, 195–96.

10. Gansler, *The Defense Industry*, 39–40.

11. Huston, *The Sinews of War*, 178–79.

12. Risch, *Quartermaster Support for the Army*, 334.

13. *Ibid.*, 341–43.

14. Quoted in "The Civil War," Public Broadcasting Special, 1990.

15. Huston, *The Sinews of War*, 191–92; Perret, *A Country Made by War*, 195–96.

16. Engelbrecht and Hanighen, *Merchants of Death*, 67.

17. Bernard Brodie and Fawn Brodie, *From the Crossbow to the H-Bomb* (Bloomington, Ind.: Indiana University Press, 1973), 135.

18. Robert O'Connell, *Of Arms and Men* (New York: Oxford University Press, 1989), 199.

19. Armstrong, *Bullets and Bureaucrats*, 17–18.

20. Engelbrecht and Hanighen, *Merchants of Death*, 31.

21. Norman B. Wilkinson, *Lammot Du Pont and the American Explosives Industry 1850–1884* (Charlottesville: University Press of Virginia, 1984), 73.

22. Zilg, *DuPont, Behind the Nylon Curtain*, 36.

23. Wilkinson, *Lammot DuPont*, 90; Zilg, *DuPont, Behind the Nylon Curtain*, 56.

24. Zilg, *DuPont, Behind the Nylon Curtain*, 36; Wilkinson, *Lammot Du Pont*, 76–77.

25. Zilg, *DuPont, Behind the Nylon Curtain*, 59, Wilkinson, *Lammot Du Pont*, 86.

26. Risch, *Quartermaster Support for the Army*, 352–53.

27. *Ibid.*, 352–54.

28. *Ibid.*

29. Richard Kaufman, *The War Profiteers* (Garden City, New York: Doubleday, 1972), 8.

30. Engelbrecht and Hanighen, *Merchants of Death*, 58.

31. *Ibid.*, 38–59.

32. Kaufman, *War Profiteers*, 9.

33. Risch, *Quartermaster Support for the Army*, 343–45.

34. Weigley, *History of the United States Army*, 219–20.

35. Huston, *The Sinews of War*, 180–82.

36. Halling, "The Federal False Claims Act: A 'Remedial' Alternative for Protecting the Government from Fraudulent Practices," *Southern California Law Review*, 52, Vol. 159 (1978), 160–65.

37. Huston, *The Sinews of War*, 181.

38. Risch, *Quartermaster Support for the Army*, 381.

39. *Ibid.*, 470.

40. Weigley, *History of the United States Army*, 219–20, Risch, *Quartermaster Support for the Army*, 358.

41. Risch, *Quartermaster Support for the Army*, 360.

42. *Ibid.*, 363–65.

43. *Ibid.*, 369.

44. *Ibid.*, 370.

45. *Ibid.*, 371.

46. *Ibid.*, 372.

47. *Ibid.*, 374.

48. *Ibid.*, 376.

49. *Ibid.*, 383.

50. Kreidberg and Henry, "History of Military Mobilization," 137–38.

51. Goff, *Confederate Supply*, 135–36.

52. Spencer Tucker, *Arming the Fleet, US Naval Ordnance, and the Muzzle Loading Era* (Annapolis, Md.: The Naval Institute Press, 1989), 175; James Phinney Baxter, III, *The Introduction of the Ironclad Warship* (Hamden, Conn.: Archon Books, 1968), 48–49.

53. Baxter, *Ironclad Warship*, 48–49.

54. *Ibid.*, 50.

55. *Ibid.*, 214.

56. Robert MacBride, *Civil War Ironclads, The Dawn of Naval Armor* (Philadelphia and New York: Chilton Books, 1962), 8.

57. Baxter, *Ironclad Warship*, 246–47.

58. James M. McPherson, *Battle Cry of Freedom, The Civil War Era* (New York: Oxford University Press, 1988), 374.

59. MacBride, *Civil War Ironclads*, 15.

60. Baxter, *Ironclad Warship*, 260.

61. *Ibid.*, 265–66.

62. *Ibid.*, 287.

63. McPherson, *Battle Cry of Freedom*, 375.

64. *Ibid.*, 377.

65. Baxter, *Ironclad Warship*, 267.

66. Armstrong, *Bullets and Bureaucrats*, 43.

67. Gansler, *The Defense Industry*, 41.

## CHAPTER 9 Demobilization and the Rise of Consumerism: 1865–1880

1. Gansler, *The Defense Industry*, 41–42.

2. Cooling, *War, Business and American Society*, 36.

3. Armstrong, *Bullets and Bureaucrats*, 46–47; Perret, *A Country Made by War*, 205–06.

4. Armstrong, *Bullets and Bureaucrats*, 78–79.

5. *Ibid.*

6. Richard John Hampton, "Achieving Socioeconomic Goals Through the Federal Procurement Process," 1981 dissertation at The George Washington University, 34.

7. Robert Wooster, *The Military and United States Indian Policy 1865–1903* (New Haven: Yale University Press, 1988), 103–04.

8. *Ibid.*

9. Nagle, *Federal Procurement Regulations*, 34.

10. *Ibid.*, 36.

11. 91 U.S. 389 (1875).

## CHAPTER 10 Building the Fleet: 1881–1898

1. Kaufman, *War Profiteers*, 9.

2. Gansler, *The Defense Industry*, 41–42.

3. Perret, *A Country Made by War*, 274–75.

4. Robert Hessen, *Steel Titan, The Life of Charles M. Schwab* (New York: Oxford University Press, 1975), 42–43.

5. *Ibid.*, 43.

6. *Ibid.*, 44.

7. Benjamin Franklin Cooling, *Gray Steel and Blue Water Navy, The Formative Years of America's Military-Industrial Complex, 1881–1917* (Hamden, Connecticut: Archon Books, 1979), 76.

8. *Ibid.*, 103.

9. Hessen, *Steel Titan*, 44.

10. *Ibid.*, 45,

11. *Ibid.*, 45–46.

12. Joseph Frazer Wall, *Andrew Carnegie* (New York: Oxford University Press, 1970), 650.

13. Hessen, *Steel Titan*, 46–47.

14. *Ibid.*, 46.

15. *Ibid.*, 47.

16. *Ibid.*

17. *Ibid.*

18. *Ibid.*, 48–49.

19. Cooling, *Gray Steel and Blue Water Navy*, 118.

20. Hessen, *Steel Titan*, 49–50.

21. *Ibid.*, 56.

22. *Ibid.*, 91–92.

23. Cooling, *Gray Steel and Blue Water Navy*, 123.

24. Hessen, *Steel Titan*, 91.

25. Cooling, *Gray Steel and Blue Water Navy*, 124.

26. Hessen, *Steel Titan*, 93.

27. *Ibid.*, 92.

28. Cooling, *Gray Steel and Blue Water Navy*, 127.

29. Hessen, *Steel Titan*, 93.

30. *Ibid.*, 94.

31. Cooling, *Gray Steel and Blue Water Navy*, 140.

32. Hessen, *Steel Titan*, 98; Cooling, *Gray Steel and Blue Water Navy*, 149.

33. Cooling, *Gray Steel and Blue Water Navy*, 166.

## CHAPTER 11 The Spanish-American War

1. Kreidberg and Henry, "History of Military Mobilization," 167–68; Matloff, *American Military History*, 324–25.

2. Risch, *Quartermaster Support for the Army*, 522.

3. Huston, *The Sinews of War*, 279; Risch, *Quartermaster Support for the Army*, 531.

4. Huston, *The Sinews of War*, 279; Risch, *Quartermaster Support for the Army*, 525–26.

5. Risch, *Quartermaster Support for the Army*, 525–26.

## CHAPTER 12 Contracting Enters the Twentieth Century: 1900–1914

1. Garnett Laidlaw Eskew, *Cradle of Ships* (New York: G. P. Putnam's Sons, 1958), 37–44.

2. *Ibid.*, 54.

3. *Ibid.*, 66.

4. *Ibid.*, 75.

5. *Ibid.*, 94.

6. Susan J. Douglas, *The Navy Adopts the Radio, 1899–1919*, at 117–74, in Smith, *Military Enterprise*, 129.

7. *Ibid.*, 142.

8. *Ibid.*

9. *Ibid.*, 143–44.

10. *Ibid.*, 149.

11. For a history of General Dynamics, see Jacob Goodwin, *Brotherhood of Arms: General Dynamics and the Business of Defending America* (Times Books, 1985); Roger Franklin, *The Defender, The Story of General Dynamics* (New York: Harper & Row, 1986).

12. Goodwin, *Brotherhood of Arms*, 26.

13. *Ibid.*, 33–34.

14. *Ibid.*, 34.

15. *Ibid.*, 35–36.

16. *Ibid.*, 42.

17. *Ibid.*, 39, 42.

18. *Ibid.*, 42–43.

19. *Ibid.*, 46–47.

20. Richard Solibakke, "The First Successful Government Contract for One (1) Heavier-Than-Air Flying Machine," 8 *Public Contract Law Journal* (1976): 195.

21. Richard M. Goldman, *To Join with the Eagles, Curtiss-Wright Aircraft 1903–1965* (Garden City, New York Doubleday & Company, 1974), 3.

22. Solibakke, "The First Successful Government Contract," 197–98; Goldman, *To Join with the Eagles*, 11.

23. Solibakke, "The First Successful Government Contract," 197–98.

24. *Ibid.*, 198.

25. *Ibid.*, 198–99.

26. *Ibid.*, 199.

27. Louis S. Casey, *Curtiss, The Hammondsport Era—1907–1915* (New York: Crown Publishers, 1981), 2.

28. Goldman, *To Join with the Eagles*, 22.

29. *Ibid.*, 23–24.

30. Curtiss, *The Hammondsport Era*, 77.

31. *Ibid.*, 94–95.

32. Goldman, *To Join with the Eagles*, 24; Curtiss, *The Hammondsport Era*, 73–74.

33. Perret, *A Country Made by War*, 326–27.

34. *Ibid.*, 307.

35. Cooling, *Gray Steel and Blue Water Navy*, 195.

36. *Ibid.*, 196.

37. *Ibid.*, 202–03.

38. Hessen, *The Life of Charles M. Schwab*, 217.

39. *Ibid.*, 218.

40. *Ibid.*, 219.

41. *Ibid.*, 220.

42. *Ibid.*, 219.

43. *Ibid.*, 221.

44. *Ibid.*, 221–22.

45. *Ibid.*, 223; Engelbrecht and Hanighen, *Merchants of Death*, 184–85.

46. Hessen, *The Life of Charles M. Schwab*, 224.

47. *Ibid.*

48. *Ibid.*, 225–26; Cooling, *Gray Steel and Blue Water Navy*, 203.

## CHAPTER 13 The Mexican Border Campaign

1. Curtiss, *The Hammondsport Era*, 194.

2. Risch, *Quartermaster Support for the Army*, 597.

3. Richard Crabb, *Birth of a Giant, The Men and Incidents That Gave America the Motorcar* (Philadelphia: Chilton Books Co., 1969), 354–55.

4. *Ibid.*

5. Goldman, *To Join with the Eagles*, 40.

6. Curtiss, *The Hammondsport Era*, 210.

## CHAPTER 14 Industrial Mobilization for World War I

1. See Barbara Tuchman, *The Guns of August* (New York: MacMillan Company (1962), 82.

2. Kreidberg and Henry, "History of Military Mobilization," 195.

3. *Ibid.*, 336–38.

4. *Ibid.*, 336–38; Gansler, *The Defense Industry*, 44.

5. Cooling, *War, Business and American Society*, 77–78.

6. Robert Higgs, *Crisis and Leviathan* (New York: Oxford University Press, 1987), 128.

7. *Ibid.*

8. *Ibid.*, 128–29.

9. Green, Thomson, and Roots, *Planning Munitions for War*, 20–21.

10. Higgs, *Crisis and Leviathan*, 129, Kreidberg and Henry, "History of Military Mobilization," 336–38.

11. Nagle, *Federal Procurement Regulations*, 44.

12. Perret, *A Country Made by War*, 322.

13. Risch, *Quartermaster Support for the Army*, 645–46.

## CHAPTER 15 The War Begins

1. Risch, *Quartermaster Support for the Army*, 620–23.

2. *Ibid.*

3. *Ibid.*

4. Higgs, *Crisis and Leviathan*, 139.

5. *Ibid.*

6. *Ibid.*, 140.

