A MOST INTRICATE DEPARTMENT: THE COMMISSARY GENERAL OF MILITARY STORES OR ORDNANCE DEPARTMENT UNDER BENJAMIN FLOWER AND SAMUEL HODGDON, 1777-1782

by

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ABSTRACT

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This thesis makes use of the little studied records of the Military Stores or Ordnance, Department during the American Revolution to examine the commonly held assumption that the Continental Army was inadequately supplied with the materials necessary for waging war. The evidence suggests that contrary to this assumption, the Ordnance Department, following the reforms of 1778, kept the army well supplied with military stores.

This study will examine three phases which illustrate the evolution of the Ordnance Department and the Army as a whole. The first phase, 1775-1777, illustrates the extemporized approach to war waged by Congressional committees lacking in military knowledge and experience. From 1777 to 1779, we witness the maturation and professionalism that evolved following the failure of the old colonial, citizen-militia approach to war. The final phase, 1779-1783, provides the evidence that the professionalization worked.

Under the guidance of General Henry Knox and the leadership of its two wartime administrators, Benjamin Flower and samuel Hodgdon, the Ordnance Department, like the

army it supported, evolved into a complex and sophisticated organization. Under Knox and Hodgdon, the Department grew from a divided and unresponsive system under political controls imposed by Congress into an efficient organization responsive to the army's needs. In many ways, the Department became superior to the British system upon which it was initially based and, except for spot shortages arising from poor fiscal or political planning and transportation problems, the Department kept the army well supplied with the weaponry and military stores needed for victory.

DEDICATION

To Kathy and Ryan--for their patience.

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CHAPTER I

INTRODUCTION--DR. FRANKLIN'S ROD

Many years after the successful completion of the American War for Independence, John Adams, in a letter to Dr. Benjamin Rush of Philadelphia, said, "the history of our revolution will be one continued lie...the essence...will be that Dr. Franklin's electrical rod smote the earth and out sprang General Washington. That Franklin electrified him with this rod--and thence forward these two conducted all the policy, negotiations, legislatures and war."[1] While it is difficult for us today to gauge the seriousness of Mr. Adams' remark, it nevertheless has value in illustrating one interpretation of that great struggle. This thesis will examine a specific aspect of the military history of the revolution: how the combat infantryman was equipped to carry on that struggle. These men, the Continental regulars, formed the core of Washington's army. They toiled and fought for eight years against a foe that many have held to be the greatest military power of their age. Did Dr. Franklin's rod or some analogous tool play a part in their struggle?

To place this thesis in its proper context, we must discuss the state of military history and the historiography of the revolutionary war as it stands today. Military history has normally fallen into four categories or topical fields of study, often woven together by writers into a

single view. The simplest type is the combat chronicle. These studies generally relate a chronological narrative of military operations from the outbreak of war to the cessation of hostilities--a "who did what to whom and when" approach. Occasionally, some critique or analysis is attempted, but it is not made central to the study. A second, more sophisticated approach to military history examines war on a strategic level. These studies, usually associated with national war college-type training of potential military leaders, examine war within a politico-military arena--a "why they did it" analysis, rather than the blow-by-blow combat chronicle. A third category centers around military biography as a major field of study. This approach uses the "great captain" as a vehicle with which to examine the course of a particular conflict. It can rise above the combat chronicle approach and operate on a strategic level, but its primary aim is to incorporate the human element, the effect of personality, into the war. Our final category would be a structural analysis of military history, the study of administration, organization, and doctrinal factors and the internal impacts they make on war. These studies are primarily logistical in context, the military-industrial complex if you will, examining the economic-technologic basis of war--a "what they could do" approach. This same method could also take an external view, placing war within an ideological-societal context or a type of "great crusade." It is primarily within this

fourth category, the examination of administration and logistics, that this thesis falls.

It is important to recognize certain basic trends in the historiography of the revolutionary war.[2] From the time that the musket smoke first cleared until well into the present century, historians have channeled their work into what is basically a "who won--who lost" approach to the revolutionary war. Initially addressed in the writings of actual participants and by later workers using their letters and diaries, these relatively simple studies sought either to bestow praise or to fix or escape blame. These efforts are illustrated by the works that British generals such as Sir Henry Clinton and John Burgoyne, wrote to defend their actions and careers during political inquiries, and by civilians such as David Ramsay and Charles Stedman who sought to explain away the loss of the first British Empire by blaming British blunders, lack of a grand strategy, and political corruption and despotism.

On the American side, autobiographies disguised as general histories such as those by Generals James Wilkinson and William Heath and by Colonel "Light Horse Harry" Lee, sought to depict how their own glorious and praiseworthy struggles against an overpowering opponent won the war for America. The "ancestor worship" approach typified by Parson Weems, that placed all the gods and heroes on our side, was not far behind. Even late nineteenth century writers' works such as William Stryker and Henry Johnston, while producing

sound and still valuable studies, had not progressed beyond the "who won--who lost" basic combat narrative, non-analytical approach.

By the twentieth century we begin to see a shift in the study of military history. Military professionals such as Britain's Major General J.F.C. Fuller and America's Major General Francis V. Greene began to pay more attention to the methodology and critical analysis of war, a topic ignored by historians working in the political and economic sectors then in vogue. The World War II era, especially, produced work by historians either hired by the military or who had personal military experiences during a period of world conflict on an unprecedented scale. The need for combined operations, i.e., amphibious war, and the impacts of total national mobilization reflecting a need to understand and overcome economic, military, and technologic problems, produced studies by George A. Billias, Samuel E. Morison, and William B. Wilcox of a new genre, beyond the old "drum and bugle" combat narratives of previous writers.

Vietnam and the social activism of the late 1960's and early '70's, however, produced the most radical change in the study of military history. The nature of the conflict in southeast Asia produced a deeper set of questions than most military historians and the armed forces themselves ever had to grapple with. American political and military leaders had to define limited military objectives within the broader context of political and ideological conflict. How

to protect a friendly population while attempting to win over, neutralize, or control a hostile one, fight both a guerilla and conventional war, and at the same time establish an effective local and national government were questions seldom before addressed. How were military and political doctrines, methodology, and organization to be meshed in formulating strategy?

The questions of Vietnam developed a "new" military history and historian. They developed the need to place the study of armies and war within the broader perspectives of political, economic, technological and social history and analysis. The best examples of this "new" approach can be seen in the work of scholars like John Shy, who has examined the role of the revolutionary militia, finding them most effective not as a "big battle" combat force but as a political weapon used to suppress loyalists and maintain political control once the main army had moved on: by Charles Royster, who has taken a cue from the politico-ideological school typified by Bernard Bailyn and examined the social and ideological base of the war effort or, as he phrases it, the "spirit of '75."

This is not to say that the armies and battles side of military history has been supplanted, but it has been cast in a "new" light. Works by Robert K. Wright, Jr., H.A. Houlding, and Don Higginbotham have pointed out the importance of understanding military doctrine, training, administration and organization and the effects of these

elements on any army's combat performance. Logistical studies, chiefly centered in Britain, by Arthur Bowler, David Syrett, and Marvin Van Creveld have shown the importance of supply, the unglamorous and painstakingly detailed requirements of bread, buttons, and bullets, without which the grandest strategy, the most brilliant tactics, and the greatest commanders would all come to nought.

While these "new" approaches to military history have shown us how incomplete a knowledge we have of the revolutionary war, they have developed several common threads. First, a viable and effective militia had to be placed and maintained in the field in order to serve as an auxiliary to the Continental Army and to provide political control in its absence. Second, political decisions and considerations impinged on military decisions: to what degree could either side use Indians and loyalists, for example; could the age-old practice of impressment be used by a people contending for freedom from overbearing authority; what were to be the chief strategic and tactical objectives, e.g., whether towns and crops were to be destroyed in order to deny their use to the enemy, and what was required to reach those objectives? Third, that the British were able to undertake their greatest war effort to date, but that they were handicapped by communication, logistical, and organizational problems. The British military efficiency so familiar to the historian of

Victorian and later periods has been shown to be only apparently so during the eighteenth century. Fourth, we have come to recognize that war was in the mainstream of 18th century life and development. Indeed, the period has been characterized by some as being one of almost continued warfare interrupted by occasional outbreaks of peace. Finally, the American colonists were not totally unfamiliar with military developments. The concept of the Legion, a military force of combined arms such as infantry and cavalry designed for flexibility and speed, developed by French military theorists and soldiers such as Marshal Saxe, was adopted by British commanders in America such as John Forbes and Henry Bouquet during the French and Indian War. Concepts like these were not lost on young Americans like George Washington, who were fortunate enough to see theory put into practice, and Henry Knox, who read military works as a personal interest.

One further factor is readily observed to be missing from our list of theoretical concepts. Ronald Hoffman has pointed out that current scholarship has been directed at "...the most basic of questions--who was going to fight the war and for what?"[3] This thesis will ask a further question--how?

During the decades immediately following World War II, military historians such as Erna Risch and James Hutson examined the logistical aspects of the revolutionary war in a rather narrow fashion, from the "top down." Basically,

they examined the legislative and political developments of the war as reflected by the views of the Continental Congress and the army's commander, General George Washington. Their general evaluation was a negative one. They took Washington's constant plea for more of everything as representing the total failure of every supply function in the army. There is a possibility that this "top down" view obscures qualifying details. Would it not be unreasonable to see Washington in the same light as any other army commander? No general in history has thought that he ever had enough of anything--men, swords, guns, or missiles. While these arguments may be true in specific instances, they can also tend to serve as an escape clause for failure. A general cannot reasonably be blamed for defeat if he is not given the necessary resources. Washington may also have used a common bureaucratic tactic: intentionally asking for more than you need in the hopes that higher headquarters will give you someting.

In the 1970's, however, historians like Jesse Lemisch have recommended looking at history from the "bottom up."[4] David Salay has taken this approach in the field of logistics in his study of how Pennsylvania armed itself for war by examining artisans and production. Martin Van Creveld, by studying 150 years of military logistics and the course of campaigns, has pointed out the need for detailed studies of supply, studies necessary before the theoretical,

macro-cosmic interpretations of history can take root. He has argued, for example, that the generalizers attribute the German failure in Africa during 1942-43 to a chronic supply shortage, and then let the issue drop. But Creveld argues, "...no author has yet bothered to investigated such questions as the number of lorries the Africa Corps had at its disposal or the quantity of supplies those lorries could carry over a given distance in a given period of time..." or the fact that the generalizers who criticized and condemned the German Schieffen Plan of 1914 never considered the "consumption and requirements of the German armies...without even a look at a detailed railway map." Without these specific studies, the generalizers and cosmic thinkers are on shaky ground.

This thesis will attempt such a fine-scale study, a micro-examination of one segment of the logistical system, the Ordnance or Military Stores Department. Specifically, it will examine the basic working level--how the Commissary General of the Military Stores Department supplied the main Continental Army with the basic infantry equipment necessary for battle--through an analysis of material previously omitted from systematic and quantitative study, i.e., the ledger books of Samuel Hodgdon (Commissary General of Military Stores during the second half of the revolutionary war), and the Miscellaneous Numbered Records of the Revolutionary War (Record Group 93 in the National Archives). As recent scholarship has tended to replace the

old "rag, tag, and bobtail" image of the Continental Army with a new competent and thoroughly professional military image, so too will this thesis argue that the old image of the "rag, tag, and bobtail" Continental Army, at least from the point of view of military or ordnance stores, may be in need of revision.[5] These records appear to have been ignored by researchers because of the great difficulty they present in working as a result of their seemingly chaotic nature of arrangement. Too often, materials on the 1780-81 phase of the war, are inter-mixed with those from the 1775-76 period. The records are also often undated, unsigned, and almost unindexed. But with slow and systematic study of particular areas, a suggestive image does begin to appear, an image that is contrary to many of the old images previously mentioned.

This thesis will examine the infantryman's basic equipment--muskets, bayonets, cartridge boxes, bayonet belts and scabbards, and musket cartridges.[6] The muskets available in the eighteenth century could cause bewildering problems to supply officers. British, French, Spanish and Dutch regulation military weapons and civilian arms were all of differing calibers. The mixture of weapons like these caused supply nightmares. Even as late as Valley Forge, Washington had to order units to exchange weapons in the hope that at least each company would have a uniform ammunition requirement.[7]

Bayonets, like all objects in that time, were handmade, so they were not interchangeable with muskets, even of the so-called national regulation patterns. Each bayonet had to be fitted to one individual musket and was so marked. They might not fit another.

Leather gear, such as bayonet belts and scabbards, and cartridge boxes was indispensible to the soldier. The scabbards protected the bayonet from the elements and from loss, and allowed the soldier to safety carry it so as to not injure himself or his comrades. Early in the war, the army was so critically short of bayonet scabbards that Washington had to order the troops to carry their bayonets constantly fixed to their muskets, a practice that led to the loss of many of the weapons.

Cartridge boxes held a prescribed number of rounds of ammunition, usually 40, in some degree of safety from breakage and the elements. The cartridge, being a musket ball and its powder charge wrapped in a paper container, was easily destroyed by moisture. Indeed, in some cases such as the "Battle of the Clouds," fought during the defensive campaign for Philadelphia in 1777, combat had to be stopped by both sides because a sudden downpour of rain rendered the ammunition supply on both sides useless.

The artillery, while less critical to this study of the infantry, faced similar equipment difficulties. The mixed bag of American artillery used during the war caused ammunition problems, again because of different gun

calibers. French ammunition could not be used readily with British cannon and vice versa. A cannonball that was too big for its gun was obviously not practical, but one too small was equally bad if not deadly. A small ball left too large of a gap between itself and the bore of the cannon. If this gap, called windage, was excessive, the ball would cause uneven wear along the bore. The wear would then result in a loss of accuracy, the potential for short rounds falling among friendly forces, and possibly the ultimate destruction of the cannon itself. Other types of equipment such as that used by the cavalry, engineers, and the navy are so specialized as to be beyond the scope of this study and will not be addressed.