7. *Ibid.*, 140–41.

8. See Holmes, "Progress Payments to Government Construction Contractors Under the Standard Form," 35 *George Washington Law Review* 962 (1967); 20 Comp. Gen. 917 (1941).

9. Higgs, *Crisis and Leviathan*, 141.

10. Hessen, *The Life of Charles M. Schwab*, 231–32.

11. Kaufman, *War Profiteers*, 11.

12. Risch, *Quartermaster Support for the Army*, 614–15.

13. Huston, *The Sinews of War*, 316–19.

14. Higgs, *Crisis and Leviathan*, 144–45.

15. *Ibid.*

16. Archibald D. Turnbull and Clifford L. Lord, *History of United States Naval Aviation* (New Haven: Yale University Press, 1949), 117–18.

17. Hap Arnold, *Global Mission* (New York: Harper & Row, 1949).

18. Gene Roger Simonson, ed., *History of the American Aircraft Industry: An Anthology* (Cambridge: MIT Press, 1968), 23.

19. Thomas L. McNaugher, *America's Military Procurement Muddle*, 208.

20. Simonson, *History of the American Aircraft. Industry*, 31; Goldman, *To Join with the Eagles*, 18–19.

21. Turnbull and Lord; *History of United States Naval Aviation*, 108.

22. Carl Solberg, *Conquest of the Skies: A History of Commercial Aviation in America* (Boston: Little Brown and Company, 1979), 47–48.

23. Crabb, *Birth of a Giant*, 364.

24. Curtiss, *The Hammondsport Era*, 38–39.

25. Goldman, *To Join with the Eagles*, 30.

26. Rutkows, *The Politics of Military Aviation Procurement, 1926–1934* (Columbus: Ohio State University Press, 1966), 179–80.

27. Simonson, *History of the American Aircraft Industry*, 41–42.

28. *Ibid.*, 42.

29. Rutkowski, *The Politics of Military Aviation Procurement*, 181.

30. Ed Cray, *Chrome Colossus, General Motors and Its Time* (New York: McGraw Hill, 1980), 155; Crabb, *Birth of a Giant*, 362.

31. Crabb, *Birth of a Giant*, 364–65.

32. Cray, *Chrome Colossus*, 156–57.

33. Robert Lacey, *Ford: The Men and the Machine* (New York: Little Brown and Company, 1986), 165–66.

34. Crabb, *Birth of a Giant*, 362–63.

35. Orr Kelly, *King of the Killing Zone* (New York: Norton, 1989), 60, 68.

36. Lacey, *Ford: The Men and the Machine*, 166.

37. Crabb, *Birth of a Giant*, 365–67.

38. *Ibid.*

39. *Ibid.*, 363.

40. Alfred Chandler and Stephen Salsbury, *Pierre S. DuPont and the Making of the Modern Corporation* (New York: Harper & Row, 1971), 396.

41. Zilg, *DuPont, Behind the Nylon Curtain*, 163.

42. *Ibid.*, 158.

43. Kreidberg and Henry, "History of Military Mobilization," 311–12; Armstrong, *History of Public Works*, 594; Risch, *Quartermaster Support for the Army*, 607–08.

44. Eskew, *Cradle of Ships*, 96.

45. Kreidberg and Henry, "History of Military Mobilization," 328–29.

46. Hessen, *The Life of Charles M. Schwab*, 235.

47. *Ibid.*, 240–41.

48. *Ibid.*

49. *Ibid.*

50. Hessen, *The Life of Charles M. Schwab*, 261.

51. Hampton, "Achieving Socioeconomic Goals," 35–37.

52. Kreidberg and Henry, "History of Military Mobilization," 321.

53. Smith, *The Army and Economic Mobilization* (Washington: Superintendent of Documents, 1959), 37–38.

54. Perret, *A Country Made by War*, 322.

55. Smith, *The Army and Economic Mobilization*, 37–38.

56. *Ibid.*

57. *Ibid.*

58. Samuel Eliot Morrison, *The Oxford History of the American People* (New York: Oxford University Press, 1965).

59. Armstrong, *History of Public Works*, 611.

60. Douglas, *The Navy Adopts the Radio*, 117–74, Smith, *Military Enterprise*, 168–69.

61. *Ibid.*

62. Nagle, *Federal Procurement Regulations*, 46.

## CHAPTER 16 The Interwar Period

1. William M. Leary, *Aerial Pioneers, The U.S. Air Mail Service, 1918–1927* (Washington, D.C.: Smithsonian Institution Press, 1985), 25–26.

2. *Ibid.*, 27–28.

3. *Ibid.*

4. *Ibid.* 30–31.

5. *Ibid.*

6. Goodwin, *Brotherhood of Arms*, 53–54.

7. *Ibid.*

8. Page Shamburger, *Tracks Across the Sky, The Story of the Pioneers of the U.S. Airmail* (Philadelphia: J. B. Lippincott Co., 1964), 152.

9. Solberg, *Conquest of the Skies*, 54–55.

10. Leary, *Aerial Pioneers*, 151.

11. *Ibid.*

12. *Ibid.*, 222–23.

13. *Ibid.*, 224.

14. Marilyn Bender and Selig Altschul, *The Chosen Instrument, Pan Am's Juan Trippe, The Rise and Fall of An American Entrepreneur* (New York: Simon and Schuster, 1982), 66.

15. Cray, *Chrome Colossus*, 267.

16. Solberg, *Conquest of the Skies*, 59.

17. Shamburger, *Tracks Across the Sky*, 115–16.

18. Solberg, *Conquest of the Skies*, 55–57.

19. Bender and Altschul, *The Chosen Instrument*, 95–96.

20. Solberg, *Conquest of the Skies*, 74.

21. *Ibid.*, 83–84; Bender and Altschul, *The Chosen Instrument*, 98.

22. Robert Serling, *Howard Hughes' Airline, An Informal History of TWA* (New York: St. Martin's Press, 1983), 3.

23. Oliver Allen, *"The Airline Builders," in Epic of Flight* (New York: Time Life, 1981), 81.

24. *Ibid.*, 83.

25. *Ibid.*, 81.

26. The Spoils Conference has been detailed in many works. Specific reliance for this portion of the book has been on Serling, *Howard Hughes' Airline*, 16–18; Allen, "The Airline Builders," 83; and W. David Lewis and Wesley Newton, *Delta, The History of An Airline* (Athens: University of Georgia Press, 1979): 26.

27. Solberg, *Conquest of the Skies*, 141.

28. Lewis and Newton, *Delta*, 26.

28. Allen, "The Airline Builders," 86.

29. *Ibid.*, 86.

30. Serling, *Howard Hughes' Airline*, 17.

31. *Ibid.*

32. *Ibid.*

33. Lewis and Newton, *Delta*, 26.

34. Solberg, *Conquest of the Skies*, 90.

35. Simonson, *History of the American Aircraft Industry*, 93.

36. Serling, *Howard Hughes' Airline*, 38–46; Rutkowski, *The Politics of Military Aviation Procurement*, 87–88; Simonson; *History of the American Aircraft Industry*, 93.

37. Solberg, *Conquest of the Skies*, 140.

38. *Ibid.*

39. Lewis and Newton, *Delta*, 42.

40. *Ibid.*

41. Solberg, *Conquest of the Skies*, 141–42.

42. *Ibid.*

43. *Ibid.*

44. Lewis and Newton, *Delta*, 42–43; Solberg, *Conquest of the Skies*, 142–43.

45. Solberg, *Conquest of the Skies*, 144.

46. *Ibid.*, 145–46.

47. Shamburger, *Tracks Across the Sky*, 167–68.

48. John Perry Miller, *Pricing of Military Procurements* (New Haven: Yale University Press, 1949), 39, William Barton, *Renegotiation of Government Contracts* (New York: Bobbs-Merrill Co. Inc., 1952), 1–7.

49. Irving Holley, *Buying Aircraft: Materiel Procurement for the Army Air Forces, United States Army in World War II Special Studies* (Washington, D.C.: Office of the Chief of Military History, 1964), 84.

50. Hessen, *The Life of Charles M. Schwab*, 261–65; Barton, *Renegotiation of Government Contracts*, 1–7.

51. Hessen, *The Life of Charles M. Schwab*, 262.

52. *Ibid.*, 263.

53. *Ibid.*

54. *Ibid.*

55. *Ibid.*, 264–65.

56. *Ibid.*, 265.

57. McNaugher, *America's Military Procurement Muddle*, 18–20.

58. *Ibid.*, 18–19.

59. *Ibid.*, 19–20.

60. *Ibid.*, 19.

61. Goldman, *To Join with the Eagles*, 19.

62. Rene J. Francillon, *Lockheed Aircraft since 1913* (Annapolis: Naval Institute Press, 1987), 8–9.

63. Curtiss, *The Hammondsport Era*, 57, 65.

64. Holley, *Buying Aircraft*, 85; McNaugher, *America's Military Procurement Muddle*, 25–27.

65. Turnbull and Lord, *History of United States Naval Aviation*, 240–41.

66. *Ibid.*

67. McNaugher, *America's Military Procurement Muddle*, 26.

68. Turnbull and Lord, *History of United States Naval Aviation*, 242.

69. McNaugher, *America's Military Procurement Muddle*, 26–27.

70. Nagle, "Access to Records—The Early Years," 24 *National Contract Management Association Journal* 15, 16 (1991).

71. Kaufman, *War Profiteers*, 134–35; James Martin Cypher, "Military Expenditures and the Performance of the Postwar U.S. Economy: 1947–1971," a 1973 dissertation at the University of California at Berkeley, 85.

72. Miller, *Pricing of Military Procurements*, 39–40; Kreidberg and Henry, "History of Military Mobilization," 511; Cypher, "Military Expenditures," 85–86.

73. *Ibid.*

74. *Ibid.*

75. Cypher, "Military Expenditures," 88.

76. Simonson, *History of the American Aircraft Industry*, 73.

77. *Ibid.*, 92.

78. *Ibid.*, 73–74.

79. Rutkowski, *The Politics of Military Aviation Procurement*, 67–69.

80. Simonson, *History of the American Aircraft Industry*, 93.

81. *Ibid.*, 85–87.

82. *Ibid.*, 100.

83. Miller, *Pricing of Military Procurements*, 164.

84. *Ibid.*

85. Rutkowski, *Politics of Military Aviation Procurement*, 167–69.

86. Holley, *Buying Aircraft*, 118–19.

87. Rutkowski, *Politics of Military Aviation Procurement*, 168.

88. *Ibid.*

89. *Ibid.*

90. *Ibid.*

91. Simonson, *History of the American Aircraft Industry*, 88.

92. McNaugher, *America's Military Procurement Muddle*, 28; Simonson, *History of the American Aircraft Industry*, 87–88.

93. McNaugher, *America's Military Procurement Muddle*, 28.

94. Rutkowski, *Politics of Military Aviation Procurement*, 50.

95. Zilg, *DuPont, Behind the Nylon Curtain*, 288; John Wiltz, "The Nye Munitions Committee, 1934," in *Congress Investigates: A Documentary History, 1792 to 1974*, Vol. 4 (New York: Chelsea House Publishers 1975), 2740, Anne Trotter, *Development of the "Merchants of Death" Theory, in Cooling, War, Business and American Society*.

96. Miller, *Pricing of Military Procurements*, 39–40.

97. Wiltz, "The Nye Munitions Committee, 1934," 2743.

98. Kreidberg and Henry, "History of Military Mobilization," 524, Cypher, "Military Expenditures," 89–90; Trotter, *Development of the "Merchants of Death" Theory*, 184.

99. Kaufman, *War Profiteers*, 134–35.

100. Cypher, "Military Expenditures," 96.

101. *Ibid.*

102. *Ibid.*

103. Kaufman, *War Profiteers*, 134–35.

104. Smith, *The Army and Economic Mobilization*, 176.

105. Kreidberg and Henry, "History of Military Mobilization," 499–501.

106. Nagle, *Federal Procurement Regulations*, 52.

107. *Ibid.*, 53.

## CHAPTER 17 Socioeconomic Statutes and Goals

1. Risch, *Quartermaster Support for the Army*, 729.

2. The story of Hoover Dam has been told in numerous official and unofficial publications, most notably by Joseph E. Stevens, *Hoover Dam: An American Adventure* (University of Oklahoma Press, 1988); and Ellis Armstrong, ed., *History of Public Works in the United States 1776–1976* (Chicago: American Public Works Association, 1976), 311.

3. Armstrong, *History of Public Works*, 324.

4. Stevens, *Hoover Dam*, 34.

5. Laton McCartney, *Friends in High Places, The Bechtel Story. The Most Secret Corporation and How It Engineered the World* (New York: Simon & Schuster, 1988), 32–33.

6. *Ibid.*, 34.

7. Stevens, *Hoover Dam*, 45.

8. *Ibid.*

9. Armstrong, *History of Public Works*, 324.

10. Stevens, *Hoover Dam*, 46.

11. Armstrong, *History of Public Works*, 324–25.

12. McCartney, *The Bechtel Story*, 39–40.

13. Stevens, *Hoover Dam*, 175.

14. McCartney, *The Bechtel Story*, 41.

15. Stevens, *Hoover Dam*, 176.

16. *Ibid.*, 232.

17. *Ibid.*, 233.

18. *Ibid.*, 234.

19. Charles W. Trainor, "The Buy American Act: Examination, Analysis and Comparison," 64 *Military Law Review* 101, Spring 1964: 102–106.

20. Paul H. Gantt and William H. Speck, "Domestic v. Foreign Trade Problems in Federal Government Contracting: The Buy American Act and Executive Order," 7 *Journal of Public Law* (1958): 378.

21. *Ibid.*, 379–80.

22. William F. Willingham, *Water Power in the "Wilderness": The History of Bonneville Lock and Dam* (Portland, Oregon: U.S. Army Corps of Engineers, 1987), 3.

23. *Ibid.*, 3–4.

24. *Ibid.*, 4.

## CHAPTER 18 The Mobilization Picks Up Steam

1. Green, Thomson, and Roots, *Planning Munitions for War*, 55–56.

2. Allison W. Saville, "The Naval Military-Industrial Complex, 1918–41," in Cooling, *War, Business and American Society*, 105–17.

3. Eskew, *Cradle of Ships*, 159.

4. *Ibid.*, 155; Armstrong, *History of Public Works*, 625.

5. Armstrong, *History of Public Works*, 614.

6. Saville, "The Naval Military-Industrial Complex," 114.

7. Kelley, *King of the Killing Zone*, 69–71.

8. Charles D. Bright, *The Jet Makers, The Aerospace Industry from 1945 to 1972* (Lawrence, Kansas: Regents Press of Kansas, 1978), 1.

9. Holley, *Buying Aircraft*, 73.

10. McNaugher, *America's Military Procurement Muddle*, 28–29.

11. Goldman, *To Join with the Eagles*, 147–48.

12. *Ibid.*, 161–62.

13. R. H. Connery, *The Navy and the Industrial Mobilization in World War II* (Princeton: Princeton University Press, 1951), 3–4.

14. Smith, *The Army and Economic Mobilization*, 215.

15. Gansler, *The Defense Industry*, 60.

16. Higgs, *Crisis and Leviathan*, 203.

17. *Ibid.*, 204.

18. *Ibid.*, 196.

19. Kreidberg and Henry, "History of Military Mobilization," 531.

20. Green, *Thomson, and Roots, Planning Munitions for War*, 57–58.

21. Miller, *Pricing of Military Procurements*, 84–89.

22. Bright, *The Jet Makers*, 3.

23. *Ibid.*

24. Holley, *Buying Aircraft*, 281.

25. Connery, *The Navy and Industrial Mobilization*, 83–84.

26. Miller, *Pricing of Military Procurements*, 48–50; Higgs, *Crisis and Leviathan*, 203.

27. Lacey, *Ford: The Men and the Machine*, 406.

28. Miller, *Pricing of Military Procurements*, 48–50.

29. Green, *Thomson, and Roots, Planning Munitions for War*, 236.

30. Miller, *Pricing of Military Procurements*, 48–50.

31. Crabb, *Birth of a Giant*, 434.

32. *Ibid.*

33. Kelly, *King of the Killing Zone*, 72–73.

34. Crabb, *Birth of a Giant*, 432.

35. *Ibid.*, 434.

36. Eskew, *Cradle of Ships*, 197–98.

37. Miller, *Pricing of Military Procurements*, 84–89.

38. Holley, *Buying Aircraft*, 284.

39. "An Act to Expedite Naval Shipbuilding,"54 Stat. 676 (June 28, 1940).

40. Holley, *Buying Aircraft*, 285.

41. Higgs, *Crisis and Leviathan*, 203.

42. *Ibid.*

43. Green, Thomson, and Roots, *Planning Munitions for War*, 263–64.

44. Holley, *Buying Aircraft*, 288–89.

45. *Ibid.*, 288–89, Green, Thomson, and Roots, *Planning Munitions for War*, 221.

46. Miller, *Pricing of Military Procurements*, 51–53.

47. War Production Board Division of Information, Priorities and Industry 4 (August 1942).

48. Office of Production Management, Priorities Division, Information Bulletin No. 5, Compliance (December 19, 1941).

49. Nagle, *Federal Procurement Regulations*, 246.

50. Wiltz, "The Nye Munitions Committee," 2124.

51. Congress established the Wade Committee on December 9, 1861, after the Union defeats at Bull Run and Balls Bluff, to "inquire into the conduct of the present war." Dominated by radical Republicans and chaired by a leading radical senator, Benjamin Wade, the joint committee claimed the right not only to investigate executive acts and advise the president but tried to direct the war effort. Hearings began in late December 1861 and continued until early 1865. At these sessions the committee discussed past and future battles and strategic plans, disloyal employees, and war supplies and contracts. Robert E. Lee commented that "the committee was worth about two divisions of confederate troops."

52. Wiltz, "The Nye Munitions Committee," 3117.

53. See Kaufman, *War Profiteers*, 134.

54. Harry S. Truman, *Memoirs: Year of Decisions* (Garden City, N.Y.: Doubleday, 1958), 189–90.

55. Wiltz, "The Nye Munitions Committee," 2124.

## CHAPTER 19 World War II Begins

1. Higgs, *Crisis and Leviathan*, 204.

2. Miller, *Pricing of Military Procurements*, 25.

3. *Ibid.*, 23–24.

4. *Ibid.*, 51–53; Higgs, *Crisis and Leviathan*, 212–13.

5. Higgs, *Crisis and Leviathan*, 213.

6. Miller, *Pricing of Military Procurements*, 62–63.

7. Higgs, *Crisis and Leviathan*, 211–12.

8. *Ibid.*, 213.

9. *Ibid.*, 206.

10. Crabb, *Birth of a Giant*, 434–36.

11. Nagle, "Access to Records—The Early Years," 24 *National Contract Management Association Journal*, 15, 17 (1991).

12. R. H. Connery, *The Navy and the Industrial Mobilization in World War II* (Princeton: Princeton University Press, 1951), 371–72.

13. Miller, *Pricing of Military Procurements*, 69–71; Higgs, *Crisis and Leviathan*, 207–08.

14. Connery, *The Navy and Industrial Mobilization*, 236.

15. Higgs, *Crisis and Leviathan*, 217–18.

16. Miller, *Pricing of Military Procurements*, 90.

17. Smith, *The Army and Economic Mobilization*, 70–71.

18. Miller, *Pricing of Military Procurements*, 122.

19. *Ibid.*, 144; Connery, *The Navy and Industrial Mobilization*, 217–18.

20. Smith, *The Army and Economic Mobilization*, 280–81.

21. Miller, *Pricing of Military Procurements*, 128.

22. Nagle, *Federal Procurement Regulations*, 136.

23. Connery, *The Navy and Industrial Mobilization*, 237–38.

24. William Barton, *Renegotiation of Government Contracts* (New York Bobbs-Merrill Co. Inc., 1952), 1–7.

23. *Ibid.*

26. Miller, *Pricing of Military Procurements*, 105.

27. Thomas Cochran, *200 Years of American Business* (New York: Basic Books, Inc., 1977), 186.

28. Connery, *The Navy and Industrial Mobilization*, 116–17.

29. *Ibid.*, 119–20.

30. Miller, *Pricing of Military Procurements*, 51–53.

31. Connery, *The Navy and Industrial Mobilization*, 120–21.

32. *Ibid.*, 122.

33. Richard Lingeman, *Don't You Know There's A War On? The American Home Front, 1941–1945* (New York: G. P. Putnam's Sons, 1970), 64.

34. Connery, *The Navy and Industrial Mobilization*, 334–35.

## CHAPTER 20 Industry Responds

1. Lacey, *Ford: The Men and the Machine*, 409; Crabb, *Birth of a Giant*, 444.

2. Crabb, *Birth of a Giant*, 440–42; Lingeman, *Don't You Know There's A War On?*, 107–10.

3. Crabb, *Birth of a Giant*, 442–44.

4. Cray, *Chrome Colossus*, 315.

5. Crabb, *Birth of a Giant*, 436–38.

6. Cray, *Chrome Colossus*, 318.

7. Solberg, *Conquest of the Skies*, 259–60; Bender and Altschul, *The Chosen Instrument*, 231–34.

8. Serling, *Howard Hughes' Airline*, 94.

9. Solberg, *Conquest of the Skies*, 252.

10. Simonson, *History of the American Aircraft Industry*, 119.

11. Lacey, *Ford: The Men and the Machine*, 412.

12. Simonson, *History of the American Aircraft Industry*, 147.

13. *Ibid.*, 166.

14. Thomas DiBacco, *Made in the U.S.A., The History of American Business* (New York: Harper & Row, 1987), 239–40.

15. Arnold, *Global Mission*, 205.

16. DiBacco, *Made in the U.S.A.*, 240–44.

17. *Ibid.*, 236, Zilg; *DuPont, Behind the Nylon Curtain*, 357.

18. DiBacco, *Made in the U.S.A.*, 235.

19. Zilg, *DuPont, Behind the Nylon Curtain*, 357.

20. James MacGregor Burns, *The Crosswinds of Freedom, The History of the United States* (New York: Alfred A. Knoft, 1989), 184.

21. Eskew, *Cradle of Ships*, 222.

22. Crabb, *Birth of a Giant*, 444.

23. *Foreign Relations of the United States, The Conferences at Cairo and Teheran, 1943* (Washington, D.C.: Government Printing Office, 1961), 469, 584.

24. Zilg, *DuPont, Behind the Nylon Curtain*, 364.

25. Connery, *The Navy and Industrial Mobilization*, 385.

26. Smith, *The Army and Economic Mobilization*, 290.

27. Perret, *A Country Made by War*, 439.

28. Smith, *The Army and Economic Mobilization*, 10.

29. Higgs, *Crisis and Leviathan*, 233.

30. Francillon, *Lockheed Aircraft*, 23.

## CHAPTER 21 Contracting in an Era of New Technology, Paperwork, Litigation

1. Simonson, *History of the American Aircraft Industry*, 185.

2. Charles D. Bright, *The Jet Makers, The Aerospace Industry from 1945 to 1972* (Lawrence: Regents Press of Kansas, 1978), 11.

3. McNaugher, *America's Military Procurement Muddle*, 30.

4. Nagle, *Federal Procurement Regulations*, 63 et seq.

5. *Ibid.*, 64.

6. *Ibid.*, 65.

7. Kaufman, *War Profiteers*, 135.

8. Nagle, *Federal Procurement Regulations*, 71.

9. *Ibid.*, 74.

10. Bright, *The Jet Makers*, 61.

11. Simonson, *History of the American Aircraft Industry*, 207.

12. William H. Gregory, *The Defense Procurement Mess* (Lexington, Massachusetts: Lexington Books, 1989), 72–73.

13. Bright, *The Jet Makers*, 135.

14. McNaugher, *America's Military Procurement Muddle*, 30.

15. Gansler, *The Defense Industry*, 85–86.

16. David Noble, "Command Performance: A Perspective on Military Enterprise and Technological Change," 329–47, in Smith, *Military Enterprise*.