This study, then, will be an examination of the operation of the Military Stores Department during the Revolution and its ability to supply the Continental Army directly under Washington. It will test whether foreign influences, so prevalent in colonial America, had any bearing on the development and operation of that Department. Finally, it will examine the degree to which the role of personality and regulation played in the Department's operation. While merely a footnote to the greater historiography of the revolutionary war, this thesis may suggest the need to re-evaluate many of the old generalizations and assumptions regarding the Continental Army. It may be a test of the myth of Dr. Franklin's rod or evidence of the reality of dedication and the work of men.

In this study, eighteenth century spelling and punctuation have been modified where necessary for clarity and understanding.

CHAPTER II

THE AMERICAN CONTINENTAL ARMY

When the Continental Congress adopted the heterogeneous force beseiging the British in Boston as the "American Continental Army" it inherited the responsibility to organize and supply a force which eventually numbered almost 20,000 men by the summer of 1775.[8] Many in Congress, like John Adams, worried about this responsibility. "It is a vast and complicated System of Business," Adams noted, "...and we were all of us, unexperienced in it."[9]

The French and Indian War, 1755-1763, had given at least some Americans a peripheral exposure to the British army. Some, like George Washington and Israel Putnam, had campaigned alongside British professionals in the wilderness. Others, like Eliphalet Dyer and Roger Sherman, contracted to furnish them with supplies.[10] Through this exposure, Americans gained some familiarity with the operations of the British army, and an insight into its strengths and weaknesses. Congress naturally used this experience to pattern the Continental Army after the British, but hoped to improve upon the British system. One of the first organizational tasks Congress faced was the need to acquire military supplies, particularly weapons. America initially lacked the military-industrial base to produce large amounts of arms, forcing Congress immediately to begin importing military stores.

On April 19, 1775, the war of words between England and her American colonies became a war of bullets. The Americans faced seemingly overwhelming odds. England reigned as the foremost military and naval power in the world, with an apparently unified and experienced administrative, organizational, and industrial base. The thirteen rebellious colonies, on the other hand, were composed of a loose confederation of separate and self-interested states, without a navy to guard their shores and bring in supplies; without a single professional soldier or an army to turn back the foe; and without the economic means to wage war. Few Americans had commanded large units in battle or had any specific experience organizing, equipping, and maintaining an army numbering in the tens of thousands. An equally serious handicap came from the fact that weapons were produced by a cottage industry. For over a century this approach had sufficed to supply the colonists with arms for hunting and Indian defense, but it could not meet the demands of a large-scale war.

Before the first clash of arms, many colonial leaders feared that the complex political crises between themselves and Great Britain might end in conflict. Some colonies began military training, strengthened their militia organizations, and, despite a British ban on importation, began to acquire arms and other military stores. The British attempt to seize or destroy munitions stockpiled at Concord precipitated armed confrontation.

Meeting in Philadelphia, Congress responded to the news of Lexington by creating a committee to investigate ways and means of obtaining arms and military stores. The members of the Committee, George Washington, Philip Schuyler, Thomas Mifflin, Lewis Morris, Silas Deane, and Samuel Adams, provided a blend of talent and experience. Washington and Schuyler were the two delegates in Congress with the most military experience. Mifflin, Morris, and Deane were merchants and were expected to provide insight into the acquisition and distribution of matériel. It is not clear why Adams was selected but it may have been related to regional or party interests in Congress.[11]

It is obvious that Americans turned to the British Army when they set up their own military organization. The colonists borrowed much from Europe, especially Britain. Political ideologies and structures, religious beliefs, and cultural mores from across the Atlantic were modified to suit the "new world" experiences and needs. In this context it was quite natural for Americans to borrow their military institutions from the British as well, especially after having seen that army first hand since 1755.[12]

At the time of the American Revolutionary War, the British army was not the efficient, smoothly operating military machine popular history suggests. Scarcely a century old at the Battle of Lexington, the British regular or standing army was, in reality, little more than a

collection of regiments. These regiments, composed of ten companies totaling nearly five hundred men, were under the almost autonomous control of their Colonel. In peacetime, the Colonel had nearly independent authority over the administration, training, and supply of the regiment. While regulations or royal warrants prescribed standard uniforms and equipment, the Colonel used the governmental funds allocated to him for the regiment as he saw fit. If he could obtain cheaper quality uniforms and equipment, then that was so much more extra money in his pocket.[13] In wartime, the regiments, under the command of their Lieutenant Colonels [aristocratic Colonels almost never went to war], would be grouped together under a temporary field commander for some particular campaign.

Administratively, the King sat at the top of the British military and naval establishment. Unless he was particularly interested in military affairs, the King normally let the Privy Council and the Cabinet establish policy and strategy, subject to his final approval. Effective direction came from one of three Secretaries of State responsible for particular geographical areas such as the colonies. They issued the orders implementing the chosen policy to the Admiralty, Treasury, Ordnance, and Army. All overseas operations involved the Admiralty which provided transports, storeships, victuallers, and escort vessels.[14]

Army supervision fell to the Secretary at War. The Secretary did not sit as a member of the Cabinet and had no direct responsibility for policy or strategy. His duties were limited to such tasks as preparing cost estimates, furnishing statistical information to the King and Parliament, and handling internal army matters such as promotions, resignations, marching orders, and courts martial. In these activities, however, he was limited to the army in England and Scotland (the British Establishment) which was directly funded by Parliament. Troops in Ireland (the Irish Establishment) were funded by the Irish Parliament and were under the direction of the Lord Lieutenant of Ireland. Operational control of the army was handled by the Privy Council, Cabinet and the Secretaries of State.[15]

The army had little organizational unity. In addition to the separation between the British and Irish Establishments, infantry and cavalry forces (the line or marching regiments), were distinct from the engineers and artillery. The latter were administered by the Board of Ordnance and not by the Secretary at War. They were the only troops provided with technical and professional military training and received a higher rate of pay than the marching regiments. Men, pay, arms, clothing, provisions, transportation, and sea power were all a host of separate "commands" or departments under the control of political appointees who often looked first to their own interests

rather than that of their charges. These latter items, commonly known today under the term "logistics," are the focus of this study and so warrant further description.

Logistics has been defined as "the practical act of moving armies...providing for the successive arrival of convoys of supplies...and establishing and organizing... lines of supplies."[16] Like the standing British army, logistics, while not then known by that name, was a relatively new concept. Prior to the mid-seventeenth century, armies maintained themselves while on campaign by impressment and plunder, eating their way from one objective to the next. The relatively small armies of the period had little need for lines of communication or supply. By the late seventeenth century, however, armies had grown to such size and complexity that detailed planning was necessary to procure, store, transport, and issue the supplies necessary for a hundred thousand men or more.[17]

The British supply system of 1775 suffered from the same divisions and lack of centralization as the rest of the army. Secretary at War, Charles Jenkinson, often complained that he could not get accurate returns from commanders in America. Without this information no one knew what supplies to send. The plea "For God's sake send us money, men, and provisions, or expect nothing" applied to both British and American forces. The divided responsibilities in British organization and strategy led Sir John Fortescue, a noted British army historian, to call the system "a hopeless

organization for War..." characterized by "overlap, duplication and decentralization."[18]

The British supply system must share some of the blame for the loss of America. If the army could not obtain supplies, it could not hold ground; if it could not hold ground, it could never conquer. The lack of food and fuel often produced redcoats as hungry and cold as their American foes. Shortages of matériel seriously hampered British operations. British gunpowder and flints were known to be defective and the "Brown Bess," the standard British infantry musket, had many weaknesses.[19] In the fight for New York in 1776, the lack of camp equipment allegedly kept General William Howe from moving against Washington as fast as he wished, giving the rebels a few additional weeks to improve defenses. Howe again suffered from this problem in 1777. In 1780, General Henry Clinton, who succeeded Howe as Commander of British forces in America, blamed his inactivity in part on an "acute" powder shortage. He stated that the troops did not have enough powder to permit their exercises at arms and that the British even had to stop firing salutes. In the South, British operations were hampered by a lack of cavalry equipment. They were also forced to disarm loyalist militia in New York in order to obtain weapons for the southern campaign. One historian has recently suggested that the inability of the British to arm the loyalists was one of the factors in their loss of the South. British regiments returning home after the war had

equipment so worn out as to be beyond repair and nearly useless for service. But even early in the war these problems existed. Regiments taking part in the attack on Bunker Hill had muskets so worn out that they had to be issued new arms on the morning of the assault. Many of the Boston garrison regiments were still using breakable wooden ramrods in muskets which should have been replaced by steel ones nearly a half century earlier.[20]

One of the culprits in the failure of the British supply system and the department directly responsible for arms, ammunition, and military stores was the Board of Ordnance. The Board of Ordnance was under the operational control of the Master General of the Ordnance. At the start of the Revolution, the Master General was the Right Honorable George Viscount Townshend. The Board took its orders directly from the King, Privy Council, or the Secretaries of State, and not from the Commander-in-Chief or the Secretary at War. The Board was divided into two branches. The Civil Branch under Townshend handled all the acquisition, preparation, and issue of stores. A Military Branch, which also reported to Townshend through the Chief Engineer, was responsible for the military engineering functions of the army such as road construction and fortification. The Board also administered a company of artificers, skilled military or civilian technicians, who performed repair or construction duties. The company did

not serve in America, however, the work there being done under contract.[21]

The Board met in the Ordnance Office at Westminster where the sub-officials handled the business. The Master General had five assistants. The Lieutenant General served as the adjutant to the Master General of the Ordnance. A Surveyor General examined the quantity and quality of all stores received, noting issues and receipts. The Clerk of the Ordnance kept all records and accounts for cash and stores and drew up the estimates. A Principal Storekeeper was custodian of the ordnance stores received into and issued out of the tower. The Clerk of Deliveries kept the accounts of the issues of stores and ordnance. Finally, a Paymaster-Treasurer was also assigned to the staff. Each garrison town had a storekeeper and a number of clerks who were responsible for the troops billeted there. The Board issued stores only on the orders of the King, Privy Council, or Secretaries of State.

The Board's primary duties were to supply the arms and ammunition of the army, regulate the inspection of arms and accouterments, and direct the royal artillery and engineers. The Board kept its own records and accounts and was funded independently of the army commanders.[22] The Board also operated the Academy at Woolwich that trained officers for the artillery and engineers in mathematics, gunnery, fortification, and other technical subjects. These officers were regarded, and regarded themselves, as an elite group

and looked down upon their comrades in the marching army. The Board also operated its own ships for transporting artillerymen and ordnance stores but had to apply to the Victualling Board, a subsidiary of the Admiralty, for food while at sea.[23]

The Board of Ordnance was tainted by scandal during the Seven Years War for issuing poor arms, faulty equipment, and bad ammunition. It was excessively frugal, issuing equipment or performing repairs only at the last minute, and was slow even then. The Board jealously guarded its authority and conflicts led the marching army to regard it as incompetent, "obnoxious and obstructive."[24]

This flawed institution became Congress' model in 1775. Americans reprinted standard British military manuals such as Simes' Military Guide, and Bland's Military Discipline, Washington, particularly, recommending the latter to his officers. Most of the New England militia used a manual written by Colonel Timothy Pickering of Massachusetts which he based on Britain's Norfolk Discipline.[25] Ex-British officers such as Charles Lee and Horatio Gates were initially held in high respect, even by Washington, and placed in high positions where they used their British army experience to help mold and organize the American Army.[26] With little experience in running an army, Congress had much to do and learn.

On June 14, 1775, Congress adopted the motley band of separate New England forces before Boston as "the American

Continental Army." It established the first regular enlistments [ten companies of riflemen] and set up a committee to draft rules and regulations "for the government of the army." The next day, it appointed George Washington Commander-in-Chief, and subsequently began establishing embryonic staff departments for the army. Drawing upon British precedent, Congress authorized the appointment of a Quartermaster General, Adjutant General, Paymaster General, Commissary of Musters and a Commissary General, leaving the actual appointments to be made by Washington.[27]

Arriving in Cambridge in July, 1775, Washington began the task of organizing his army and making key appointments in its various departments. Ezekiel Cheever, a Massachusetts artillery officer, was appointed Commissary of Artillery stores. Cheever was responsible for receiving, storing, and issuing all ordnance stores. He apparently held this position until assigned to the laboratory at Springfield, Massachusetts, in 1777. Thomas Mifflin, a prosperous Philadelphia merchant, and, like Washington, a recent Congressman, was appointed Quartermaster General. Like his British counterpart, Mifflin's duties included gathering intelligence, supplying camp equipment, forage, provisions, wagons, boats, lumber, fire wood and other necessities of an army in the field.

While Washington toiled in Cambridge Congress did likewise in Philadelphia.[28] American infantry regiments emerged with approximately the same size and shape as their

British counterparts. Congress adopted a modified version of the British Army's Articles of War which set out the legal regulations of the army. A medical department, based on the British system, was established. Congress also set up military departments based on geographical divisions by initially appointing General Philip Schuyler to command the forces gathering along the North or Hudson's River. Eventually the colonies would be divided into six geographic departments, each with their own supply officers and depots.[29] See Map 1.