17. Thomas Misa, "Military Needs, Commercial Realities and the Development of the Transistor, 1948–1958" in Smith, *Military Enterprise*.

18. Simonson, *History of the American Aircraft Industry*, 227.

19. Cray, *Chrome Colossus*, 355.

20. Bright, *The Jet Makers*, 41–42.

21. Simonson, *History of the American Aircraft Industry*, 238–39.

22. See Bibliographical Essay, 567.

23. Courtney G. Brooks, James M. Grimwood, Loyd S. Swenson, Jr., *Chariots For Apollo: A History of Manned Lunar Spacecraft* (Washington: NASA, 1979), 56.

24. *Ibid.*, 387.

25. Barton C. Hacker and James M. Grimwood, *On The Shoulders Of Titans: A History of Project Gemini* (Washington: NASA, 1977), 75.

26. Richard G. Hewlett and Francis Duncan, *Nuclear Navy 1946–1962* (Chicago: University of Chicago Press, 1978), 158–64.

27. *Ibid.*, 85–86.

28. *Ibid.*, 99.

29. See Bibliographical Essay, 567.

30. Hewlett and Duncan, *Nuclear Navy*, 217–18.

31. *Ibid.*

32. *Ibid.*

33. Nagle, *Federal Procurement Regulations*, 285–87.

34. *Ibid.*, 285–86.

35. *Ibid.*, 286–87.

36. McNaugher, *Americas Military Procurement Muddle*, 56; Fen Osler Hampson, *Unguided Missiles: How America Buys Its Weapons* (New York: Norton, 1989).

37. McNaugher, *America's Military Procurement Muddle*, 58–59; Bright, *The Jet Makers*, 71–72.

38. Francillon, *Lockheed Aircraft*, 37–39.

39. Bright, *The Jet Makers*, 73.

40. McNaugher, *America's Military Procurement Muddle*, 66–67.

41. *Ibid.*

42. Bright, *The Jet Makers*, 14–19; 135–43.

43. Gansler, *The Defense Industry*, 93.

## CHAPTER 22 The Modern Era: A Sea of Paperwork

1. Nagle, *Federal Procurement Regulations*, 76.

2. *Schoenbrod v. United States*, 410 F.2d 400, 403 (Ct. Cl. 1969).

3. Nagle, *Federal Procurement Regulations*, 132.

4. *Ibid.*, 140.

5. *Ibid.*, 134.

6. *Ibid.*

7. *Ibid.*, 128.

8. *Ibid.*, 129.

9. *Ibid.*

10. *Ibid.*, 128.

11. *Perkins v. Lukens Steel Co.*, 310 U.S. 113, 127 (1940).

12. Nagle, *Federal Procurement Regulations*, 89–90.

13. *Paul v. United States*, 371 U.S. 245 (1963).

14. *G. L. Christian & Assocs. v. United States*, 312 F.2d 418 (Ct. Cl. 1963).

## CHAPTER 23 The Modern Age—The 1980s and 1990s

1. See William E. Kovacic "Evaluating the Effects of Procurement Reforms on Defense Acquisitions," October 1997 Presentation to the Annual Meeting of the Boards of Contract Appeals Bar Association, 3–4.

2. Hon. William S. Cohen, "The Competition in Contracting Act," 14 *Public Contract Law Journal* 1 (1983).

3. Andy Pasztor, *When the Pentagon Was For Sale: Inside America's Biggest Defense Scandal* ( Scribner, New York, 1995), 26.

4. See William E. Kovacic, "Blue Ribbon Defense Commissions: The Acquisition of Major Weapons Systems, from Arms, Politics and the Economy—Historical and Contemporary Perspectives" (Robert Higgs ed., Holmes & Meier for the Independent Institute 1990) (hereinafter Kovacic, Blue Ribbon), 76, which studies the role that the Packard Commission and other blue ribbon panels played in evaluating and reforming the weapons acquisition process in the United States since World War II; Pasztor, *When the Pentagon Was For Sale: Inside America's Biggest Defense Scandal*, 30.

5. Cohen, "The Competition in Contracting Act," 10. Actually, such statistics and statement from Congress must be viewed with caution. Many times members did not understand that contracts that were negotiated could also have been awarded competitively.

6. 10 U.S.C. § 2306.

7. See pages 486–89, *supra*.

8. Marshall J. Doke, Jr., Kathy C. Weinberg, and Stan Hinton, "1987 Procurement Review: What Happened, What It Means, What To Do," *Briefing Papers* No. 88-2 (January 1988).

9. Pub. L. No. 99-433, 100th Stat. 992.

10. See Kovacic, Blue Ribbon 76.

11. "A Quest For Excellence: The Final Report by the President's Commission on Defense Management," 55 (June 1986).

12. *Ibid.*

13. 52 Fed. Reg. 34,386 (1987).

14. Defense Policy Panel on Acquisition Policy Panel of the H.R. Comm. on Armed Services, 100th Cong. 2nd Sess., Defense Acquisition: Major U.S. Commission Reports (1949–1988) (Comm. (1988 vii)).

15. Pasztor, *When the Pentagon Was For Sale*, 348.

16. 41 U.S.C. § 423.

17. 134 Cong. Rec. S17071 (daily ed. October 20, 1988).

18. See Julian S. Greenspun, "1988 Amendments to Federal Procurement Policy Act: Did the 'Ill Wind' Bring an Impractical Over-Reaction that May Run Afoul of the Constitution?" 19 *Public Contract Law Journal* 393 (Winter 1990); For a discussion of the legislative history of the Procurement Integrity Act, see Donaldson, "Section 6 of the Office of Federal Policy and Procurement Act Amendments of 1988: A New Ethical Standard in Government Conduct?," 20 *Columus Law Review* 421 (1990).

19. Robert D. Wallick, Peter L. Wellington, and Jerald S. Howe, Jr., "Procurement Integrity: Pondering Some Imponderables," 19 *Public Contract Law Journal* 349 (1990).

20. U.S. General Accounting Office, "Implementation of the Certification Requirements of the Procurement Integrity Law," Rep. No. T-NSIAD-91-05 (Washington D.C.), Government Printing Office, February 21, 1991, at 9, quoted in Joseph A. Pegnato, "Procureosclerosis," 26 *National Contract Management Journal*, 64, 68 (1995); see James P. Gallatin and Bruce S. Ramo, "Procurement Integrity—What Does It Mean?," 30 *Contract Management*, January 1990 at 20.)

21. Dees, "Numerality" Environment in Government Contracts, 20 *National Contract Management Journal* (Winter 1987), 1-2.

22. See Office of the Inspector General. DOD. Handbook on Scenarios of Potential Defective Pricing Fraud, Pub. No. IG/APO 7600.I-H, at i (1986).

23. E.g., *United States v. Bank of New England, N.A.* 821 F.2d 844 (First Cir.), *cert. denied*, 484 U.S. 943 (1987).

24. E.g., *United States v. Automated Medical Laboratories, Inc.*, 770 F.2d 399, 407 (4th Cir. 1985); *Standard Oil Co. v. United States*, 307 F.2d 120, 128 (5th Cir. 1962).

25. S. Rep. No. 99-345, 99th Cong., 2nd Sess. (29 July 1986).

26. Section 935 of the 1986 DOD Authorization Act, Pub. L. No. 99-145, gave subpoena power to the Director of the Defense Contract Audit

Agency for the production of records of a contractor for which access is provided by the clauses in the contract; *United States v. Aero Mayflower Transit Co.*, 831 F.2d 1142 (D.C. Cir. 1987).

27. Pub. L. No. 100-690, § 7078.

28. DOD Authorization Act of 1986, Pub. L. No. 99-145, Title IX.

29. Carl L. Vacketta and Dorn C. McGrath III, "Procurement Reforms of the 99th Congress," *Briefing Papers* No. 86-13 (December 1986).

30. Pub. L. No. 100-700.

31. See page 197, *supra.*

32. *Ibid.*

33. Pub. L. No. 99-562, 100 Stat. 3153.

34. S. Rep. No. 99-345, 99th Cong., 2d Sess. 304, *Reprinted in* 1986, U.S.C.C.A.N 5266-5269; Michael L. Waldman, "The 1986 Amendments to the False Claims Act: Retroactive or Prospective?" 18 *Public Contract Law Journal* 469 (1989).

35. Waldman, "The 1986 Amendments to the False Claims Act: Retroactive or Prospective," 472–473.

36. Michael L. Waldman, "Damage Control: A Defendant's Approach to the Damage and Penalty Provisions of the Civil False Claims Act," 21 *Public Contract Law Journal* 131, 132 (1992). Louis D. Victorino, Robert L. Ivey, and Kevin R. Sullivan, Qui Tam Lawsuits, *Briefing Papers* No. 89-10 (Sept. 1989).

37. Victorino, "Qui Tam Lawsuits," 4.

38. Pasztor, *When the Pentagon Was For Sale*, 366.

39. Armed Forces Journal, Aug. 1985, p. 42, cited in Colleen A. Preston, "Congress and the Acquisition Process: Some Recommendations for Improvement," 20 *National Contract Management Journal* 1 (1986) at 2.

40. John W. Whelan, "Reflections on Government Contracts and Government Policy on the Occasion of the Twenty Fifth Anniversary of the Public Contract Law Section," 20 *Public Contract Law Journal* (1990), 6–10.

41. Whelan at 11 references President Reagan asking Congress to slow up a bit. He also points out that Senator Nunn held similar views by complaining about the micro-management (by the Congress presumably) of defense procurement and spoke of the need to "reform the reforms" already in place; See 47 Fed. Cont. Rep. 125 (1987) and Preston 1.

42. Pub, L. No. 99-661, 100 Stat. 3816.

43. Pub. L. No. 101-280, 104 Stat. 149.

44. E.g., 1986 DOD Authorization Act, P.L. 99-145, § 911.

45. Pasztor, *When the Pentagon Was For Sale*, 10.

46. *Seattle Post Intelligencer*, Sunday, January 30, 1994, p. E1.

47. Beighle, "Defense Contractors: The Next Spotted Owl?" 24 *National Contract Management Journal* 23, 27 (1991).

48. See pages 215–21, *supra.*

49. Joseph Kattan, "The Declining Defense Sector and Federal Anti-Trust Enforcement," 23 *Public Contract Law Journal* (1993), at 1.

50. *Newsweek* July 15, 1991, at 35.

51. *Wall Street Journal* of May 2, 1994, 86–87.

52. Pasztor, *When the Pentagon Was For Sale*, 10.

53. David V. Lamm, "Why Firms Refuse DOD Business: An Analysis of Rationale," 20 *National Contract Management Journal* (Winter 1988) 45.

54. Lamm, "Why Firms Refuse DOD Business: An Analysis of Rationale," 48–49.

55. George K. Krikorian, Presentation to the Acquisition Law Advisory Panel, Ft. Belvoir, Virginia, June 3, 1992; Krikorian, "DOD's Cost Premium 30-50%, National Defense," *Journal of the American Defense Preparedness Association*, 12-13, September 1992.

56. Janik Bouquet, "Beyond Procurement Contracts: Opportunities for High-Technology Partnerships With the Federal Government," 27 *National Contract Management Journal* 15 (1996); Carl L. Vacketta, Richard N. Quyath, and Holly Emerick Svetz, "Other Transactions," *Briefing Papers* No. 98-4 (March 1998).

57. July 15 1991, *Newsweek* at 38.

58. *Ibid.*

59. Introduction to the Section 800 report, page 1-6.

60. Marshall J. Doke, Jr., Kathy C. Weinberg, and Stan Hinton, "The 1989 Procurement Review," *Briefing Papers* No. 90-2 (January 1990).

61. Douglas P. Beighle, "Defense Contractors: The Next Spotted Owl?" 24 *National Contract Management Journal* 23 (1991).

62. Air Force Association, Arlington, Virginia, "Lifeline Adrift: The Defense Industrial Base in the 1990s" (1991) cited in Marshall J. Doke, Jr., Stan Hinton, and R. Chris Puffer, "1991 Procurement Review," *Briefing Papers* No. 92-2 (January 1992).