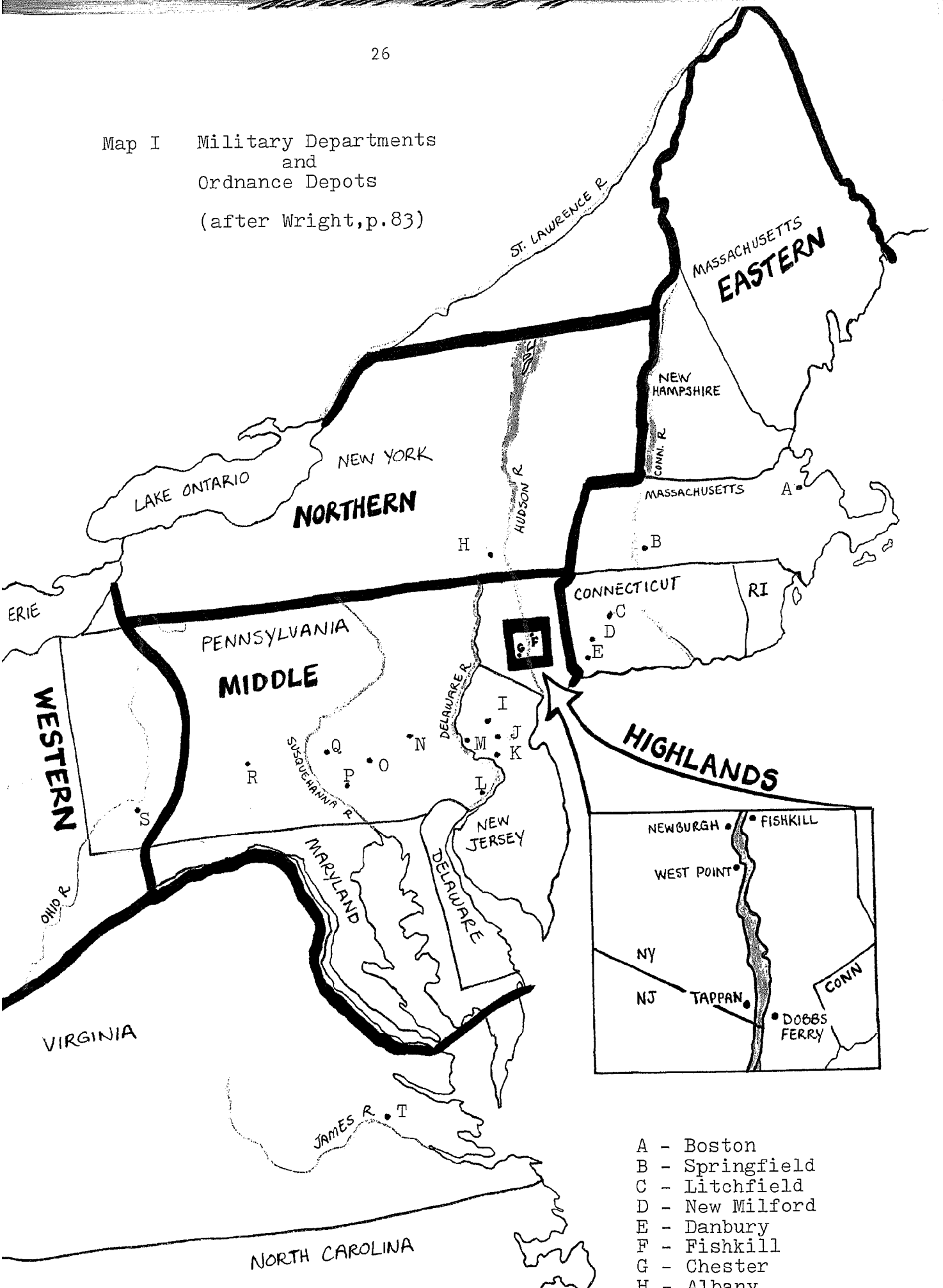
Having provided a basic army organization modeled on the British system, Congress next turned to specific problem areas: One of the most pressing concerns was the need for weapons and ammunition. Colonies like Massachusetts and Pennsylvania had accumulated over 42,000 muskets by early 1776 but more were needed. By 1777, the colonies had produced only about one-third (2,290,877 pounds) of their gunpowder requirements.[30] Anticipating problems, on September 18, 1775, Congress appointed a nine-member "Secret Committee of Trade" to import 500 tons of gunpowder, 40 six-pounder brass cannon, up to 20,000 double briddled musket locks and 10,000 stand of good arms. The committee was also to see to the distribution of these stores upon their arrival.[31] By the end of 1775, Congress also attempted to standardize domestic arms production. Gunsmiths received instructions to copy the "Brown Bess" musket, but also to make significant modifications which corrected some of that

L - Philadelphia
M - Easton
N - Allentown
O - Reading
P - Lancaster
Q - Lebanon
R - Carlisle
S - Fort Pitt
T - Point of Forks

(not to scale)

Map I Military Departments
and
Ordnance Depots

(after Wright,p.83)



A - Boston
B - Springfield
C - Litchfield
D - New Milford
E - Danbury
F - Fishkill
G - Chester
H - Albany

weapon's deficiencies. For example, the "Committee of Safety" muskets were required to have the more reliable and durable steel ramrods.[32]

Problems related to the actual shortages of supplies were compounded by administrative problems created by Congress itself. Congress was reluctant to centralize political and military power. Regional jealousy, party or factional interests, and Whig ideology were among the factors that contributed to the diffusion of power and authority.[33] This led Congress to conduct its business through special committees. Whenever a crisis loomed or an unexpected problem arose, Congress created a committee to deal with it. There soon came to be Cannon, Musket, Clothing, Medical, Marine, etc. committees, all competing for scarce resources. In addition, State governments raised and equipped their own land and naval forces further aggravating supply problems. This compounded Washington's organizational problems. Reluctance to consolidate power and the ignorance of the delegates regarding the real nature of army staff work led Congress astray. Fears of military dictatorship prevented the concentration of authority necessary for administrative responsibility. John Adams, for example, fought against allowing Washington to choose his own staff, arguing that it was "against every proper Rule and Principle...as these officers are checks upon the General, and he a check upon them: There ought not to be too much connection between them."[34]

Lastly, the soldiers themselves and staff inefficiency or inexperience contributed to the supply difficulties. In 1775 men followed colonial traditions and reported to camp with their own arms and ammunition. Those who came empty handed were issued what was available from stores or sent home. When discharged, they often took their weapons home with them. General George Weedon complained that the militia acquired arms from the government "by hook or by crook... It was a kind of common law amongst them to filch arms." Citizens stole goods from army wagons or picked up arms left along the road leading General Nathanael Greene to state "It being a received opinion among many that whatever public property shall by accident or otherwise fall in their way, they have a right to apply to their own use. Thousands of arms and all kinds of public stores have been conveyed away upon this principle."[35] Military stores were often misdirected or incorrectly stated in army returns (when those documents were even prepared). Headquarters, frustrated, tried to cope with the need to protect, store, repair and account for military stores.

By the end of 1775 it was obvious that something had to be done to strengthen the administration of the new Continental Army. Spring could be expected to bring renewed British military activity. The military organization that Congress had established based upon colonial experience and the familiar British system was badly flawed. The division of responsibility that characterized the British approach to

war and a strong Whig political ideology in Congress handicapped the Americans. Congress needed to find some way to bring scattered responsibility and a war by committee approach under greater control and direction.

CHAPTER III

A NEW AND GREAT EVENT

American hopes for a short struggle and a speedy reconciliation with Great Britain ended by the summer of 1776. The British had decided to use force against the colonies and dispatched the greatest overseas army they had ever assembled. The inexperienced Continental Army was soundly defeated in a series of battles in New York and driven across New Jersey into Pennsylvania. Philadelphia, the seat of the Continental Congress, appeared lost by December and the specter of the gallows loomed before rebel leaders. Hopes fostered by the brave and noble words of the Declaration of Independence and the "rage militaire" of 1775 began to pale before the bayonets of British and German regulars.[36] Congress realized that the struggle had now entered into a larger and more complex phase that dwarfed the extemporized approach to war of 1775. Without a stronger and better organized army, the Declaration would soon ring hollow. Political rhetoric and ideology had to give way to military necessity.

The lack of fixed responsibility and accountability created chaos in the military supply operations of the war's first year. The acquisition and distribution of military supplies by the Secret Committee of Trade lacked efficiency. Committee agents, such as John Langdon in Portsmouth, New Hampshire, received and disbursed the imported arms with no

strategic plans in mind and often without input from Congress or Washington. Lack of communication and accountability resulted in no one ever being sure of exactly what stores existed, when they were, and what had been issued to whom. In order to provide better control of this situation Congress appointed a seven member committee on January 23, 1776, to consider the feasibility of establishing a "War Office."[37]

In June, 1776, the committee submitted its report and Congress voted to establish a "Board of War and Ordnance." Congress sought to improve upon the British Board of War by combining many of the diverse and separate British military supply functions under one department. Army administration, promotion, provisions, troop registers, etc. were now to be centralized in the American system. In particular, and central to this thesis, Congress instructed the Board to obtain and maintain exact accounts of all artillery, arms, ammunition and warlike stores, to keep aware of where these stores were deposited, and to see to their preservation and care. The Board also supervised the raising of new troops, military expenditures, and the forwarding of dispatches from Congress to the armies in the field.[38] It was also directed to develop a plan of operaitons for the campaign of 1777. The Secreat Committee of Trade was directed to deliver all arms and military stores to the new Board which was to distribute them to the various geographic departments.[39]

Congress attempted to consolidate many of the responsibilities scattered among various departments in the British army, such as the Secretary at War, the Board of Ordnance, the Privy Council and Cabinet, under its new Board of War and Ordnance. Congress hoped that this would achieve the efficiency lacking in the British system. Unfortunately, Congress did not go far enough. It did not give the Board authority over all the army's supply departments.

The new Board of War was to consist of five members of Congress; Roger Sherman, Benjamin Harrison, James Wilson, Edward Rutledge, and John Adams, who was to serve as its first President. Richard Peters, a Philadelphia militia officer like Mifflin, was appointed Secretary.[40] While outwardly appearing to be just another congressional committee, the Board of War and Ordnance was to grow into an administrative link and clearinghouse between Congress and the Army. Writing to inform Washington of the new Board, President John Hancock called the action "a new and great event in the history of America."[41]

Meeting in its office in Market Street near the corner of Fourth in Philadelphia, the new Board worked day and night in order to solve the many problems facing the Continental Army.[42] While new members were added and old ones left, the work seemed to produce little ill feeling among the members. Writing to Joseph Ward, a fellow Massachusetts delegate, Adams noted much "Candor and Harmony

exists between members as generally takes place in assemblies, and much more than could naturally be expected in such an assembly as this."[43] In the zeal of those early days the army people met frequently with those of the navy, loaning each other cannon, ammunition and other stores.[44] Adams later characterized the burden of his task when he wrote: "The duties of this board kept me in continual employment, not to say drudgery from the 12th of June, 1776, till the 11th of November, 1777, when I left Congress forever. Not only my mornings and evenings were filled up with the crowd of business...but a great part of my time in Congress was engaged in making, explaining, and justifying our reports and proceedings."[45]

Having looked into the supply issue, Congress next turned its attention to the reform of the army. The large scale increases in British troop strength in 1776 called for an American army on a larger footing than at Boston, and Congress wanted an army at least twice the size of the British.[46] Fear of a large standing army and belief in the republican virtue of the militia or citizen soldier led Congress initially to provide for only one year enlistments. By the time of the battles of New York, Washington's forces numbered about 31,000 men, 57% of these being militia.[47] The disasters in New York, however, showed the folly of depending upon militia units which could not stand the disciplined charges of the British and German regulars. By

the end of 1776 even John Adams had to admit that "a regular Army, and the most masterly Discipline" was needed.[48]

In the fall of 1776 then, based upon recommendations of the Board of War, Congress passed what was to become known as the "eight-eight battalion resolve." The army's strength was to be increased to 88 regiments or battalions [these terms were used interchangeably during this period], with soldiers enlisted for three years. Congress deliberately chose to relieve the militia of the responsibility to meet European regulars in open battle except under crisis conditions. By the end of 1776, Congress increased the number of desired regiments to 110 and included two companies of artillery artificers for repair work.[49]

Having established the Board of War to control and coordinate the affairs of the army and having laid out the organizational scheme of that army, Congress now got down to the issue of ordnance and military stores. Writing to Congress in September, 1776, Colonel Henry Knox, Washington's chief of artillery, offered a list of "Hints" or proposals to increase the efficiency of the artillery branch.[50] Knox asked for the establishment of magazines, at a safe distance from the front, to prepare and store ordnance supplies. He wanted military artificers assigned to the magazines to manufacture the vehicles, harnesses, and ammunition needed by the army. Foundaries would be set up for casting cannon, mortars, and howitzers, and an academy similar to the British school at Woolwich to train artillery

officers. Most importantly [for this thesis], Knox also asked for "a board of ordnance" for artillery and artillery stores "whose business shall be the regulation and management of the affairs of this department [the artillery] and to whom returns shall be made."[51] Knox envisioned this Board as being separate from the politically appointed Board of War and Ordnance just established by Congress. He did not elaborate on the expected membership of his Board nor did he explain how it would relate functionally to Congress.

Not all of Knox's requests were instituted. This may be due to the lingering reluctance to centralized authority by Congress. Curbing the power of the military Congress kept the army under civilian control. It may have resulted from the confusion caused by Congress' flight to Baltimore in the fall of 1776 and the press of more important matters. Whatever the reason for rejecting Knox's total scheme, Congress did act to establish military store depots at Springfield, Massachusetts, and Carlisle, Pennsylvania. It also approved the establishment of military and civilian artificers.[52]

By the end of 1776 a professional military organization began to emerge. The increasing scope and complexity of the war showed Congress that dependence upon hastily assembled, untrained militia and improvised supply efforts could not produce victory. Commitments made in the political process through the Declaration of Independence were matched in the military sphere by the establishment of the Board of War and

the recognition of the need for a long-term professional army. Congress' bold decision to rely on a long-term war machine faced a serious test in the complex campaigns of 1777. While the expanded Continental Army, with militia support, won a major victory at Saratoga, it failed to hold Philadelphia and suffered many minor defeats. Poor battlefield performance wsa followed by near collapse in logistical support agencies.

The need to provide military or ordnance stores for the larger army and long-term war now envisioned led to the establishment of a new department in the army's supply services--the Commissary General of Military Stores. In January, 1777, Washington appointed Lieutenant Colonel Benjamin Flower to head the new department.[53] Flower's duties were to erect magazines, laboratories, and foundries to fix ammunition, cast cannon, and prepare military or ordnance stores. His artificer companies were to make carriages for the artillery and harnesses. What Flower could not make he was to contract for. Washington urged Flower to speed up the production of gun carriages, the preparation of ammunition and the casting of cannon at Philadelphia. Flower was to apply to Congress for funds and on matters relating to camp business he was to work through General Knox and the Quartermaster General. "The speedy accomplishment of the matters with which you are instructed" Washington told Flower, "are of such high import to the welfare of the Continent, that I hope no inducement will be

wanting to urge you to complete them as soon as possible."[54] In April, 1777, Congress gave Flower his first appropriation, $100,000, and the Department was officially in operation.[55]

Following Flower's appointment as Commissary General of Military Stores, Congress moved to establish regulations for the Department's operations. The first problem it tackled wsa the lack of accurate information on the location and quantity of ordnance stores. By August, 1777, Congress ordered that the Commander-in-Chief and each continental district commander furnish monthly reports to the Adjutant or Deputy Adjutant General of all public arms and accouterments and all military stores. The reports were to be forwarded to the Board of War and Ordnance outlining the quantities of supplies and the corps to which they belong. Under threat of dismissal, all persons entrusted with the care of military stores were to make monthly returns to the Board giving the quantity and condition of each article and its location.[56]

Congress also established regulations to deal with a second problem--the tendency of soldiers to keep their weapons after discharge. In January and February, 1777, Congress ordered that all arms and accouterments belonging to the government be stamped and marked "UNITED STATES." The Board of War modified these instructions by shortening the markings to read "U: STATES." Upon receiving word of this Washington ordered Flower to have the stamps sent to

Samuel French, Commissary of Military Stores with the main army then at Morristown, New Jersey.[57]

Congress also moved to correct a third problem--the confusion relating to the accountability for and issue of military stores. Congress had earlier directed the Secret Committee of Trade to turn over all its arms supply responsibility to the Board of War and Ordnance. The difficulties of eighteenth century communication must have caused delay in the transfer of these duties because accountability problems still existed. In a further attempt to correct this problem, Congress now ordered that the Secret Committee of Trade could not authorize its agents to deliver stores in their custody except by Order of Congress.[58]

But even these reforms were not enough. The problems facing the Continental Army in 1777 were not restricted to supplies alone and the changes Congress instituted above did not work. By the end of 1777, the war effort was again near collapse. Continental currency began to depreciate rapidly. Quartermaster General Mifflin resigned in November after having ignored his responsibilities for several months and the office remained vacant during a critical part of the campaign. To make matters worse, the winter quarters selected for the main army at Valley Forge fell into an area that had been picked clean by both sides during the 1777 campaign. That winter nearly 3,000 men out of 17,000 were unfit for duty because they lacked shoes and clothing. For

days at a time, foodstuffs, particularly meat, were not to be had. Nearly 3,000 men were to die that winter of disease made worse by lack of food, clothes, shelter, and medical supplies. To save themselves because the army could not help them, soldiers subjected the surrounding areas to "plunder" and "abuses" for "three miles in every direction." Foraging expeditions were seen by one soldier as little more "than to procure provisions from the inhabitants...at the point of the bayonet." Writing to Congress that winter, Washington said that if supplies were not soon available, the army would starve, dissolve or disperse.[59]

The Ordnance Department was no better off than that of the Quartermaster. A Congressional committee sent to camp to investigate conditions described the Department as being in the "most deplorable situation," with at least 6,000 arms being in need of repair. The lack of transport waggons, a responsibility of the Quartermaster Department, prevented ordnance stores from being moved and the deplorable road conditions forced the waggons that were available to carry only two-thirds of their normal load. Sometimes supplies even had to be dropped along the wayside where they became subject to plunder. Militia demands also drew down the stocks in the magazines, and the fighting in Pennsylvania had hopelessly mixed up the Pennsylvania State and the Continental stores so that Flower, to make amends, was forced to supply State demands.[60] General Baron Johann dekalb, one of the many French officers who volunteered in

America's cause, ably summed up the situation, "...luckily we have an enemy to deal with as clumsy as ourselves,..." otherwise, "all things seem to contribute to the ruin of our cause. If it is sustained, it can only be by a special interposition of Providence."[61]

Recognizing the need for reform in late 1777, Congress turned its attention to the Board of War. The Board was responsible for the receipt, issue, and maintenance of military stores and the records relating to them. The Board created in 1776 was composed of members of Congress. These overworked individuals simply could not devote enough time to solve every problem. Robert Morris realized this when he wrote, "the fact is they [Congress] have too many objects and retain too much executive business in their own hands."[62]

On October 17, 1777, Congress created a new Board of War. Congress expected this reform to provide experienced, full-time administrators. It elected an impressive group of members: General Thomas Mifflin, former Quartermaster General; General Horatio Gates, the hero of Saratoga with higher aspirations; Joseph Trumbull, Commissary General; Richard Peters, Secretary to the old Board of War; and Timothy Pickering, future Quartermaster General. Congress also increased the responsibilities of the Board by assigning it the additional duties of military recruiting and the construction and management of military buildings.[63] On paper, the Board looked like a great mix of expertise.

Mifflin, Pickering and Gates were soldiers and were expected to provide guidance in military affairs. Trumbull had an excellent record in the Commissary Department and Peters could provide political and historical insight from his experience on the old Board of War. A great deal must certainly have been expected from all this talent.

The Board was to prove a major disappointment, however. Washington's performance in the campaign of 1777 and the loss of Philadelphia displeased many in Congress. Horatio Gates, however, was crowned with laurels. Some in Congress thought that Gates might produce the victory that Washington missed and rumors soon spread that there was a movement in Congress to replace Washington. Mifflin became implicated as a partner of Gates and the whole affair has come down in history as the Conway Cabal [named after General Thomas Conway, a French volunteer and friend of Gates]. Although the question of a plot or 'cabal' to replace Washington remains hotly debated by historians, the basic mood of the Valley Forge winter was a negative one: the Main Army suspected the Board of harboring ill-will for Washington, and therefore treated it with hostility.

Faced with the inadequacy of their earlier reforms, Congress tried again. In early January, 1778, Congress dispatched to Washington's camp a Committee composed of delegates Francis Dana, Joseph Reed, Nathaniel Folsom, John Harvie [Charles Carroll of Carrollton and Gouvermeur Morris were to join them later], and Gates, Mifflin and Pickering

from the Board of War. The Committee was to investigate the condition of the army and make recommendations for the improvements they might find necessary.[64] Because of the political poison that arose between Gates, Mifflin and Washington, the members of the Board of War withdrew from the Committee. By this action the Board eventually removed themselves from any meaningful future role as directors of military policy and supervision. Washington's deep distrust of the Board, because of Gates and Mifflin, would lead him, with the assistance of Knox and Greene, to carry out more and more of the supply operations for the army under his own control. It would also cause Washington and Knox to turn away from Colonel Flower who held close friendships with Mifflin, Pickering, and Peters throughout the war.

By the time of Valley Forge many problems beset the Army. The Officer Corps became convulsed over issues of rank and honor. French volunteers had offered their services to American agents in France. Their services were accepted in the hopes that their experience and knowledge would shore-up weak points in the Continental Army. The high rank they were given, however, enraged American-born officers who had carried the fight these past years. Many, like Knox, threatened to resign when they perceived their honor threatened by their being outranked by foreign appointees.[65]

The Committee concentrated, however, on two more important issues, the numerical weakness of the army and the

deterioration of the supply system. After three years of seemingly unsuccessful war, patriotic fervor rapidly cooled. Congress was finally forced to recognize that the large scale army it hoped to recruit in 1775 and 1776 would not materialize. In May, 1778 then, Congress acted upon the Committee recommendation to re-organize the army. It reduced the number of planned infantry regiments to eighty and reduced the number of men in each.[66] The army would now be a leaner and more compact force. On the supply side, Major General Nathanael Greene, one of Washington's most efficient and trusted officers, was prevailed upon to assume the duties of Quartermaster General. Greene soon had sufficient food and supplies coming in to Valley Forge to end the immediate crises.

For the purposes of this thesis, Congress' most important work was with the Military Stores or Ordnance Department. In February, 1778, Congress drew up the first large scale operating regulations for the Department.[67] The new regulations spelled out exact procedures for the operations of the Ordnance Department, replacing the patchwork system of 1775-1777. Flower, as Commissary General of Military Stores, answered directly to the Board of War. He was responsible for the receipt, repair, and delivery of all arms, ammunition, accouterments, other military stores, and contracts. His accounts were to be audited every six months by the Board of Treasury. He was also to collect returns of military stores in the various

states, submitting status reports on the first of each month to the Board of War. The Board was required, from "time to time," to transmit these totals and the locations of military stores to Washington. Congress allowed Flower to appoint as many clerks, conductors, deputies, or assistants as he required. This was a major concession since Congress had denied this privilege to other staff departments such as the Commissary General, Joseph Trumbull, in the reorganization of 1777.[68] Unlike the Quartermaster Department, Flower's staff who did the purchasing of military stores were apparently allowed no commissions on their transactions since Congress considered commissions as a source of corruption and profiteering.[69]

Like other staff departments, the Military Stores Department was composed of a mixture of civilian and military personnel. Flower had the direction of all artificers and armorers employed in any armory, laboratory, or magazine, except those with the field army. The eldest colonel of artillery in camp, the chief engineer, or the commanding officer of artillery were to constitute a separate Board of Ordnance to transact all business necessary to be done in the field. They were subject to control by Washington but not Flower. Flower was, however, to obey their direction in cases of emergency.[70] The artillery artifices were expanded from the two companies authorized in 1777 to a regiment of five. The pay of those who enlisted for three years or the war was set at $20 per

month, compared to $6-2/3 and $8-1/3 for the infantry and artillery private respectively, paralleling British army practice where technicians received higher pay than line troops. They also received the bounty, clothing and other benefits due to the Continental artillery. The officers' pay was to be equal to their counterparts rank in the artillery but they would have no rank or authority beyond their regiment.

By spring then, Congress had prepared a new structure for the army and its supply department. The commencement of the campaign of 1778 prevented the reforms from being fully implemented, but this was to prove a blessing in disguise as fundamental problems in the Military Stores Department were uncovered. The February, 1778, regulations provided that returns of stores would be sent to Flower and that the Board of War would "from time to time" send the compiled data on to Washington and Knox. In reality what was to be "from time to time" became more akin to whenever the Board felt like it. By splitting the Department's responsibilities between Flower's staff and the field army, Congress created the potential for political conflict and operational inefficiency. Flower was answerable to the Board of War. The Board's leaders, however, Gates and Mifflin, had incurred Washington's distrust as a result of the Conway Cabal, and the poisonous political atmosphere this created enveloped Flower. The split had also resulted in operational inefficiency because Washington and Knox could

not obtain information on the quantity and location of ordnance stores during the campaign. This prevented effective planning and maneuver.

In a bitter letter to Washington in December, 1778, Knox blasted the existing condition. The February regulation, he charged, had given the Board of War sole direction of all preparations of ordnance and military stores for the field and deprived him [Knox] as "Head of the Ordnance Department" of any direction over it except in emergencies. Knox felt that while Flower's reputation would be little damaged by stores "being improperly or ignorantly prepared," Knox said that his own would be ruined because he was answerable for the artillery stores. Knox complained that he could get no returns and did not know where to find ordnance stores and stated his "utter inability" to perform his duties. Flower's deputies gave him no information, "not conceiving themselves obliged to send me returns, even on my sending for them." His requests had gone unanswered for months and he found himself "totally ignorant of what is doing in the Ordnance Department in Pennsylvania." It is a "preposterous arrangement" Knox wrote, "where the Principal of a Department has not the sole direction of everything in it." Knox concluded that if Congress would not give him sufficient power "incidental to the Office" and if all the artificers, laboratory Directors, Commissaries, Clerks and Conductors in the Department could not be put under his direction then Knox would resign.[71]

Knox had expressed similar views on the structure of the Ordnance Department in his "Hints" of 1776. Knox's personal ambition and the problems outlined relating to the campaign of 1777 and 1778, strengthened his efforts to gather all ordnance functions under himself, in effect making him the equivalent to Britain's Master General of the Ordnance, but with the control and responsibility over actual combat operations that the former figure lacked. The departmental regulations of 1778 showed that Congress either disagreed with him or did not understand Knox's 1776 proposals. The upshot was an administrative nightmare in which two independent ordnance departments were created. One subject to the political control of a distrusted and politically motivated Board of War with no love of Washington, and the other limited to field expediency. Knox could not tolerate the fact that the Board of War had direct control of the very heart of the army's ordnance supply, the army's fate.

Knox continued to press his case. In January, 1779, Washington sent him to Philadelphia to confer with Congress. Knox's criticism unfairly singled out Flower, but the 1778 arrangement stated that it was the Board of War, and not Flower that was to provide the ordnance returns, and on no set schedule. Flower may have felt himself constrained to operate through prescribed channels. Flower's service through 1777 and 1778 had also been an immensely trying experience. Not only was he Commissary General of Military

Stores but also Commander of the Artificer Regiment. The fall of Philadelphia launched him on a hectic tour of evacuating the military stores, relocating them through New Jersey and Pennsylvania. This kept him constantly traveling to supervise his scattered department. His health finally broke down at Valley Forge and he lay near death for weeks. Circumstance and Congress had forced Flower, alone, to carry the burdens that Knox had planned for a Board.

In February, 1779, Congress worked out a compromise with Knox in the form of new regulations for the Ordnance Department. While Knox still did not receive the complete control that he wanted, the new system was an improvement. Knox received control over all ordnance activities in the field. While the Board of War, except in emergencies, still retained control over the stores in fixed magazines, it was now required to make monthly returns to the Commander-in-Chief, who would then notify the Commander of Artillery. Knox's authority increased in two additional ways. He could influence production of military stores by sending the Board estimates of arms and other stores needed by the army, and also order changes in the construction or manufacture of ordnance stores. If the Board concurred, the artificers and laboratory personnel would comply.