63. *Ibid.*

64. July 15, 1991 *Newsweek.*

65. "Defense Industry Mergers Will Get Pentagon Support, *Wall Street Journal*, September 1, 1993 at A-16, cited in Kattan 1.

66. Booz, Allen and Hamilton, "Consolidation in Aerospace/Defense: What's Next?" (June 1992), See also Dennis A. Yao and Susan S. DeSanti, "Antitrust Analysis of Defense Industry Mergers," 23 *Public Contract Law Journal* 379 (1994); Benjamin L. Ginsberg, James A. King, Michael J. Schaengold, and David J. Berteau, "Waging Peace: A Practical Guide to Base Closures," 23 *Public Contract Law Journal* 169 (1994).

67. John W. Chierichella and Douglas E. Perry, "Mergers and Acquisitions of Government Contractors: Special Considerations and Due Diligence Concerns," 23 *Public Contract Law Journal* 471 (Spring 1994).

68. *Newsweek* July 15, 1991 at 35.

69. See page 115 *supra*.

70. See ABA Section of Public Contract Law, "Service Contracting, A Booming Business in the Downsizing Decade," 1997.

71. 52 Fed. Reg. 44,853 (1987).

72. See Kovacic "Evaluating the Effects of Procurement Reforms on Defense Acquisitions," October 1997 Presentation to the Annual Meeting of the Boards of Contract Appeals Bar Association, 8–9.

73. U.S. Department of Defense, Defense Management Report to the President by Secretary of Defense Dick Cheney (1989), at 26.

74. National Defense Authorization Act for Fiscal Year 1991, Pub. L. No. 101-510.

75. Streamlining Defense Acquisition Law at Vol. I:1-7. For more information on this subject, see Kurt A. Didier, "Construction Contracting and the New Two-Phase Design-Build Selection Procedures: Balancing Efficiency With Full and Open Competition," 27 *Public Contract Law Journal* 589 (1998).

76. Quote in Green, "Federal Waste and Fraud May be Tamed," *The San Diego Union-Tribune*, May 23, 1993 at 1, cited in Joseph A. Pegnato, "Procureosclerosis," 26 *National Contract Management Journal* 65 (1995).

77. 59 Fed. Reg. 26,772 (1994).

78. Pub. L. No. 99-661, Section 907, 100 Stat. 3816, 3917 (1986).

79. Wendy T. Kirby and Josephine L. Ursini, "Commercial Products Procurement," *Briefing Papers* No. 91-3 (February 1991).

80. 1990 DOD Authorization Act, Pub. L. No. 101-189, 103 Stat. 1352.

81. Peter J. Ritenburg, "FASA's Commercial Item Preference Promises Little Streamlining Without Additional Authority," *Contract Management*, June 1995 at 4.

82. CSIS, *Integrating Commercial And Military Technologies For National Strength: An Agenda for Change* (1991).

83. Quoted in *Federal Contract Management: A Manual for the Contract Professional*, Norman A. Steiger, Editor-in-Chief, p. 19-4 to 19-5.

84. The Federal Acquisition Streamlining Act of 1994, Pub. L. No. 103-355, 108 Stat. 3243.

85. S. Rep. No. 103-258, at 2 (1994), *reprinted in* 1994 U.S.C.C.A.N. 256, 2563.

86. 140 Cong. Rec. 56584 (daily ed. June 8, 1994).

87. 59 Fed. Reg. 52,387 (1994).

88. Executive Order 12931 at 926. See Brian S. Frye, "Micro Purchases and Mandatory Sources," 28 *National Contract Management Journal* 21, 1997.

89. Divisions D and E of the Fiscal Year 1996 Defense Authorization Act, Pub. L. No. 104-106, 110 Stat. 186, 642 (February 10,

1996) contained the Federal Acquisition Reform Act of 1996 and the Information Technology Management Reform Act of 1996, later renamed the Clinger-Cohen Act of 1996, by Section 101(f) of the FY 1997 Omnibus Consolidated Appropriations Act, Section 808.

90. Accompanying Report of the NPR, quoted in Jean-Pierre Swennen and John E. McCarthy, Jr., "Electronic Commerce and Federal Procurement," *Briefing Papers* No. 98-8 (July 1998), at 2.

91. 58 Fed. Reg 58,095 (1993).

92. Christopher R. Yukins, "Managing Electronic Commerce on the Federal Acquisition Computer Network (FACNET)," 27 *National Contract Management Journal*, 35 (1996).

94. Howard W. Cox, "FASA and Full Certifications: Procurement Fraud on the Information Superhighway," 25 *Public Contract Law Journal* 1 (1995).

# Bibliographical Essay

I have included in this essay all the books and articles I have consulted even if, for reasons of space, I could not include material derived from them. The chapter categories in this history are merely dividing lines in what is essentially a continuum. Consequently, I have not retained them in discussing my sources. For example, coverage of the aircraft and automobile industries straddled several chapters in the text, but here I have consolidated such coverage in a single category.

## General

Chuck Culver's *Federal Government Procurement—An Uncharted Course Through Turbulent Waters* (McLean, Va.: National Contract Management Association, 1984) is a brief, entertaining history of procurement that connects it with the national and international events occurring simultaneously. My earlier book, *Federal Procurement Regulations: Policy, Practices and Procedures* (Chicago: American Bar Association, 1987), especially chapter two, tracing the history of those regulations, has been extremely valuable.

Two short studies tracing the development of procurement methods are Cox, "Historical Development of Procurement Methods" (undated, prepared by the Office of the Secretary of Defense) and Susko, "The Historical Development of Procurement Methods" (1980), a research project at the Florida Institute of Technology.

Erna Risch's *Quartermaster Support for the Army, 1775–1939* (Washington, D.C.: Center for Military History (1962), while not specifically concerned with procurement, has so exhaustively covered the related subject that it is a treasure trove of information. Also of tremendous value is James Huston, *The Sinews of War, A Study of Army Logistics* (Washington, D.C.: Center for Military History, 1966). Lt. Col. Marvin A. Kreidberg and 1st Lt. Merton G. Henry, "History of Military Mobilization in the United States Army 1775–1945," *Department of the Army Pamphlet No. 20-212* (Washington, D.C.: Center for Military History, 1955) studies the entire subject of mobilization of both industry and personnel. Other helpful works include James W. Booth, *Interest and Federal Contracts: A Perspective*

(Washington, D.C.: Arthur Andersen, 1982); Abbott, "A Legislative History of Competition in Government Procurement," an unpublished paper at The George Washington University National Law Center; Hugh Grant Wheeler, "The Effects of War on Industrial Growth, 1816–1970," a 1975 dissertation at the University of Michigan; Nagle, "The Role of Certifying and Disbursing Officers in Government Contracts," 95 *Military Law Review* 1, 106 (1982); and Cullerton, "History of the Food and Forage Act," *Resource Management Journal* (Summer 1983), at 20, tracing the development of some of the laws on financial controls.

*Navy Contract Law*, published by the Office of the Navy General Counsel in 1955, provides much insight on navy contracting history. Jack Sweetman, *American Naval History* (Annapolis, Md.: Naval Institute Press, 1984), puts that contracting history in perspective.

No comparable study has been found that chronicles the contracting efforts of the Post Office. However, Rudolph Sobernheim, "Contracts for the Highway Transportation of the Mails," *Public Contract Law Journal* 8, 157 (1976) is an excellent source. Other helpful sources include Daniel Roper, *The United States Post Office* (1917); Dorothy Fowler, *Unmailable—Congress and the Post Office* (1977); Wayne Fuller, *The American Mail, Enlarger of the Common Life* (Chicago: University of Chicago Press, 1972); Cheryl Weant McAfee, *Know Your Government—The United States Postal Service* (New York: Chelsea House Publishers, 1987). Other related post office histories were discussed in the sections on the overland mail in the 1850s and the air mail contracts in the 1920s and 1930s.

For general histories of the United States, I consulted Harry Carman, Harold Sysett, Bernard Wishy, *A History of the American People*, Volumes I and II (New York: Knopf and Company, 1961); Samuel Eliot Morrison, *The Oxford History of the American People* (New York: Oxford University Press, 1965); Marshall Smelser and Harry Kirwin, *Conceived in Liberty, The History of the United States* (Garden City, N.Y.: Doubleday and Company, 1962); James MacGregor Bums, *The Crosswinds of Freedom, The History of the United States* (New York: Alfred A. Knopf, 1989). For a broader historical view, I consulted William McNeil, *The Rise of the West* (Chicago: University of Chicago Press, 1963).

For general military history, see Geoffrey Perret, *A Country Made by War: From the Revolution to Vietnam—The Story of America's Rise to Power*

(New York: Random House, 1989); Russell F. Weigley, *History of the United States Army* (New York: MacMillan, 1967); Maurice Matloff, ed., *American Military History* (Washington, D.C.: Center for Military History, 1968); and Allen Millett and Peter Maslowski, *For The Common Defense, A Military History of the United States of America* (New York: The Free Press, 1984). Donald Hickey, *The War of 1812, A Forgotten Conflict* (Urbana and Chicago, University of Illinois Press, 1989); David Clary and Joseph Whitehorne, *The Inspectors General of the United States Army, 1777–1903* (Washington, D.C.: Center for Military History, 1987); and Richard Kaufman, *The War Profiteers* (Garden City, N.Y.: Doubleday, 1972) chronicle many of the scandals in defense contracting.

To trace the development of weapons, see Robert O'Connell, *Of Arms and Men* (New York: Oxford University Press, 1989); Martin Van Creveld, *Technology and War, From 2000 B.C. to the Present* (New York: Free Press, 1989); and Bernard Brodie and Fawn Brodie, *From Crossbow to H-Bomb* (Bloomington, Ind.: Indiana University Press, 1973).

For studies of the various methods used to control contracting prices, especially during wartime, see William Barton, *Renegotiation of Government Contracts* (New York: Bobbs-Merrill Co. Inc., 1952); John Perry Miller, *Pricing of Military Procurements* (New Haven: Yale University Press, 1949); and J. Fred Weston, ed., *Procurement and Profit Renegotiation* (San Francisco: Wadsworth Publishing Company, 1960).

Benjamin Franklin Cooling, ed., *War, Business and American Society, Historical Perspectives on the Military-Industrial Complex* (Port Washington, N.Y.: Kennikat Press, 1977); and Merritt Roe Smith, ed., *Military Enterprise and Technological Change, Perspectives on the American Experience* (Cambridge: MIT Press, 1985) have both been of tremendous help in preparing this book. Both Cooling and Smith have pioneered other studies that are cited in this bibliography. Dr. Jacques S. Gansler was kind enough to share with me a copy of chapter two of his dissertation on the "Industrial Base," which was not included in his book, *The Defense Industry* (Cambridge: MIT Press, 1980).

For histories of business, I consulted Thomas DiBacco, *Made in the U.S.A., The History of American Business* (New York: Harper & Row, 1987); Thomas Cochran, *200 Years of American Business* (New York: Basic

Books, Inc., 1977); Gerald Gunderson, *The Wealth Creators* (New York: Truman Talley Books, 1989).

For histories of other unique types of contracting, see Ellis Armstrong, ed., *History of Public Works in the United States 1776–1976* (Chicago: American Public Works Association, 1976); Paul Gates, *History of Public Land Law Development*, Public Land Law Review Commission (Washington, D.C.: 1968); Bledsoe and Ravitz, "The Evolution of R&D as a Procurement Function of the Federal Government," 17 Federal Bar Journal 189 (1957); A. Hunter Dupree, *Science in the Federal Government: A History of Politics and Activities to 1940* (Cambridge: Harvard University Press, 1957).

## French and Indian War

The military history books mentioned earlier provide some background on and insight into the French and Indian War, but the story of the Niagara Campaign and its contract support are recounted in Theodore Thayer, "Contractors for the Niagara Campaign, 1755–1756," *William and Mary Quarterly*, 3d ser., 14 (January 1957) at 31.