Knox's authority was further enhanced by the appointment of two officials: a Field Commissary of Military Stores, independent of Flower, was funded by the Commander-in-Chief. The Field Commissary, a member of

Knox's staff, was to receive and issue all ordnance stores and arms in the field. He was also authorized to apply for and receive ordnance and other stores from the fixed magazines, accepting "none apparently unfit for service." Those items not repairable in the field would be sent to the Commissary General of Military Stores." The second official was to be a Surveyor of Ordnance. The Surveyor was to be selected from among the Colonels of Knox's artillery regiments. He was to visit all production facilities and report on all matters of construction and quality control relating to ordnance stores. Other artillery officers also made visits to production centers in order to gain "insight into the mechanical branches of their profession" and to spread that knowledge among their units upon their return."[72]

The February, 1779, arrangements fixed the basic structure of the Ordnance Department until its dissolution in 1782. The reporting system, responsibilities, and job classifications from the Board of War to the lowest clerk remained intact. The "arrangements" produced a split in the department between civilian and military personnel like the British Board of Ordnance. With the exception of the military personnel in the Artificer Regiment, the Commissary General of Military Stores would command what essentially was the civilian branch, while the Field Commissary under Knox would constitute the military branch. The course of the war and the depreciation of Continental currency,

however, were to force Congress to scale back the department by cutting pay and personnel.

Faced with the threat of bankruptcy, the Continental Congress moved to cut back the scale of its military efforts in 1780. It began to shift duties performed by the Quartermaster and Commissary Departments to the States by a system of specific supplies. This amounted to an abandonment by Congress of many supply responsibilities. Congress also did away with many of the commissions it paid to staff officers and substituted fixed salaries instead.[73] The entire effort was directed at reducing public expenditures with little thought as to the impact on the army.

Considering recommendations by the Board of War to increase the pay and benefits of Ordnance Department personnel, Congress moved to adjust their pay scales based upon merit. [See Appendix B for pay scales and staff levels.] But Congress made cutbacks as well. In the future, only military personnel would receive rations, the others would have the cost of rations or subsistence factored into their salaries. This was based on Major Samuel Hodgdon's belief that those performing in unskilled jobs could be hired at little more than the cost of their rations. In some cases, piece work was introduced also, so that, for example, file cutters would be paid by the inches of file cut.[74]

Following the ratification of the Articles of Confederation, Congress moved to abolish the Board of War and Ordnance. In its place, in February, 1781, Congress created a Secretary at War. Finally, all administrative duties relating to the army were to be under one head authority, as we have seen, denied to his English counterpart. Among his other duties, the new Secretary was responsible for obtaining accurate returns of troops, arms, ammunitions, clothing and other supplies, and to furnish reports on these to Congress. He was to provide for the care and storage of all military stores, provide estimates of needed items and supply the information to the newly appointed Superintendent of Finance, Robert Morris. Morris then would see whether the could be obtained.[75]

Congress created the position of Superintendent of Finance the same day it established the Secretary at War, and the Superintendency was to be the dominant position. Morris' duties were to "examine into the...public expenditures...and for establishing order and economy in the expenditures of the public money." He was to "superintend and control the settlement of all public accounts, to direct and control all persons employed in procuring supplies for the public service, and in the expenditure of public money."[76] Morris also received approval from Congress to discharge any officer in any branch of the service who handled public money and he was allowed to eliminate many of

the officials who previously purchased and transported army supplies.[77]

Through his fiscal power, Morris also had direct control over the Ordnance Department. The Commissary General wrote directly to Morris when requesting funds and does not appear to have had to go always through the Secretary at War.

Following the American victory at Yorktown in October, 1781, a war weary Congress accelerated its cutbacks in the army and its supply departments. Congress now passed new measures to reduce the army and its support staffs. In order to pay debts, many items of equipment and stores so dearly bought a short time earlier were sold, as well as many public buildings. Hessian prisoners were sold to ironmasters.[78] The Commissary General of Military Stores also wanted to sell great quantities of shot and shell, estimating that they would bring £10-12/ton for shells and £7-9/ton for shot. Congress, however, upon the recommendation of Morris, decided against this measure.[79]

In the fall of 1782, Congress again moved to reduce the army and the end of the Ordnance Department had finally come. Having already cut the Department the previous year, Congress now reduced it further, repealing all previous regulations concerning it. In the words of the Commissary General, Congress had "totally overthrown the fabric of years, leaving scarcely a trace behind."[80] His position was abolished, leaving him as Commissary of Military Stores but

under the Secretary at War Benjamin Lincoln. Officials at outlying ordnance posts were dismissed and the stores consolidated. The Field Commissaries were reduced in numbers and their pay cut again. Now, only one Field Commissary and two clerks or conductors were to serve with the main army. One deputy and two clerks were retained at West Point and with the Southern Army. One conductor would be kept at Fort Pitt.[81] The Commissary General had to take the position of Deputy Assistant Quartermaster at Philadelphia in December, 1782, in order to make ends meet.[82]

Field arrangements were changed also. Previously, each infantry brigade had a conductor of military stores attached to it who received and issued military stores. This was now mostly done away with, the stores being handled by the Brigade Quartermasters or waggon conductors. Laboratory staffs were also reduced. Officials retained in service were cautioned that since their positions were now "considered as an easy tour of duty no additional pay or emoluments would be forthcoming," and that "a living solely from the employment cannot be expected." In other cases, laboratory staffs were dismissed overnight.[83]

The army, of course, suffered because of these cuts. With little staff to assist him, the Commissary General of Military Stores wrote the Secretary at War that "to keep the business in order I find it indespensably necessary to be personnally present to superintend the whole."[84] Great

quantities of military stores were left unattended.[85] Even Washington complained arms were getting out of repair because there were no longer traveling forges with each brigade or the materials to repair them.[86] With a few strokes of the pen, Congress had, in a short period, dismembered what had taken it so long to build.

Being reluctant to the centralization of political and military power, Congress relied on a series of committees to address and resolve the economic, political, and military problems which constantly appeared before it. Envisioning a war of short duration it adopted an extemporized war by committee approach and relied on the republican virtue of the free citizen militia to carry the day.

Political rhetoric and ideology, however, were blasted away in the first discliplined volleys by professional British and German soldiers in 1776 and were forced to give ground to military reality. It came to be recognized by even the republican champions like John Adams that the struggle was to be a long one and a professional approach to the waging of war was needed. Valley Forge was the birthplace to the professional approach. Congress expanded and reorganized the size of its army, placed it on a long-term footing, and provided regulations for its organization, operation, and support.

Recognizing that it could no longer control military operations on the enlarge scale of 1776 and later years, Congress established the Board of War and Ordnance to

specialize in the military phase while it dealt with the economic and political phases. But Congress could not fully bring itself to divorce itself from the conduct of the war and refused to grant military department heads full autonomy to conduct their business.

Nowhere was this dichotomy seen more in effect than in the arrangements made for the Ordnance Department from 1777 to 1782. The campaigns of 1777 and 1778 demonstrated the consequences of divided responsibility and the lack of accountability between a politically appointed Board of War, hostile in spirit to the army's Commander-in-Chief, and the field commanders who needed ready access to military stores and knowledge as to what was available. In spite of the pleas of Washington and Knox, Congress steadfastly refused to concentrate ordnance administration under a single figure. Possibly Congress did not consider the issue serious enough to risk alienating its loyal servants on the Board of War. Possibly, the republican spirited radicals in Congress resented the self-styled arrogance and superiority professed by professional officers like Henry Knox. But most probably, their English political heritage, the fear of centralized political and military power, and the fear of a professional standing army in the hands of a despot, whether King or Parliamentarian, kept them from the enacting the logical recommendations proposed by Knox and Washington.

The system was to remain flawed. But men soon learn deal to difficult situations and impossible tasks. The Ordnance Department was to prove no exception.

CHAPTER IV

THE GENTLEMEN IN BLACK FACED RED

All laws and regulations are promulgated to direct and control the actions of men. While, on the one hand, individuals can undermine well-conceived legislation, individuals can compensate for conceptual errors in poor statutory organizations. This interaction of personality plays a critical role in unraveling the story of the Continental Army's supply departments, and of the Ordnance Department in particular. When Congress refused Henry Knox's request for full control of the Ordnance Department, it prevented the creation of an official similar to Britain's Master General of the Ordnance. Knox did not abandon his goal of achieving the unified direction, operation, and accountability for ordnance stores. He simply shifted his focus and set about creating a unified and efficient team of subordinates.

Colonel Benjamin Flower and Major Samuel Hodgdon, the Ordnance Department's two war-time leaders, did much to shape its growth. Flower, overworked and in ill health, rose to lead the department is its early period through petition and political influence. His association with men distrusted by Washington and his key subordinates led to his eclipse. Major Hodgdon, Flower's successor, was also an ambitious, hard working, and dedicated soldier. But Hodgdon had the powerful support of General Henry Knox, Washington's

trusted chief of artillery. Hodgdon proved himself to Knox by his efficiency in action following the ordeal at Valley Forge when the army came to place more value on ability than on political connections. The selection of Hodgdon, initially as the principal field commissary of military stores and later as Flower's replacement, gave Knox the control over Ordnance Department operations denied to him in legislation.

In January, 1777, Washington assigned Benjamin Flower to the new post of Commissary General of Military Stores. Flower, the man, has proved to be an elusive figure for the historian. Born about 1748, he worked as a hatter in the Hight Street Ward of Philadelphia. In 1774, he was assessed a city tax of £41..11..2 indicating that he owned a fair amount of property, placing him in a middle class status.[87] Flower's sister, Rebecca, was to be employed by the Military Stores Department making flags, liners for dragoon caps and other small items. Her husband, William Young, would also do work for the Department.[88]

On July 10, 1776, Lieutenant Flower of the First Battalion, Philadelphia Associators, "animated with a just sense of the importance of the present contest" petitioned Congress for the vacant post of Commissary of Military Stores at the Flying Camp. Located near present day Perth Amboy, New Jersey, the Flying Camp constituted the reserve base for Washington's army in New York. On July 31st, President Hancock notified Flower of his appointment.[89]

Young Lt. Flower must have had his hands full. Most of the Flying Camp was composed of raw recruits and short-term militia--a rowdy and relatively undisciplined group. Militia men were notoriously hard and wasteful of public arms, losing, selling, or stealing them; ignoring rudimentary maintenance; and squandering ammunition like schoolboys. Flower was instructed by the Pennsylvania Council of Safety to look into these abuses and the negligence of the officers respecting them.[90] Flower's performance must have been sufficiently satisfactory for him to have received Washington's appointment in 1777 as Commissary General of Military Stores.

Flower was an ambitious individual. His new position carried the rank of Lieutenant Colonel of Artillery Artificers but apparently he also insisted that the word "General" be incorporated in his title. Flower further sought the rank of Colonel in the artillery which would have given him line rank in the army. [As noted, artificer officers could rank only in their regiment.] In November, 1777, Flower petitioned the Board of War for the artillery colonelcy, claiming to have held the rank of Lieutenant Colonel of Artillery since July, 1776. He also claimed that General Hugh Mercer had given him the command of the artillery at the Princeton battle in January, 1777.[91]

Flower may have expected his old Associator friends on the Board of War, Mifflin and Peters, to help his case. When they passed the issue to Washington (and therefore

Knox) friction arose. Knox adamantly opposed Flower's claim to a colonelcy of artillery and rejected his Princeton claim as "totally repugnant to every military principal and decisively inadmissible."[92] Knox undoubtedly acted this way because in the British system he was following, Ordnance Department officials had no command authority in the line regiments. If Flower received rank in the artillery, this would upset Knox's system. Mercer, unfortunately for Flower, was killed at Princeton and Flower could offer no other support for his claim. Knox refused to support Flower's petition for artillery rank and claimed that Flower "had too great an avidity for it." Knox did, however, admit that because of Flower's "technical merit, industry, activity, and experience" he should have command of the artificers but that he was unaware that they were to be "artillery artificers." Knox dubiously claimed that Congress inserted this artillery artificer language into the February, 1778, regulation without his knowledge. He also thought that the Springfield laboratory was not to be under Flower's command. Washington acquiesced on Flower's title of "Commissary General" but refused his request for artillery rank fearing that granting this request would exacerbate the numerous disputes over rank and seniority which were convulsing the officer corps at Valley Forge. In approving Flower's title, however, Washington expressed a "very favourable opinion" of Flower but felt his rank as Lieutenant Colonel to be "fully competent to every purpose."

Perhaps as a result of his patrons on the Board of War, Congress granted Flower the pay and rations, but not the rank, of an artificer colonel.[93]

Flower began his new assignment in a most difficult period. He faced persistent problems trying to obtain accurate information on stores available, enforcing accountability for supplies, raising personnel, and establishing repair and manufacturing centers. These problems were often intertwined and were compounded by recalcitrant subordinates and the eighteenth century's slow communications.

A good example of the accountability problem can be seen in the shortages of firearms at various times during the war. It has been estimated that over one hundred thousand French arms alone were imported during the war. Over 81,000 of these, or nearly 80% were imported by December, 1777.[94] In addition, over 40,000 muskets were in store in Pennsylvania and Massachusetts by 1776. While the number of arms available in private ownership is uncertain, one estimate states that nearly 80% of the militia units supplied their own arms during the war's first year.[95] Additional arms were also imported from Spain and the Dutch. Since estimates of the number of men in service, militia or regular, vary from 100,000 to 150,000, it would appear that at least one musket should have been available for every man who would shoulder it.[96] Yet repeated shortages and calls for arms arose.

Several possibilities could be advanced in order to answer this question. First, sources on the numbers of available arms could be in error. Shortages of arms and accouterments could have been chronic, but contemporary accounts do not fully support this.[97] Also, the pleas of army commanders, who could be expected to ask for more than they could get, enhanced the appearance of arms shortages. Finally, staff inefficiency in record keeping and the misdirected issues of arms could have been a factor. The confused efforts in Congress leading from the Secret Committee to the Board of War, and the built-in inefficiency of the 1778 and 1779 Ordnance Department regulations provide the most likely answer. Simply put, no one was fully accountable during the early years of the war.

Lack of communication also had an impact on accountability problems. Secret Committee agents, such as John Langdon at Portsmouth, New Hampshire, may not have been fully aware of the transfer of responsibilities to the Board of War. For example, in March, 1777, the first French arms arrived in two ships. The Amphitrite and the Mercury brought in nearly 21,000 muskets and other vital military stores.[98] Word of their arrival gave Congress high hopes that they had adequate supplies for the moment, and that it was now men and not materials that were in demand. "If the men will enlist they can now be armed and clothed... Weak and exposed as our enemies are in the Jersies, to a stroke that would be decisive, we cannot avail ourselves of it for

want of men, altho we have arms, tents, clothes, and every necessary ready for 20,000 soldiers."[99]

Congress ordered 5,000 of the recently imported arms to Massachusetts. Whether these arms were actually sent is uncertain; but Langdon apparently under pressure from the New Hampshire assembly and General John Sullivan to arm the recruits begin dispatched to Fort Toconderoga to stop the expected British invasion from Canada, issued arms to New Hampshire, Rhode Island, and, apparently, a second time to Massachusetts on his own account. In April, Washington was stunned by an appeal for arms from Massachusetts that he believed was previously answered. This indicated a supply system without organization or direction.[100]

What was happening was that stores were being issued directly to the states without the knowledge of Congress or Washington's supply officers. These items were retained by the States for their own use and when state troops or militia were called out they requested a supply issue from Washington. Also, short-term troops often took their issued equipment home with them--a problem which led Washington to exclaim that the process "scatters our Armoury all over the world."[101] Arms obviously were available, but nobody knew where they were or who had them. The legislation requiring U.S. markings and the establishment of the Board of War as a control coordinating authority were attempts to correct this problem of accountability.

Caught up in the frenzy of effort and constant travel in trying to establish his new Department, Colonel Flower made some ill-considered decisions and placed too much trust in subordinates. He fell victim to the same problems which plagued the other supply departments such as that of his friend the Quartermaster General Thomas Mifflin. Mifflin's department was rife with complaints of inefficiency and dishonest subordinates. Typical of the complaints against Flower were those of General Sullivan. Sullivan, like everyone else in the summer of 1777, was looking for arms and ammunition. He sent complaints to Flower of receiving arms unfit for service. Flower replied that he sent no unfit arms "...as I have a public Armourer who examines all arms delivered into my Store before they are delivered to the troops...." If the arms were bad or damaged, Flower said, the fault was with the troops and the carelessness and neglect of their officers "By throwing them into their waggons instead of carrying them." If, however, he wrote Sullivan, "the officers will suffer their men to receive arms unfit for Service, it's their faults and not mine, but your Honor may be assured, I will take every method in my power to prevent such abuse in the future, for it's with the greatest difficulty I can procure arms...and unless the officers to whose care they are entrusted, take a proper method to preserve them, we shall soon be destitute of them."[102]

Flower also assured Sullivan that since all the new arms had been issued [these must be the arms received in March] to passing troops and those repaired reissued as soon as they are finished, Sullivan would have to await a new supply which was expected shortly. This supply would "enable us to comply with all orders from the Army at a moment's warning."[103] Writing to Sullivan again a few days later Flower spelled out his problems. "...the demand there has been on me for every sort of military stores...has been immense. I have employed every person I could get in the different Branches...I shall ever lament as the greatest misfortune of my life, that the want of cartridges or anything else when called for in my Department should be the means of losing this city [Philadelphia]--and your Honor may rest assured that every Order for any kind of military Stores, that is in our possession or can possibly be procured, shall always be attended to with strictest punctuality--I have a proper sense of the necessity of keeping up a proper supply of everything necessary of the defense of a soldier."[104]

But Philadelphia did fall, notwithstanding the efforts of Washington and Flower to save it. Flower again was pushed into another round of frenzied activity trying to evacuate the ordnance stores, and even the Liberty Bell, before the city fell. Moving the stores to Trenton, New Jersey, and then scattering his operations from there to

Allentown, Lebanon, York and Carlisle in Pennsylvania, Flower traveled constantly that winter.[105]

Partly as a result of his travels, Flower's health broke down and he nearly died at Valley Forge.[106] His intense activity in the field in late 1777, and his illness at Valley Force, prevented him from providing the close supervision necessary at departmental headquarters. This lack of supervision was to lead to great difficulties for Flower and the Ordnance Department and, perhaps because of his illness, Washington began to rely more on Knox to perform more properly the functions of the Military Stores Department and the Board of War, which he distrusted.[107]

By the summer of 1778, Congress was disgusted with the supply scandals that plagued the army at Valley Forge. The first agency Congress identified for investigation was the Quartermaster Department. By this time Continental currency had begun its precipitous decline and inflation soared. Army officials found themselves in competition with speculators and each other, while the troops in camp suffered amidst plenty and lost faith in the supply system while food and clothing rotted away in warehouses. "There is not a Cross Road or Village of three houses," complained one of Washington's aides, "but a deputy Commissary and Quartermaster is fixed there--to do nothing." Congress reacted strongly. It authorized the States to investigate and remove corrupt Continental officials.[108] While few

supply officials were actually proven guilty, their public image tumbled.

Commissions to supply officers as a percentage of their expenses were seen to be corrupting influences and the cause of rising inflation, but they were one of the few means to attract men into the supply departments. Even Quartermaster General Greene had the dangle the profit motive to induce men to remain in or take Quartermaster Department jobs. "I had not the least idea of your resignation," he wrote Deputy Quartermaster Hugh Hughes," as you would have the same Command, as heretofore, and continue to enjoy all the profits and Emoluments of the Office." The Quartermaster Department's image became so bad that any association with it was looked upon with horror. A Congressional delegate, John Mathews of South Carolina, whose committee was reprimanded by Congress for some slight, indignantly noted that regardless of our character as members of their own body, I find we are to be considered as Quarter-Masters, etc., and liable to equal insults."[109]

Congress never conducted its planned investigation of Mifflin's Department. Perhaps other matters, such as the French alliance were more pressing and the delegates probably felt that the new Quartermaster General Nathanael Greene could correct the problems that plagued the Department. It is also probable that Mifflin's political and social stature protected him from the criticism that was

soon to be leveled at another Department whose leader was an easier target.

In 1777, desperately needing a staff to handle the press of Ordnance Department business, Colonel Flower, on the recommendation of several gentlemen of the Pennsylvania Council of Safety, appointed Cornelius Sweers as an accountant in his new department.[110] In August, upon his return from a visit to Carlisle, Flower was informed by Sweers that auditors had examined the Department's accounts and no problems appeared. At first Flower trusted in Sweers' honesty, and had no reason not to. Flower also then checked the accounts but a lack of time did not allow him a thorough examination. Showing his faith in Sweers, Flower appointed him to act in his absence and asked President Hancock to send Sweers $20,000 for the Department's use "for which his receipt shall be sufficient."[111]

Sweers, however, came to betray Flower's trust. Suddenly starting to live in a manner that should have been beyond his means, and being seen to engage in currency speculation, Sweers fell under suspicion. Flower went to the Board of War and got permission to have Sweers dismissed but decided to wait until Sweers finished an accounting project. Finally, upon notification by the Treasury of problems with the Department's accounts, Flower ordered Major Joseph Watkins, Commissary of Ordnance Stores at Lebanon, to have Sweers arrested and his records confiscated.[112]

Sweers sent repeated letters to the President of Congress and the Board of War protesting his innocence and saying that it was Flower who lead him astray.[113] According to Sweers, during the hectic summer of 1777, the Board of War ordered Flower to purchase as many arms at the best price he could. [In April, Congress itself resolved "that it be recommended to the good people of the states, to furnish the Commissary General of Military Stores, with all such articles as he may want for the use of the army at a reasonable price."] Sweers stated that Flower "suggested" that since arms' prices went at £6 and up, any amount he [Sweers] could buy at a lower price and send to Major Jonathan Gostalowe, one of Flower's assistants in Philadelphia, with his receipt as to the current value would result in a split between himself and Sweers. Sweers asked for a hearing and the chance to examine his account book and said that if he committed any wrong it was because human nature is "subject to frailties in an unguarded moment," admitting no other frauds. Sweers also added that Joseph Nourse, an official of the Board of War and an admitted friend of Flower, visited him during his confinement and asked him for a description of the account book; Sweers implied that this was an attempt to locate and destroy it. In late May or early June, 1777, Sweers claimed that Flower had said that since they were both appointed to purchase arms that they "might as well as not make some advantage of

such purchase." Sweers admitted that he agreed to this and cited an example from his memo book:

			Purchase	Charged U.S.
1777	2 June	1 rifle	₤4..10	₤6..5
	16 June	2 muskets	6..0	10..15
	17 June	1 musket	5..0	7..0
	18 June	1 musket	4..0	6..0

Sweers said that there were other entries like these but from time to time he tore them out and destroyed them but forgot about this one.

Acting upon these allegations, Congress moved on August 3 that Flower, under suspicion for "frauds and malpractices in the discharge of his office" be "arrested and closely confined in the gaol."[114] It is at this point that Flower appears to become a victim of political battles between the conservative and radical members of Congress.

Congress aligned itself along regional party lines.[115] The Eastern Party, consisting of the delegates from New England and eventually Pennsylvania and New Jersey, consisted of the old revolutionary radicals like John and Sam Adams, and James Lovell. They extolled a virtuous, republican militia army and distrusted a standing regular army and its aristocratic officer corps. They were alarmed about war profiteering and were opposed to French influence. They were generally older, less wealthy and less socially prestigious men, generally oriented toward "leveling" or democrating values. They referred to themselves as the

"Party of the Revolution"; outsiders, such as John Jay referred to them as the "family compact." They totally distrusted and hated officers like Phillip Schuyler and Benedict Arnold. Their opponents, the Southern Party, contained the conservatives. Led by men such as John Jay, Wiliam Duer, Gouverneur Morris, and Robert Morris, they favored French diplomacy, a professional standing army and officer corps, and strong mercantile and fiscal policies. They feared the "people's revolution" concept of the eastern radicals.

The easterns were now ready for a showdown and perhaps a chance to attack Arnold, then military governor of Philadelphia and the subject of intense gossip relating to his business practices while in that position, and the army officer corps through Flower. The showdown came, but not as expected. The New England faction voted against the arrest order while the New York delegates voted in favor![116] (See Appendix A.) The motion did not carry and a second vote was necessary. Apparently, so highly thought of was Flower that the humiliating language of the first motion, that he be arrested and jailed, was struck down by the overall vote. The second vote, which was passed with the two parties almost working together, now charged Flower with malconduct only. But the friction between Congress and the army, represented by General Arnold, was just starting.

Arnold and others who believed in Flower came to his defense. Arnold, as military governor, would have to carry

out the arrest order. Perhaps less out of friendship for Flower and more out of pique with Congress for lack of recognition, or a desire to defend the honor of the officer corps, Arnold toyed with Congress. Acknowledging the receipt and execution of the arrest order, Arnold asked for clarification of whether Congress wanted Flower under common military arrest or in close confinement. If Flower were only confined in his room by one or two guards, Arnold wrote, he might escape unless restrained by a "principle of honor" thus leaving himself [Arnold] open for censure by Congress for not complying with its instructions. If, on the other hand, he put Flower in jail, Congress and the army could charge him with exercising discretionary authority beyond the intent of Congress. Arnold asked for clarification.[117] Henry Laurens, President of Congress, who had no love for Arnold--frequently taking the side of Pennsylvania's Supreme Executive Council in its own troubles with Arnold--replied that it was the intent of Congress that Flower "be securely kept in a convenient room under a sufficient guard."[118]

Next, Flower's friends, Timothy Pickering and Richard Peters of the Board of War, came to aid him. Pickering wrote Laurens questioning the meaning of "arrest and safely keep." Pickering said that Flower could be "safely kept" only by being jailed, adding that Colonel Flower "ever sustained the fairest character...the purest integrity, and nice, unblemished honor...great diligence, knowledge and

activity in business...in one word--an officer of singular worth."[119] The Board believed Flower's own "guidelines, unsuspecting honesty" caused him not to "minutely examine" Sweers accounts. Pickering also pointed out Flower's ill health resulting from "great fatigues and exposures in the public service," and challenged Sweers' credibility. He also pointed out that Flower's confinement would cripple the efforts of the Ordnance Department to support the present campaign and asked Congress "to excuse an immediate execution of the order, or at least that a military arrest be the only restraint on his person."[120] Congress returned an angry letter accusing Pickering and Peters of insult to Congress in disobeying its order, and by offering reasons to prove Flower's innocence and expressing their "pain and reluctance to carry out the resolve of Congress to arrest and safely keep Colonel Flower." Pickering finally wrote back an apology putting all blame on himself, rather than the Board, but added that he felt justice demanded the Board's testimony in Flower's favor.[121]

Flower himself was not idle during this period. When he received his arrest order from Arnold, he called the charges cruel and unjust, and complained that Congress should have granted him a hearing before passing judgment.[122] He asked for permission to take "air and exercise" or to go abroad on parole or bail because of his ill health. In support of this request, Flower enclosed a letter from Dr. Clarkson, his physician, who stated that

Flower was recovering from "a dangerous oppression of the lungs with hectic fever, occassioned by the excessive fatigues of his office and...is now in imminent danger of a total relapse unless permitted to enjoy free air and excercise."[123] Congress granted the request and instructed Arnold to allow Flower to take airs at certain hours in the custody of one or more "vigilant and discreet" officers.[124]

At some point, Flower got permission to visit Sweers. He told Sweers that a Henry Baker had stated that Sweers made Baker sign a receipt for £5 when Baker had received but £3..15 [must be for an arms purchase]. Flower defended himself to Congress by claiming that during the visit Sweers admitted making the accusations against him out of advice from his [Sweers] friends who told him it was his only hope for freedom. In his closing statement, Flower said that his Department was the "most intricate of any other of the Civil Offices" in the army, and that if he were guilty of any omissions it was a result of the "want of abilities and not the badness of my heart."[125]

On August 24, the Congressional committee appointed to investigate the case, consisting of Joseph Reed, Francis Dana and William Drayton, submitted its report. The charges against Flower were found "unsupported" and Flower's character remained "unspotted." Congress ordered FLower released and Sweers to be tried for forgeries and fraud.[126] Tried before the Supreme Court of Pennsylvania in 1779, Sweers was found guilty of fraud. He drew a prison

sentence, a heavy fine, and punishment in the pillory--the latter being repealed upon petition.[127]