## Revolution

Ironically, this earliest period of procurement has received the most attention. See, for example, Erna Risch, *Supplying Washington's Army* (Washington, D.C.: Center for Military History, 1981); Victor Johnson, *The Administration of the American Commissariat During the Revolutionary War* (Philadelphia: 1941); E. Wayne Carp, *To Starve the Army at Pleasure* (Chapel Hill: University of North Carolina Press, 1984); Ganister, "American Military Procurement and Supply During the Revolutionary and Federalist Periods—or—Lockheed Isn't Alone," a speech delivered at a National Contract Management Association Conference on September 30, 1976, and graciously provided to the author, Dickson, "Procurement Problems During the American Revolution," 10 *National Contract Management Journal* 20 (Winter 1976–77); and E. James Ferguson, "Business, Government, and Congressional Investigation in the Revolution," *William and Mary Quarterly*, 3d ser., 16 (July 1959) at 293.

Robert Morris's papers were exhaustively sought out, studied, compiled, and published in *The Papers of Robert Morris*, a five-volume work edited by E.

James Ferguson and published in 1973. The Morris papers and correspondence are located in the Manuscript Division, Library of Congress. The best treatment of Morris is Clarence L. Ver Steeg, *Robert Morris, Revolutionary Financier* (Philadelphia, 1954). The best older work is William G. Sumner, *The Financier and the Finances of the American Revolution* (1891).

For more about Jonathan Trumbull, see Joy, "America's First Contracting Officer," *Government Contracts Chronicle* (September 1971) at 2. Joy also looks at Trumbull's father in "Connecticut's Merchant Governor," 8 *Public Contract Law Journal* 129 (1976). Other period figures are studied in Robert F. Jones's dissertation at the University of Notre Dame, "The Public Career of William Duer: Rebel, Federalist Politician, Entrepreneur and Speculator 1775–1792" (1967); Theodore Thayer, *Nathanael Greene, Strategist of the American Revolution* (New York: Twayne Publishers, 1960); Larry Gerlach, *Proud Patriot, Phillip Schuyler and the War of Independence, 1775–1783* (Syracuse, N.Y.: Syracuse University Press, 1987); Kenneth Rossman, *Thomas Mifflin and the Politics of the American Revolution* (Chapel Hill: University of North Carolina Press, 1952).

## Constitutional Period

I consulted Paul Nelson, *Anthony Wayne, Soldier of the Early Republic* (Bloomington: Indiana University Press, 1985); Hutcheson, Tench Coxe, *A Study in American Economic Development* (1969); and Record Group 92, National Archives.

For more on the building of the frigate Constitution, see F. Alexander Maguun, *The Frigate Constitution and Other Historic Ships* (New York: Bonanza Books, 1927); Howard Chapelle, *The History of American Sailing Ships* (New York: Norton & Company, 1935); Spencer Tucker, *Arming the Fleet, US Naval Ordnance, and the Muzzle-Loading Era* (Annapolis, Md.: The Naval Institute Press, 1989).

Other works consulted for this period include Alexander DeConde, The Quasi War, *The Politics and Diplomacy of the Undeclared War With France, 1797–1801* (New York. Charles Scribner's Sons, 1966); Robert Johnson, *Guardians of the Sea: History of the U.S. Coast Guard, 1915 to the Present* (Annapolis, Md.: Naval Institute Press, 1987); Oliver W. Holmes, "Shall Stagecoaches Carry the Mail? —A Debate of The

Confederation Period," *William and Mary Quarterly*, 3rd Ser., 20 (October 1963) at 555.

## Start of the Arms Industry

Eli Whitney has been the subject of numerous biographies. Whitney's contracts, and later the Wright brothers' contracts, provide snapshots of the procurement practices of the past, preserved by the attention of historians.

The story of Whitney's contracts and their effect on the American system of manufacturing and the related history of Hall, North, Colt, and the others are recounted in James Joy, "Eli Whitney's Contracts for Muskets," *Public Contract Law Journal* 8 (1976) at 140; Claud E. Fuller, *The Whitney Firearms* (Huntington, W.Va.: Standard Publications, 1946); Joseph and Francis Gies, *The Ingenious Yankees* (New York: Crowell and Company, 1976); Derry and Williams, *A Short History of Technology From the Earliest Times to A.D. 1900* (New York: Oxford University Press, 1961); Edwards, *The Story of Colt's Revolvers: The Biography of Colonel Samuel Colt* (New York: Castle Books, 1957); Haven, *A History of the Colt Revolver and Other Arms Made By Colt's Patent Firearms Manufacturing Company from 1836 to 1940* (New York: Morrow & Company, 1940); Daniel Boorstin, *The Americans, The Democratic Experience* (New York: Random House, 1973); Roger Burlingame, *The March of The Iron Men* (New York: Charles Scribner's Sons, 1938); Boothroyd, *The Handgun* (New York: Bonanza Books, 1979); Anthony DiFilippo, *Military Spending and Industrial Decline. A Study of the American Machine Tool Industry* (Greenwood Press, 1986); and Merritt Roe Smith, Harpers Ferry Armory and the New Technology: *The Challenge of Change* (Ithaca: Cornell University Press, 1977).

For more on the DuPonts, see Leonard Mosley, *Blood Relations, The Rise and Fall of the DuPonts of Delaware* (New York: Atheneun, 1980); Gerard Colby Zilg, DuPont, *Behind the Nylon Curtain* (Englewood Cliffs, N.J.: Prentice-Hall, 1974); Norman B. Wilkinson, Lammot DuPont and the American Explosives Industry 1850–1884 (Charlottesville: University Press of Virginia, 1984); Alfred Chandler and Stephen Salsbury, *Pierre S. DuPont and the Making of the Modern Corporation* (New York: Harper & Row, 1971).

## Exploration of the West, Freighting Empires, and the Overland Mail Service

Because these themes are so interrelated, I have combined them here. Of interest are W. Turrentine Jackson, *Wagon Roads West: A Study of Federal Road Surveys and Construction in the Trans-Mississippi West, 1846–1864* (Berkeley: University of California Press, 1952); Forest G. Hill, *Roads, Rails and Waterways: The Army Engineers and Early Transportation* (Norman, Oklahoma: University of Oklahoma Press, 1957); Norris Schneider, *The National Road, Main Street of America* (Dayton: The Ohio Historical Society, 1975); John Hawgood, *America's Western Frontier: The Exploration and Settlement of the Trans-Mississippi West* (Knopf & Company, 1972); Charles Ambler, *A History of Transportation in the Ohio Valley* (Westport, Conn.: Greenwood Press, 1931); Robert W. Frazer, *Forts and Supplies, The Role of the Army in the Economy of the Southwest, 1846–1861* (Albuquerque: University of New Mexico Press, 1983); Chester Kieffer, *Maligned General: The Biography of Thomas Sidney Jesup* (San Rafael: Presidio Press, 1979); Frances Prucha, *The Sword of the Republic: The United States Army on the Frontier, 1783–1846* (London: The Macmillan Company, 1969); and Edgar Wesley, *Guarding the Frontier: A Study of Frontier Defense From 1815 to 1825* (Westport, Conn.: Greenwood Press).

The stories of the overland mail and freighting industries and their colorful characters have been told in numerous books. Waddell F. Smith, *The Story of the Pony Express* (San Francisco: Hesperian House, 1960); McKee, *The Last West: A History of the Great Plains of North America* (New York: Crowell & Company, 1974); LeRoy R. Hafen, *The Overland Mail* (1926); W. Eugene Hollin, *Great Days of the Overland Stage, American Heritage Book of Great Adventures of the Old West* (American Heritage Press, 1957); Ralph Moody, *Stagecoach West* (New York: Crowell. & Company, 1967); David Nevins, *The Old West—The Expressmen* (Time Life Books, 1974); Edward Hungerford, *Wells Fargo, Advancing the American Frontier* (New York: Bonanza Books, 1949); John Unruh, *The Plains Across: The Overland Emigrants of the Trans-Mississippi West, 1840–60* (Chicago: University of Illinois Press, 1979); LeRoy R. Hafen and Francis Marion Young, *Fort Laramie and the Pageant of the West, 1834–1890* (Lincoln: University of Nebraska Press, 1984); Raymond W. and Mary Lund Settle, *War Drums and Wagon Wheels, The Story of Russell*, Majors and Waddell

(Lincoln: University of Nebraska Press, 1966); Marshall Trimble, *Arizona, A Panoramic History of a Frontier State* (Garden City, N.Y.: Doubleday and Company, 1973); Alexander Adams, *Sunlight and Storm, The Great American Plains* (New York: G. P. Putnam's Sons, 1977).

## Civil War to 1880

James M. McPherson's *Battle Cry of Freedom, The Civil War Era* (New York: Oxford University Press, 1988) is a recent classic of the Civil War, especially his recounting of the *Monitor-Merrimac* confrontation. Also dealing with that battle are James Phinney Baxter, 3rd, *The Introduction of the Ironclad Warship* (Hamden, Conn.: Archon Books, 1968); Robert MacBride, *Civil War Ironclads, the Dawn of Naval Armor* (Philadelphia and New York: Chilton Books, 1962).

See Russell Weigley, *Quartermaster General of the Union Army* (New York: Columbia University Press, 1959) for a biography of Montgomery Meigs. For a discussion of Lincoln's involvement in Government contracts, see Roe, "Lincoln: The First Board of Contract Appeals," 8 *Public Contract Law Journal* 179 (1976), and the more extensive treatment in Robert Bruce, *Lincoln and the Tools of War* (Indianapolis, Ind.: Bobbs-Merrill, 1956).

I also consulted Bradley, *Simon Cameron, Lincoln's Secretary of War. A Political Biography* (Philadelphia: University of Pennsylvania Press, 1966); Richard D. Goff, *Confederate Supply* (Durham: Duke University Press, 1969); David A. Armstrong, *Bullets and Bureaucrats, The Machine Gun and the United States Army, 1861–1916* (Westport, Conn.: Greenwood Press, 1982).

For a discussion of the False Claims Act, see O.S. Hiestand, "The Abraham Lincoln Law Revisited: False Claims Act of 1863". Halling, "The Federal False Claims Act: A 'Remedial' Alternative for Protecting the Government from Fraudulent Practices," 52 *Southern California Law Review* Vol. 159, 1978; "The False Claims Act and the Proposed Program Fraud Civil Remedies Act: Complementary Partners in the Prevention of Federal Program Fraud," 73 *Kentucky Law Journal* 965 (1984–85).

The period after the war was relatively quiet for procurement, but John Williams, *A Great and Shining Road, The Epic Story of the Transcontinental Railroad* (Times Book 1988); and Robert Wooster, *The*

*Military and United States Indian Policy 1865–1903* (New Haven: Yale University Press, 1988) provide unique perspectives on the period.

## Armor and the Building of the Fleet

The story of the Navy's rebuilding in the 1880s and the armor plate scandal have been retold in Benjamin Franklin Cooling, *Gray Steel and Blue Water Navy, The Formative Years of America's Military-Industrial Complex, 1881–1917* (Hamden, Conn.: Archon Books, 1979); Joseph Wall, *Andrew Carnegie* (New York: Oxford University Press, 1970); Robert Hessen Steel Titan, *The Life of Charles M. Schwab* (New York: Oxford University Press, 1975); and Kausal, "What A Difference A Century Makes—Or Does It?," *Contract Management* (October 1989) at 24.

Also of interest are John Alden, *The Fleet Submarine in the U.S. Navy* (Annapolis, Md.: Naval Institute Press, 1979); Pawlowski, *Flat-Tops and Fledgings, A History of American Aircraft Carriers* (New York: A. S. Barnes and Company, 1971).

## Aircraft

To cover the spectrum of aircraft history, see Gene Roger Simonson, ed., *The History of The American Aircraft Industry: An Anthology* (Cambridge: MIT Press, 1968); Charles D. Bright, *The Jet Makers, The Aerospace Industry from 1945 to 1972* (Lawrence: Regents Press of Kansas, 1978); Robert Kane and Allan Vose, *Air Transportation*, 7th ed. (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1979). An autobiography that covers most of the history of aviation is *Global Mission* by Hap Arnold (New York: Harper & Row, 1949).