The speed with which this case was settled and the furor it provoked between the Congress, the Board of War and the army, amply demonstrates the confidence that most leaders had in Colonel Flower. Flower's ability, dedication and character were no longer questioned. Timothy Pickering, a member of the Board of War and a friend of Flower, summed up his character in a letter to his wife when he wrote, fearing that Flower would resign over his ordeal, "...I would venture to vouch for Flower's innocence as soon as for my own...a more honest and valuable officer I do not know anywhere."[128]

About the time Flower became embroiled with the Sweers' case, a new figure began to emerge in the ordnance field. Unable to achieve the direct control he wanted through regulation, Knox worked out an informal arrangement of influence through careful selection of his principal field commissary, a position granted the Department in the 1779 regulation. The man Knox picked for this job was Major Samuel Hodgdon. So effective was their relationship to become that when Hodgdon succeeded Flower as Commissary General, Knox achieved de facto control of the Ordnance Department.[129]

Like Flower, Samuel Hodgdon, the man, has proved to be an illusive figure. Born in Boston in September, 1745 and twice married, Hodgdon served as an artillery captain early

in the war.[130] His earlier occupation is unknown. At one time he held the minor public office of Engineman [fireman] on Engine No. 8 and might have worked as a "mechanic" or artisan as many of the Bostonians who entered the artillery were.[131] Hodgdon's early connection with the artillery service and his Boston heritage would have put him in a position to have known Knox before the war. His hard and faithful work in the service could then be expected to have enhanced Knox's recognition of him.[132]

Hodgdon first appears in connection with the Military Stores Department when he was appointed Commissary of Military Stores by General Knox in February, 1777. Hodgdon served in the Northern Department during the Saratoga campaign under General Horatio Gates supplying arms, especially to Fort Edward, a key American position. Hodgdon won promotion from Gates, whom he considered an "intrepid Gentleman," because of his efficiency in organizing and consolidating military stores returns from uncoordinated supply personnel.[133]

Assigned to the main army at White Plains, New York, in July, 1778, Hodgdon ran afoul of Major Samuel French, a Flower appointee, who was serving there as Commissary of Military Stores. Knox placed Hodgdon in charge of the army's stores, but French argued that he was the chief commissary. Knox examined the case and ruled in Hodgdon's favor.[134] French soon departed for Philadelphia, apparently to appeal to Flower. Flower sympathized with French and

took the matter to the Board of War which ruled in French's favor. Knox, however, remained firm in his support of Hodgdon, and in spite of the Board of War's opposition got him appointed Field Commissary.[135]

Flower and the Board must have resented Hodgdon's appointment, even apparently holding back his pay.[136] Hodgdon's connection or favor with Knox, and therefore with Washington, could have been perceived by Flower as a threat. Indeed, writing later to his friend Pickering, Flower stated that he believed that he faced "ill grounded prejudices" and "enemies" against him "in a certain place."[137] From the rejection of his earlier claim for rank, and the loss of the issue over French, it is quite likely that this "enemy" was Knox. On the Board of War as well, Mifflin and Pickering were no friends of Washington, and it was no secret that Mifflin was critical of Washington for his reliance on Knox and Greene for advice, and probably jealous as well.[138]

Hodgdon tried to soothe the ruffled feelings in a letter to Flower and the Board of War by saying that Knox had called upon him "to take charge of all the stores on the ground," and that the approval of the Board was the "height of my ambition."[139] For about the next two years Hodgdon served as the Deputy, or principal Field Commissary of Military Stores with the main army. Hodgdon worked hard improving the operational efficiency of the Department, even designing new reporting forms, so "as to annihilate any further complaints" and to make it [the Department] "far

from being the most contemptible in the army." Flower's declining health forced him to spend more time away from his duties and in convalescence where he often visited at Mifflin's estate near Reading, Pennsylvania.[140]

Finally in February, 1780, Hodgdon was officially directed to Philadelphia to take "role charge" of Flower's Department. Richard Frothingham, a fellow Bostonian, succeeded him as field commissary to the main army.[141] Taking leave of his men, "who wear the Black faced with Red," Hodgdon tended his aid "to contribute to the happiness of the Gentlemen I have had the honor to command in the Field."[142] Hodgdon's new appointment gave him operational control of Flower's department. Flower remained on as titular head.

Hodgdon inherited several interrelated problems from Flower. Difficult subordinates caused disciplinary headaches. Quality control at production centers was poor. Congress vacillated as to whether Philadelphia or some other location was to serve as the principal military stores center. Internal feuds existed among departmental staff. Finally, the declining currency caused an inability to pay and feed military and civilian workers and to obtain the production or repair of needed equipment. All these factors combined to hinder the Ordnance Department in its most important task--providing the army with the weaponry to wage war.

Personnel and production were two problems most closely related. Poor pay contributed to a decline in morale and disclipline and production suffered accordingly. Early in the war, Congress established two key production centers, Carlisle, Pennsylvania, and Springfield, Massachusetts. Both suffered from problems as a result of internal feuding by Ordnance Department personnel and the lack of adequate supervision. In late 1780, uncertainty regarding possible reductions at Carlisle had departmental officials talking about a "political purge." Congress proposed placing the artificers there under the Pennsylvania state troop quota so that they might benefit from that State's generous allocations of clothing. However, following an inspection trip by President [Governor] Joseph Reed of Pennsylvania, himself a former Washington aide, that had identified poor production practices, the chances of the men being adopted by Pennsylvania appeared slim. Reed claimed that everyone there was idle, with more women and children around than workers. The wooden and iron work on the cannon carriages rendered them useless. The works were being viewed as a "public nuisance."[143] At Springfield, rumors circulated that the military officers were not getting along with each other or the local populace. By 1779, disputes over rank between Colonel Ezekiel Cheever, Washington's first Commissary of Military Stores, and Lieutenant Colonel David Mason, an early artillery officer deputy commissary

superintending the laboratory, had brought the work nearly to a halt.

Action was quickly taken by departmental leaders to check these problems. Carlisle Superintendent Samuel Sargent was issued a warning letter on his performance, one he apparently heeded as problems at Carlisle seem to have subsided.[144] Hodgdon summarily removed officers who refused to accept his leadership or who "cared nothing for me or my orders."[145]

To deal with the Springfield problem, the Board of War dispatched the Surveyor of Ordnance, Colonel John Lamb, to examine into the "amazing confusion" there and the "character, abilities, and so far as you can judge, the conduct of the officers." Arriving at Springfield on February 11, 1780, Lamb immediately launched his investigation. Lamb reported to the Board that the "anarchy and confusion" stemmed from a "clashing of power" deriving from divided authority. He recommended the appointment of a single supervisor.[146]

One of the key personnel problems he identified was Major Joseph Eayers, Superintendent of Artificers. Characterizing Eayers as "an ignorant, overbearing man" Lamb reported that Eayers detained men enlisted by other officers, and also artisans whose skills, Lamb said of him, "cannot be supposed that you understand the business of the laboratory sufficiently to direct them." Eayers also kept his 15-year old son on the payroll as a clerk, at $40 per

month and a suit of clothes. Overall, however, Lamb thought the Springfield site to be an excellent choice but only needed a reduction in staff and more efficient management.

Basing his thoughts on Lamb's information, Hodgdon forwarded his own recommendations to the Board of War.[147] The dispute over precedence, he said, between Mason and Cheever produced much division, suspicion, and jealousy. This, in turn, produced disgust among the citizens and the public business eventually stopped. He also pointed out that the post was well situated as good timber was available, and lead for musket cartridges could be obtained from Boston "at any time." The stores were at such a distance as to be safe from attack and the site was a healthy one. Hodgdon recommended the removal of some officers, and keeping others he thought excellent and who could not be dispensed with. Regarding Mason and Cheever, however, Hodgdon wrote "the latter is far advanced in life--the frailties of which he may every day exhibit--and Colonel Mason is and always has been detestible to the Department." But since they both served since the beginning of the war, he diplomatically recommended that they be quietly retired and provided for.[148]

On July 26, 1780, acting on the reports by Lamb and Hodgdon, Congress dismissed Cheever, Mason, and any other surplus officers in the Department of Military Stores.[149] The new Superintendent was, for the first time, to report directly to the Commissary General of Military Stores. [It

appears that Springfield was not originally placed under Flower's command as Knox initially suspected. Left to itself, its inefficiency could not then be blamed completely on Flower.][150] Mr. Joseph Hiller was asked to assume the post there, Hodgdon telling him "the department at present is but small, yet well managed...nothing more than a general knowledge of business, founded on a good mechanical head is requisite."[151]

The affair at Springfield showed that Hodgdon could be compassionate as well as efficient in managing his department. Writing to Colonel Cheever, Hodgdon advised him to get his accounts in order "to convince the world that you have acted well and discharged your trust with fidelity, a consolation in my opinion more valuable than the mines of Perue."[152] While Cheever was phasing out his command a few months later, Hodgdon wrote him again trying to soften the blow of Cheever's son's death acknowledging "it must be a heavy tryal for you at this time of life, may God support you under it and in the multitude of distracting thoughts, which may naturally be supposed to arise on such an occassion."[153]

Other departmental personnel problems had also become acute by late 1779. Money and rank were issues which could not be easily solved. Writing to the Board of War Hodgdon lamented that it could not "fall upon some mode to encourage Gentlemen of Abilities to engage in the Military Stores Department...but we still live by faith and hope [for]

better times."[154] The winter at Valley Forge had seen the army's officer corps convulsed over the inseparable issues of rank and honor. Resignations and threats of resignations abounded. Slighting native born officers who had fought and bled for three years, Congress appointed many foreign adventurer-volunteers to exalted positions in the Continental Army. In addition, it had given military rank, and hence prestige, to many staff positions. Nowhere was this practice more notorious than in the Quartermaster Department. Blacksmiths and waggonmasters held military rank and felt themselves too important to do their jobs. Baron DeKalb commented on this as "The very numerous assistant quartermasters are for the most part men of no military education whatever, in many cases ordinary hucksters, but always colonels...the army teems with colonels." The misery of Valley Forge had caused such vilification of that Department and its practices, that Washington refused to grant rank to others in the army's supply and staff departments.[155]

Hodgdon, however, felt that Ordnance Department personnel needed military rank to perform their duties and made several attempts to obtain it. Both continental and state military officers and public officials stopped army supply trains and took what they needed. Hodgdon pointed out to Knox the "incessant reproaches of the officers of the Line, calling upon them [Hodgdon's people] to declare their rank and despising them and treating them with ineffable

contempt because they have none." He cited an example where a conductor was arrested by "a Lieutenant whom he lately commanded, for striking a soldier who grossly insulted him." Hodgdon asked that Deputy Field Commissary be appointed captains in the artillery and brigade conductors as lieutenants. Hodgdon also appealed to the Board of War, pointing out that his staff was assigned to every garrison or brigade, and if captured "must expect no other usage than that of the private... This and the miserable pittance they received for their Services...has occasioned many resignations and unless something is immediately done, the Department must sink into contempt. For my own part, notwithstanding my determined frugality I am every day growing poor, and nothing but my zeal for the sacred cause could induce me to continue the present campaign." Justice demands, he argued, "that since his men are equally exposed...so they should have equal rewards...for God's sake Gentlemen, can't you do as much for us or are we not so deserving" as the other staff departments.[156]

Hodgdon was not able to obtain the rank for departmental staff as he had hoped, but the Board of War requested pay increases from Congress. In May, 1779, it sent a detailed report to Congress outlining the distressed situation of the Department. Calling the men "useful and indispensably necessary people," the Board said that it tried to keep them in good temper. The Department was now on the "eve of disolution, as the officers, already deeply

distressed, will not continue in the Service to their certain ruin; nor will a man re-enlist, or recruits engage in the Corps, on the present terms...."[157]

While acknowledging difficulties with the use of soldiers as workers, who with only their military pay had no incentive to be productive, the Board pointed out that civilian artificers could not be hired or retained. They demanded large daily wages and were "transient, clamorous, ungovernable and extortionate" even when paid. The Board rated the artificer's pay to that of the soldier's salary at nearly 10 to 1, and said that they also made more than the officers. It pointed out that in the British army a carpenter made more than a lieutenant, the artificer receiving a Spanish dollar per day plus rations. The Continental artificer officers and workers could resign and easily better their lot because most had been master workmen before the war. Since they could expect no military glory, the chief object besides promotion sought by line officers, that they had to be provided for pay-wise if they were expected to remain in the Service. If the skilled workers left, the Board said, "all the Ordnance supplies must stop, as we know of none who will fill their places."

Reluctantly, the Board recommended that Congress increase salaries and other grants. It reminded Congress that as large as the recommended increases appeared, the cost of living was now ten times greater than in February, 1778, the date of the first ordnance regulations [see

Appendix B for pay scales]. The men who were already in Service could be expected to continue on these modest terms while it was doubtful if new recruits could be found As a final recommendation to induce the men to stay, the Board recommended that Congress should adopt the new pay scales with provision for merit. Congress passed the pay reforms and other recommendations nearly as the Board suggested. This enabled the Department to move into 1780 at least on a subsistence level.

Like its British model, the Continental Army suffered from a fragmented organization because Congress shared Britain's ideological heritage that feared the concentration of power, especially military power. The suffering of the army at Valley Forge came from a supply system weakened by this ideological concern. Divided responsibility led to the lack of accountability and poor personnel choices, and eventually to corruption and inefficiency. The eventual scandal has left the supply system with a poor historical reputation.

The Military Stores or Ordnance Department felt the effects of the turmoil. It was split along two lines, each of which became subject to partisan political pressure. An essentially civilian branch, under the direction of Colonel Flower and the Board of War, was responsible for the acquisition or manufacture, repair, and distribution of military stores. General Knox, on the other hand, commanded those operations necessary for the immediate support of

Washington's forces in the field. The political and personnel schism between the Board of War and Washington hampered the cooperation and effective relationships of their subordinates, leaving the military stores operation confused and unresponsive to the military necessities of the battlefield.