The story of the Wright brothers' contracts has been retold in numerous books and articles. See Solibakke, "The First Successful Government Contract for One (1) Heavier-Than-Air Flying Machine," 8 *Public Contract Law Journal* (1976); Powell, "The Army Procures a Flying Machine: A Backward Glance," 12 *National Contract Management Journal* 75 (December 1978); Home, "Defense Industry Profits—How Much is Enough?" 7 *National Contract Management Journal* 115 (1973); and Meyer, "The First Airplane Contract," *Contract Management*, Part 1 (November 1986); Part 2 (March 1987) at 12, and Part 3 (May 1987) at 18.

Other pioneers are studied in Louis S. Casey, *Curtiss, The Hammondsport Era, 1907–1915* (New York: Crown Publishers, 1981); Murray Rubenstein & Richard M. Goldman, *To Join With the Eagles, Curtiss-Wright Aircraft, 1903–1965* (Garden City, N.Y.: Doubleday & Company, 1974); Rene J. Francillon, *Lockheed Aircraft Since 1913* (Annapolis, Md.: Naval Institute Press, 1987); Archibald D. Turnbull and Clifford L. Lord, *History of United States Naval Aviation* (New Haven: Yale University Press, 1949); John Shiner, *Foulois and the U.S. Army Air Corps* (Washington, D.C., 1983). For more on the Naval Aircraft Factory, see Evans, "NAEC—A Brief History," *Aviation News*, November–December 1988, at 14.

For more on the airmail service and the rise of the commercial airlines, see Carl Solberg, *Conquest of the Skies: A History of Commercial Aviation in America* (Boston: Little, Brown, 1979); Oliver Allen, "The Airline Builders," Time Life, Epic of Flight, 1981; William M. Leary, *Aerial Pioneers, The U.S. Air Mail Service, 1918–1927* (Washington, D.C.: Smithsonian Institution Press, 1985); Page Shamburger, *Tracks Across the Sky, The Story of the Pioneers of the U.S. Airmail* (New York: J. B. Lippincott Co., 1964); Jackson, *Flying the Mail* (New York: Time Life Books, 1982); Robert Serling, *From the Captain to the Colonel, An Informal History of Eastern Airlines* (Dial Press, 1980); W. David Lewis and Wesley Newton, Delta, *The History of An Airline* (Athens, Ga.: University of Georgia Press, 1979); Robert Serling, *Howard Hughes' Airline, An Informal History of TWA* (New York: St. Martin's Press, 1983); Marilyn Bender and Selig Altschul, *The Chosen Instrument, Pan Am's Juan Trippe—The Rise and Fall of An American Entrepreneur* (New York: Simon and Schuster, 1982); Daley, *An American Saga, Juan Trippe and His Pan Am Empire* (New York: Random House, 1980); John Nance, *Splash and Colors, The Self Destruction of Braniff International* (New York: Morrow & Company, 1984); Rutkowski, *The Politics of Military Aviation Procurement, 1926–1934* (Columbus: Ohio State University Press, 1966).

Most of the details about the Spoils Conference came out of the Black Committee hearings, U.S. Senate, 73rd Congress, 2nd Session, "Hearings Before a Special Committee on Investigations of Air Mail and Ocean Mail Contracts."

Irving Holley's, *Buying Aircraft: Materiel Procurement for the Army Air Force, United States Army in World War II Special Studies*, (Washington, D.C.: Office of the Chief of Military History, 1964) is a classic.

## Automobiles

Of interest are Robert Lacey, *Ford: The Man and the Machine* (New York: Little Brown and Company, 1986); Richard Crabb, *Birth of a Giant, The Men and Incidents That Gave America the Motorcar* (Philadelphia: Chilton Books Co., 1969); Ed Cray, *Chrome Colossus, General Motors and Its Time* (New York: McGraw Hill, 1980).

## Shipbuilding

I consulted Garnett Laidlaw Eskew, *Cradle of Ships* (New York: G. P. Putnam's Sons, 1958); and Norman Friedman's four books, *U.S. Battleships, An Illustrated Design History* (1985), *U.S. Destroyers, An Illustrated Design History* (1982), *U.S. Cruisers, An Illustrated Design History* (1984), *U.S. Aircraft Carriers, An Illustrated Design History* (1983) (Annapolis, Md.: Naval Institute Press). The Bethlehem Steel controversy is discussed in Whelan and Mains, "Cost Plus—or, I May Be a Robber But I'm Not A Thief," 8 *Public Contract Law Journal* 210 (1976); Allison W. Saville, "The Naval Military-Industrial Complex, 1918-41," in Benjamin Franklin Cooling, ed., *War, Business and American Society, Historical Perspectives on the Military-Industrial Complex* (Port Washington, N.Y.: Kennikat Press, 1977); Susan J. Douglas, "The Navy Adopts The Radio, 1899–1919" in Merritt Roe Smith, ed., *Military Enterprise and Technological Change, Perspectives on the American Experience* (Cambridge: MIT Press, 1985).

## Interwar Period

Robert Higgs, *Crisis and Leviathan* (New York: Oxford University Press, 1987) reviews the growth of government, especially after such crises as world wars. Constance McLaughlin Green, Harry C. Thomson, and Peter C. Roots, *The Ordnance Department: Planning Munitions for War* (Washington, D.C.: 1955) chronicles how the army prepared for war. See also Bernard Baruch, *Taking the Profits Out of War* (New York: Prentice Hall, 1941); Larry Berman, *The Office of Management and Budget and the Presidency, 1921–1979* (Princeton, N.J.: Princeton University Press, 1979); Marx, "The Bureau of the Budget: Its Evolution and Present Role," 39 *American Political Science Review* 653 (1945).

After World War I, more scholars paid attention to government contracts, as evidenced by Benedict Crowell, *Government War Contracts* (New York: Oxford University Press, 1920); Tanney, *Government Contract Law and Administration* (Chicago: Callaghan & Company, 1930), Clem Linnenberg, "Policies and Procedures in Federal Civilian Procurement," a Ph.D. dissertation at Yale University (1941); Cheever, "Emergency Legislation—Wartime Contracts," a presentation on January 11, 1936, at the Army Industrial College in Washington, D.C., and a course given at the same institution on War Contracts and Procedure by Major C. C. Fenn (both are in the library of the Industrial College of the Armed Forces); Gromfine and Edwards, "Termination after World War L" 10 *Law and Contempory Problems* 563 (1944); H. Struve Hensel and Richard G. McClung, "Profit Limitation Controls Prior to the Present War," *Law and Contemporary Problems X* (Autumn 1943) at 199.

Helmuth Carol Engelbrecht and Frank Cleary Hanighen, *Merchants of Death, A Study of the International Armament Industry* (New York: Mead, Dodd & Co., 1934) should be read not only for its content but also because the book played such a large role in promoting the theory that it presents.

See also Anne Trotter, *Development of the Merchants of Death Theory*, in Benjamin Franklin Cooling, ed., *War, Business and American Society, Historical Perspectives on the Military-Industrial Complex* (Port Washington, New York: Kennikat Press, 1977); John Wiltz, "The Nye Munitions Committee, 1934," in *Congress Investigates: A Documentary History, 1792 to 1974*, Vol. 4 (New York: Chelsea House Publishers, 1975).

During this period, many of today's standard clauses in government contracts were devised; thus, articles on those clauses were helpful. See, for example, Joy, "The Disputes Clause in Government Contracts: A Survey of Court and Administrative Decisions," 25 *Fordham Law Review*, 11, 15 (1956); Grayson, "Risk Allocation Under the Permits and Responsibilities Clause of the Standard Government Construction Contract," 35 *George Washington Law Review* 988 (1967); Barron and Munves, "The Government Versus the Five Percenters: Analysis of Regulations Governing Contingent Fees in Government Contracts," 25 *George Washington Law Review* 127 (1957); Patton, "The Material and Workmanship Clause in Government Construction Contracts," 35 *George Washington Law Review* 998 (1967); and Caruthers, "The Changed Conditions Clause in Government

Construction Contracts," an unpublished thesis at the Army Judge Advocate General's School (April 1961).

## Hoover Dam

Joseph E. Stevens, *Hoover Dam: An American Adventure* (University of Oklahoma Press, 1988) is a comprehensive and award-winning account of building the dam. The Hoover Dam has been the subject of several publications by the Superintendent of Documents. See Ellis Armstrong, ed., *History of Public Works in the United States, 1776–1976* (Chicago: The American Public Works Association, 1976); *The Kaiser Story*, the official history of the Kaiser Company, and Laton McCartney, *Friends in High Places, The Bechtel Story: The Most Secret Corporation And How It Engineered The World* (New York: Simon & Schuster, 1988). For more on the Hoover Dam and the Buy American Act, see Paul H. Gantt and William H. Speck, "Domestic v. Foreign Trade Problems in Federal Government Contracting: The Buy American Act and Executive Order," 7 *Journal of Public Law* (1958); and Charles W. Trainor, "The Buy American Act: Examination, Analysis and Comparison," 64 *Military law Review* 101 (Spring 1964).

William F. Willingham's *Water Power in the "Wilderness"—The History of Bonneville Lock and Dam* (Portland, Oregon: U.S. Army Corps of Engineers, 1987) chronicles the story of another of the great dams of the 1930s.

## World War II

The U.S Army history of World War II has been of tremendous help in writing this book. See Smith, *The Army and Economic Mobilization* (Washington, D.C.: Superintendent of Documents, 1959); Harry B. Yoshpe and Marion U. Massen, *Procurement Policies and Procedures in the Quartermaster Corps During World War II* (Washington, D.C.: Government Printing Office, 1947); Vincent C. Jones, *Manhattan, The Army and The Atomic Bomb* (Washington, D.C.: Government Printing Office, 1985).

The navy has not taken as systematic an approach to this topic, but see R. H. Connery, *The Navy and the Industrial Mobilization in World War II* (Princeton, NJ.: Princeton University Press, 1951). For a description of naval procurement during this time, see *Navy Contract Law* (2nd ed. 1959);

Neale, "Naval Procurement During World War II: Its Legal Aspects," 38 *American Bar Association Journal* 213 (March 1952); and Jacob Furer, *Administration of the Navy Department in World War II* (Washington, D.C.: Government Printing Office, 1959).

Other important sources include Donald Nelson, *Arsenal of Democracy, The Story of America's War Production* (New York: Harcourt Brace and Company, 1946); Richard Lingeman, *Don't You Know There's A War On? The American Home Front, 1941–1945* (New York: G. P. Putnam's Sons, 1970); Graske, *The Law of Government Defense Contracts* (New York: Baker, Voorhis and Company, 1941); Malman, "Policies and Procedures for the Termination of War Contracts," 10 *Law and Contemporary Problems* 449 (1944); Draper & Strauss, *Coordination of Procurement Between the War and Navy Departments* (Washington, D.C., 1945); Bureau of the Budget, *The United States at War* (Washington, D.C.: Government Printing Office, 1946).

For a history of the War Production Board (WPB), see Civilian Production Administration, Bureau of Demobilization, *Industrial Mobilization for War, History of the War Production Board and Predecessor Agencies* (1947); War Production Board, War Production in 1944 (June 1945); J. L. O'Brian and M. Fleischmann, "The War Production Board Administrative Policies and Procedures," 13 *George Washington Law Review*, 1 (1944). The WPB lasted until November 3, 1945, when Executive Order 9638 (October 4, 1945) replaced it with the Civilian Production Administration. See also U.S. Treasury, *Federal Procurement: A Manual for the Information of Federal Purchasing Officers* (1943).

See Goodman, "An Assessment of Title H of the First War Powers Act," an unpublished thesis at The Judge Advocate General's School, Charlottesville, Virginia (1959), for a discussion of the act, Executive Order 9001, and implementation by the services during the war, McClelland, "The Administration of Title 11 of the First War Powers Act," 61 *Dickinson Law Review* 213 (1957); Smith, "War Department Board of Contract Appeals," 5 *Federal Bar Journal* 74 (1943).

## Modern Era

In the modern age we have been inundated with procurement literature. This did not happen all at once; the flood gates did not open until after 1960. 1

have relied heavily on my earlier book, *Federal Procurement Regulations, Policies, Practices and Procedures*; and Miller, "Military Procurement Policies: World War II and Today," 42 *American Economic Review Papers and Proceedings* 453 (1952). For a thorough portrait of procurement after World War II, see Lupton, "Government Contracts Simplified" (Washington, D.C.: Richmond, Williams, Byrd, 1953) and Vom Baur, "Fifty Years of Government Contract Law," 29 *Federal Bar Journal* 305 (1970).

The development of the Armed Services Procurement Act, from its embryonic stages in the report by the Procurement Policy Board up to its enactment, is chronicled in Schreiber, "The Armed Services Procurement Act of 1947: An Administrative Study," an unpublished doctoral dissertation at American University (1968). This dissertation is an exhaustive study of the act and is indispensable to anyone interested in the subject. See also Doc. No. 175 of the Procurement Policy Board, House Report No. 109, 80th Congress, 1st Session (1947) at 27.

In preparing the discussion of how the ASPR was created, I have relied heavily and extensively on two authoritative analyses presented at a DOD-sponsored seminar in Washington, D.C. on November 1–2, 1949, and published by the American Ordnance Association. The analyses are "Armed Services Procurement Regulation" by Brigadier General E. M. Brannon, Army Assistant Judge Advocate General; and "Contract Forms and Provisions" by Harold B. Gross, General Counsel of the Navy.

For a thorough examination of the Hoover Commission's effect on Federal Supply, see Schreiber, "Federal Supply Management—A Study of the Implementation of the Hoover Commission Recommendations on the Federal Supply System," unpublished thesis, American University (December 1952). The commission issued its "Task Force Report on the Federal Supply System—Status of the Hoover Report, A Report to the American People Prepared by the Citizens Committee for the Hoover Report," Report No. 3, in December 1950.

For the history of the Truth in Negotiations Act, see Kulish, "DPC 74 and Subcontractor Data: A Giant Step Forward or Running in Place?" unpublished thesis at The Judge Advocate General's School (1971); Odam, "The 'Truth in Negotiating Act' and Some of Its Recurring Problems in Defense Contracting," 21 *Baylor Law Review* 480 (1969); Roback, "Truth in Negotiating: The Legislative Background of Pub. L. 87-653," 1 *Public*

*Contract Law Journal* (No. 2) 3 (1968); Graetz, "The Truth In Negotiating Act—An Examination of Defective Pricing in Government Contracts," 54 *Virginia Law Review* 505, 510–11 (1968); Lanoue, "The Truth In Negotiating Clause of Pub. L. 87-653 as Interpreted by the Armed Services Board of Contract Appeals," 13 *University of Illinois Law Review* 604 (1968).

For a discussion of the background and working of the Commission on Government Procurement, see Holifield, "Federal Procurement and Contracting Reform," 41 *Brooklyn Law Review* 479 (1975); and Ler, "The Commission On Government Procurement," a MBA thesis at The George Washington University (1970).

For a thorough discussion of the legislative-executive interplay in the creation of the OFPP, see Roback and Goodwin, "Office of Federal Procurement Policy: The Legislative Background," 8 *National Contract Management Journal* 15 (1974). Haugh, "The Federal Acquisition Regulation—A Regulatory Reform Long Anticipated Almost Here," *Contract Management* (November 1980), at 4–5, was the first of three articles on the FAR, the second and third appeared in February 1981, at 12, and March 1981, at 12. See also Sowle, "The Federal Procurement Process: A Time of Transition," *Contract Management* (July 1981) at 4.

For a discussion of the extensive contract litigation process, see 85th Congress, House Armed Services Committee, "Study of the Armed Services Procurement Regulations and Departmental Implementation Thereto," Hearings Before the Subcommittee for Special Investigation, July 16–18, 1958; Shedd, "Disputes and Appeals: The Armed Services Board of Contract Appeals," 29 *Law and Contemporary Problems* 39, 42–43 (1964). The board and its earlier World War II versions are discussed in Edwards, "The Armed Services Board of Contract Appeals, An Assessment" (February 1, 1959), an unpublished thesis at The Judge Advocate General's School; and Naylor, *Federal Contracts and Procurement Procedures* (1949).

The role of the General Accounting Office in government contracts is related in Cibinic and Lasken, "The Comptroller General and Government Contracts," 38 *George Washington Law Review* 349, 373–374 (1970); Schnitzer, "Changing Concepts in Government Procurement and Influences of The Comptroller General on Contracting Officer Operations," 23 *Federal*

*Bar Journal* 90, 96 (1968); Beach, "Role of the General Accounting Office in the Regulation of Industry," 21 *Business Law* 235 (1965); Keller, "GAO's Right of Examination of Contractor's Records: The Legislative History, GAO's Interpretation, A Court Decision," 1 *National Contract Management Journal* 24 (1967).

The story of General Dynamics and the nuclear navy is recounted in Jacob Goodwin, *Brotherhood of Arms: General Dynamics and the Business of Defending America* (Times Books, 1985); Patrick Tyler, *Running Critical: The Silent War, Rickover and General Dynamics* (New York: Harper & Row, 1986); Roger Franklin, *The Defender, The Story of General Dynamics* (New York: Harper & Row, 1986); Richard G. Hewlett and Francis Duncan, *Nuclear Navy, 1946–1962* (Chicago: University of Chicago Press, 1978); Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947–1952: A History of The U.S. Atomic Energy Commission*, Volume II (University Park: Pennsylvania State University Press, 1962); Norman Polmar, *Atomic Submarines* (New York: Van Nostrand Company, 1963).

For the story of NASA's contracts, see Barton C. Hacker and James M. Grimwood, *On The Shoulders Of Titans: A History of Project Gemini* (Washington, D.C.: NASA, 1977); and Courtney G. Brooks, James M. Grimwood, and Lloyd S. Swenson, Jr., *Chariots For Apollo: A History of Manned Lunar Spacecraft* (Washington, D.C.: NASA, 1979).

For an analysis of the changing role of procurement regulations, see Shedd, "The Christian Doctrine, Force and Effect of Law, and Effect of Illegality on Government Contracts," 9 *Public Contract Law Journal* 1, (1977); Cibinic, "Contract By Regulation," 32 *George Washington Law Review* 111 (1963); Keefe, "Christian Government Contracts," 29 *American Bar Association Journal* 1225 (1963); Note, 51 *George Washington Law Review* 842 (1963); Braude and Lane, "Modern Insights on Force and Effect of Procurement Regulations—A New Slant on Standing and the Christian Doctrine," 31 *Federal Bar Journal* 99 (1972); Note, "Defense Contractor's Peril: The Written Agreement May Not Contain All the Terms," 57 *Southern California Law Review* 452 (1964); Donnelly, "The Milkman Rings Twice; Has *Paul v. United States* Given Federal Procurement Regulations the Force of Statutory Law?" 29 *Law and Contempory Problems* 347, 359 (1964); Levanthal, "Public Contracts and Administrative Law," 52 *American Bar Association Journal* 35,38 (1966).

On the changing role of government contracts, see Miller, "Administration by Contract, A New Concern for the Administration Lawyer," 36 *New York University Law Review* 957, 989 (1961); Frenzen, "The Administrative Contract in the United States," 37 *George Washington Law Review* 270 (1968); Miller, "Accountability and the Federal Contractor: A Legal Analysis (More or Less)," 20 *Journal of Public Law* 443, (1971); Stone, "Contract by Regulation," 29 *Law and Contempory Problems* 32 (1964); Reilly, "The Role of Government Contracts in Furthering National Economic and Socioeconomic Policies," 21 *Catholic Law* 8, (1975); Van Cleve, "The Use of Federal Procurement to Achieve National Goals," 1961 *Wisconsin Law Review* 566; Maness, "The Emergence of the Current Interest in the Defense Small Business and Labor Surplus Area Subcontracting Programs," 18 *Military law Review* 119, (1962); Miller and Pierson, "Observations on the Consistency of Federal Procurement Policies with Other Government Policies," 29 *Law and Contempory Problems* 277 (Spring 1964); Miller, "Government Contracts and Social Control: A Preliminary Inquiry," 41 *Virginia Law Review* 27 (1955); Richard John Hampton, "Achieving Socioeconomic Goals Through the Federal Procurement Process," a dissertation at The George Washington University (1981).

To cover the wide range of contracting issues in the modern era, see Katayama, Emergency Procurement Powers, 2 *Public Contract Law Journal* 236 (January 1969); Barron, "Procurement Under the Defense Production Act," 12 *Federal Bar Journal* 265 (1952); Alvis, "Background and Current Government Contracting Trends," in Government Contracts and Procurement (1962) at 8; Van Cleve, "The Novelties in Contracting with Non-Defense Agencies," 1 *National Contract Management Journal* 31 (1967); Kabieseman, "Updating the ASPR," Defense Industry Bulletin (Fall 1971) at 21; Sanders, "Changing ASPR to DAR: Do Benefits Outweigh Costs?" 12 *National Contract Management Journal* 21 (Second Quarter 1978); Caruso and Caruso, "The Proposed Federal Acquisition Act of 1977," 10 *Public Contract Law Journal* 151 (1978); Belden and Commack, Procurement, Industrial College of the Armed Forces (1973); OFPP, "Survey and Study of Executive Agency Procurement Regulation" (April 1979); Stuart, "Government-Industry Contracting: What Should the Relationship Be?" 17 *National Contract Management Journal* 47, 48–49 (1983); Wildermuth, "Contracting Out: A Case for Realistic Contract vs. In-House Decision Making," 49 *Military Law Review* 1 (1970); and James

Martin Cypher, "Military Expenditures and the Performance of the Postwar U.S. Economy: 1947–1971," a dissertation at the University of California at Berkeley (1973).

The following literature was very helpful in reviewing major defense procurements, especially those involving scandals. Tobias, Goudinoff, *Leader, and Leader, What Kind of Guns are They Buying for Your Butter? A Beginner's Guide to Defense Weaponry and Military Spending* (New York: Morrow and Company 1982); Thomas L. McNaugher, New Weapons, *Old Politics: America's Military Procurement Muddle* (Washington, D.C.: Brookings Institution, 1989); Robert F. Coulam, *Illusions of Choice. The F-111 and the Problem of Weapons Acquisition Reform* (Princeton: Princeton University Press, 1977); Clarence H. Danhof, *Government Contracting and Technological Change* (Washington, D.C.: Brookings Institution, 1968); Robert J. Art, *The TFX Decision: McNamara and the Military* (Boston: Little, Brown and Company, 1968); A. Ernest Fitzgerald, *The High Priests of Waste* (New York: W. W. Norton, 1972) and his later work, *The Pentagonists* (Boston: Houghton Mifflin Company, 1989); Dina Rasor, ed., *More Bucks, Less Bang: How the Pentagon Buys Ineffective Weapons* (Washington, D.C.: Fund for Constitutional Government, 1983); Robert W. Drewes, *The Air Force and the Great Engine War* (Washington, D.C.: National Defense University, 1987); Thomas L. McNaugher, *The M16 Controversies: Military Organizations and Weapons Acquisition* (Praeger, 1984); Nick Kotz, *Wild Blue Yonder: Money, Politics, and the B-1 Bomber* (New York: Pantheon Books, 1988); Frederic M. Scherer, *The Weapons Acquisition Process: Economic Incentives* (Cambridge: Harvard University, Graduate School of Business Administration, 1964); Fen Osler Hampson, *Unguided Missiles: How America Buys Its Weapons* (New York: Norton, 1989); William H. Gregory, *The Defense Procurement Mess* (Lexington, Mass.: Lexington Books, 1989); Orr Kelly, *King Of The Killing Zone* (New York: Norton, 1989). Hedrick Smith's *The Power Game* (New York: Random House, 1979) discusses such diverse procurements as the Division Air Defense Gun (DIVAD) and Rockwell's B-1 subcontracting plan; Andy Pasztor, *When the Pentagon was for Sale: Inside America's Biggest Defense Scandal* (Scrbner, New York 1995) focuses on the Ill Wind scandal.

# Name Index

## D



## E



## F

## G



## H



## I



## J

## K



## L



## M

## N



## O



## P



## R

## S



## T

## U



## V



## W



## Y