Before Congress dispatched its Committee to Camp in January, 1778, to find ways of improving the army, Henry Knox already knew part of the solution to his ordnance problems. Frustrated by the refusal of Congress to consolidate departmental operations and responsibilities Knox turned to the careful selection of all personnel that were in his power to appoint. His selection and promotion of Samuel Hodgdon gave him the de facto control he sought. While Flower was a dedicated and hard working soldier, his ill health and political limitations prevented him from becoming the effective ordnance administrator that the army needed. This need for effective personnel relationships was coming to be recognized elsewhere in the army as well. The relationship between Inspector general von Steuben and Adjutant General Alexander Scammell in improving army administration eventually led to the consolidation of their offices. The relationship between Knox and Hodgdon was finally to produce an Ordnance Department responsive to the needs of field commanders. The Committee at Camp realized this. Writing to President Laurens in February, 1778, it said "We proceed now to state the arrangement which we

propose to make, promising that it is upon the character of man principally, and not your Paper Systems that our success must depend."[158] How successful this would be will be seen in the ability of the Ordnance Department to provide the army with the tools necessary for victory as the war entered a new and final phase.

CHAPTER V

OUR SOLDIERS ARE WELL ARMED

The success of long years of struggle in trying to establish an effective Ordnance Department and supply system must be judged by how well the Continental Army was equipped to fight. This can be measured by three critical standards--by the ability of the Ordnance Department to arm the new army field organization authorized at Valley Force and implemented by 1779; by its ability to support the new combat doctrines of that army; and by its ability to supply the military stores necessary to turn back the British offensive in the South during 1780-1781. Despite the steady decline in the purchasing power of Continental currency and the cutbacks Congress made in army organization because of it, these were to prove formidable standards, but they were met.

One of the primary functions of the Ordnance Department was to manufacture and repair, either in-house or by contracts, military stores needed by the army. To achieve this ability, Congress had established two key ordnance centers, Springfield, Massachusetts, and Carlisle, Pennsylvania. A host of other sites were also added to perform particular functions as the war went on. One of these sites, Philadelphia, grew to such size because of its proximity to the main army's operating area, that it began

to rival Carlisle (see Map 1). Each of these sites would be in a position to support a particular theater of operations.

For some time, Congress could not make up its mind as to whether or not it wanted Carlisle of Philadelphia to serve as the principal ordnance center. At various times it issued orders enlarging or decreasing the responsibilities of one or the other. By the summer of 1780, as a result of mounting currency problems, consolidations within the army, and an inability to find workers, Congress proposed another round of shifts. The wheelwrights and carpenters were to be transferred from Carlisle to Philadelphia because timber was becoming difficult to obtain near Carlisle, and the mounting of cannon could be better done at Philadelphia where the tubes were. Transportation costs would, therefore, be reduced. It was also thought that more civilian workers than soldiers could be utilized in Philadelphia enabling Congress to save money, since civilians could be dismissed when food, money, or materials became scarce. A leather factory was to be maintained at Carlisle since leather could be got on better terms there. In addition, large stocks of oil and thread existed at Carlisle and poplar, the wood most suitable for cartridge box blocks, was plentiful nearby.[159]

In June, 1780, Hodgdon set about preparing an estimate or proposal for enlarging the laboratory at Philadelphia. It was to consist of 12 carpenters, 1 turner, 1 cooper, 10 blacksmiths, 4 wheelwrights, 1 painter, and 1 tinplate worker with another 30 men for "chymical preparations,

finishing and packing stores."[160] This estimate also included provisions for an armory and ordnance yard. With the focus of the war shifting southward, Philadelphia was expected to play a greater role in ordnance supply. Lieutenant Hoey, head of the facility there, was told by Hodgdon that the city was expected to supply most of the army's stores adding "Here is a fine company of artillery...well used to the Business, tools and materials in abundance."[161] In the estimate, Hodgdon also laid out the duties of the head of a laboratory. He was to parade the men for work, supply materials to keep them employed, provide dimensions for transport boxes and the method of packing them, compound all compositions by his own hand, and use his utmost caution to prevent accidents, especially in driving portfires when explosions are possible.[162]

By November, Congress again changed its mind and scrapped the shift from Carlisle to Philadelphia. It was now considered cheaper to perform the expected work at Carlisle. All artificers were to be moved there and Philadelphia kept only as an issuing depot with a laboratory for fixing ammunition.[163] This vacillation also occurred on the opening or closing of other depots as well.

Lack of funds and the effects of a severe inflation caused further cuts, however. Congress moved to close many of the ordnance depots such as Lancaster, Fishkill and even Springfield. While Fishkill and Springfield were finally spared they were forced to undergo large staff cutbacks.[164]

So bad was the inflation, that contractors now wanted $100 for a bayonet and when one of Hodgdon's officers complained of receiving no money for his post Hodgdon replied "surely $12,000 is some money [the amount Hodgdon sent him]."[165] It even appears that Congress considered eliminating the post of Deputy Commissary General of Military Stores. [This consideration may have been a veiled threat to force Flower to resign, but appears to have been beaten off by his friends on the Board of War.][166]

As we have seen, lack of pay was a major factor in contributing to poor morale and hence quality of manufacture in the Ordnance Department. Currency depreciation also contributed to the acquisition and contract difficulties. In good times the Department's production could be substantial. In March, 1778, Washington was informed that the cartridge factory at Lebanon, Pennsylvania, alone could produce 6,000 cartridges and a ton of ball each day. The Department's Philadelphia operation had become so efficient by mid-1779, that it was capable of turning out 60-70 cartridge boxes per day. So efficient, also, had musket repairs become that with adequate pay for workers over 1,000 could be ready in a week and stocks of repairable weapons were being depleted. Tens of thousands of musket cartridges could be quickly turned out by civilian workers.[167] This was more than adequate, as we shall see, to meet army demand. Unfortunately, this could not always be maintained due to lack of funds and raw materials.

The problems relating to quality control and production were not limited to the military's own production centers. Shot and shell furnished by civilian contractors also caused difficulties. Wrong size production patterns supplied by the Ordnance Department resulted in the production of out of gauge shot. Often times, this was not discovered until the shipment reached camp because of poor proofing at the furnaces. Referring to one bad load, Hodgdon complained that 154 eight-inch and 116 five and one-half inch shells had to be condemned after the trouble and expense of transportation.[168] The shipment of wrong size ammunition also effected small arms ammunition as well. By June, 1779, two-thirds of the army had been equipped with French muskets but Ordnance Depots continued to send most of its cartridges in British caliber.[169]

Besides being out of gauge, ammunition was sometimes badly made. As early as 1778, the Ordnance Department became involved in trying to improve weapons technology. Lewis Nicola, commander of the Invalid Regiment which occasionally supported the activities of the Ordnance Department, wrote a lengthy treatise to Knox detailing recommendations for providing better production techniques. Noting that the casting was done in sand molds held together by wooden forms and therefore subject to distortion by shrinking and swelling, Nicola made recommendations to correct this problem. Among its duties the Ordnance Department also served as an experimental or test facility

for the army. Nicola designed machinery for better production techniques, but much depended on the attention paid by the manufacturers. One Dr. Preserved Clap, a man of "great mechanical abilities," while serving in a volunteer capacity in 1780, working at the artificer shops in Philadelphia trying to develop a machine to destroy shipping. The Department also performed tests on gunpowder and provided firework displays for special celebrations. It also developed a new leather cartridge box to replace older tin boxes.[170]

On one inspection trip to Pompton, a furnace operated by Gabriel Odgdon, it was found that of 50 shells cast, 20 were good, 15 needed mending, and 15 were bad or useless. The inspector, Major Sebastian Pauman of the artillery, reported that the shells looked good at the bottom, "but about the fuze hole and ears they look very bad." This resulted from drops of iron which tended to settle there causing them "not to hold wind."[171]

Hodgdon directed his attention to the problem. Artillery officers were dispatched to work with the ironmasters who had army contracts to improve production. Hodgdon also informed the ironmasters that only those shell standing proof at the furnace would be paid for. He provided the ironmasters with exact dimensions of shells for mortars and howitzers after having measured them himself. He supplied officers as assigned to proof the shells with detailed instructions on how it was to be done, and, where

possible, he supplied them with tools to check the gauge or caliber of shot. He noted regarding our manufacturers, "it really hurts me to find fault with our own manufactories. I am sensible it is discouraging in their infant state but duty and faithfulness oblique me to notice every imperfection that may occasion disappointment and its consequences."[172]

Try as he might, however, quality control was not an easy objective for Hodgdon to achieve. Perhaps that infant state the American arms industry then existed in, accustomed to producing pots, kettles, and other domestic items, this was too much to expect in a short time. Nearly a year later in 1780, the problems, to some extent, still persisted. Writing to Colonel John Lamb, Knox complained that some of the eight-inch shells made in Pennsylvania were too large for the 8-inch English mortars and howitzers. Bauman, a rather difficult and sarcastic fellow in the best of times, wrote back noting that the problem was nothing new.[173]

While quality control problems were generally internal to the Department and somewhat within its ability to correct, the troubled financial situation was tougher to deal with. Still, Hodgdon worked with the ironmasters to achieve a solution. In July, 1780, Congress authorized the Board of War to contract for the production of 615 tons of shot and 947 tons of shells for the next campaign. While the Treasury reported that it had no money, Congress expected to receive funds soon and appropriated $4 million

to be paid in specie or the equivalent in State currency.[174] This sum was in addition to the $1 million appropriated by Congress in January to pay for orders of the previous year, but only a third of which had been paid.[175] Hodgdon estimated that the shells would cost £2,500 per ton and the shot £1,250 per ton.[176] The ironmasters, however, continually pressed Hodgdon for payment of old contracts. Hodgdon was left with no recourse except to appeal to the Board of War for funds, and later to the Superintendent of Finance, since he knew the ironmasters would probably not extend him any credit.[177] Realizing that he was not likely to obtain cash, Hodgdon tried to press the new Loan Office certificates on ironmasters such as Gabriel Ogden of the Pampton furnace. "I should recommend," Hodgdon wrote "...[you]...accept the certificates, as from the present appearances you will not get one farthing of money for a long time, and certificates are almost as much used as money and make part of the present commercial Medium, the interest makes them very acceptable."[178]

Lacking money to pay for production, Hodgdon arranged a barter or exchange system. One method of acquiring a particular grade of iron or steel product was to furnish the ironmasters one particular grade of metal in exchange for another. In May, 1780, for example, Hodgdon agreed with Ironmaster Mark Thompson that the Department would furnish Thompson with pig iron for his making bar iron at the exchange rate of 17 1/2 tons of pig iron for a return of 5

tons of bar iron. [Pig iron was a low grade of metal which was used in the making of steel or could be transformed into another type of iron such as bar iron. These exchanges were also used for other items such as saltpeter for finished gunpowder, one grade of leather for another, etc.] The ironmasters seemed to prefer working under this arrangement but Hodgdon sometimes had difficulty in getting the pig iron to them.[179] A direct conversion to the steel grade exchange rate could also be obtained as a ratio of 7 tons of pig iron for 1 ton of blistered steel delivered at Philadelphia. This exchange rate held good at least through the summer of 1781.[180]

Finally, in a desperate effort to obtain munitions in 1780, the Supreme Executive Council of Pennsylvania granted authority to invoke Martial Law in order to obtain supplies. The Board of War impounded all the air furnaces in Philadelphia and Hodgdon took over his first furnace in August, 1780.[181] The intent was to reduce a stock of damaged cannon and other useless metal into shells and bar shot. The takeover of the furnaces lasted into late November when a lack of wood failed to keep the workers busy.[182]

Working together in spite of problems, the Ordnance Department and the infant American iron industry achieved a notable success. Table I depicts grapeshot, shot of varying sizes from three to thirty-two pounders, and shell from five and one-half inch to thirteen inches. The number of

furnaces which produced the shot and shell is given in parentheses.

TABLE I

American Shot and Shell Production 1775-1783[183]

	N.E.	N.Y.	Pa.	N.J.		Total
1775			28(1)			28(1)
1776	132(5)	84(2)	157(2)	195(4)		569(13)
1777	5(1)		60(2)	135(2)	2(1)	202(6)
1778			34(1)	219(3)	21(1)	274(5)
1779			34(1)	51(2)	5(1)	69(4)
1780	190(2)		534(7)	293(4)		1017(13)
1781			164(4)	86(2)		250(6)
1782	340(1)		128(3)	239(2)		707(6)
1783	309(1)					309(1)

This geographical distribution of the iron producing centers caused immense hardships in obtaining transportation to move these stores as we shall see. But it also serves to illustrate the magnitude of the Department's success in bringing such a far flung operation under effective control. The hardships were rewarded finally at Yorktown when, in 1781, the Ordnance Department and the American iron industry worked to provide enough shot and shell in spite of currency and transport problems to pound the British into surrender, and only a fraction of the munitions available were expended, as the British defenses were pulverized day and night.[184] What is even more significant about this

production is that the American iron industry supplied munitions to the French artillery as well. American ironmasters produced 85% of the shot and shell expended during the war with the result that relatively little artillery ammunition had to be imported following the amount which came with the initial French ordnance shipments in 1777. American industry also produced at least 50% of the iron cannon, over 650, used during the war, and most of this occurred in the early years of conflict.[185]

This level of production also indicates another criteria with which to judge the success of the Ordnance Department. It was fortunate for the patriot cause that the colonial iron industry was so advanced and efficient. Despite British attempts to limit the growth of American production, such as the Iron Act of 1750, by the eve of the Revolution American iron production exceeded that of Britain. One seventh, or 30,000 tons, of the world's total production came from America. Had not the colonial iron industry reached this level of capacity, America's successful struggle for independence might not have been possible.[186]

While the transition from the production of household goods to military supplies was a frustrating one, as Salay has shown, the effort eventually paid off. The Ordnance Department successfully marshaled an existing and efficient American industrial iron manufacturing base and channeled that production capability into the support of the war

effort. Through innovative methods of finance, the development of a barter or exchange system acceptable to the Department and the iron producers, the assignment of artillery officers to oversee quality control, a negligible amount of impressment, and a good deal of friendly persuasion, Hodgdon and the Ordnance Department were able to keep the production of weapons, munitions, and other metal products needed by the army on stream.

But artillery supplies were only one part of the many supply demands faced by the Ordnance Department. Infantry equipment, such as muskets and bayonets, cartridge boxes and belts, and the ammunition itself, the life blood of a fighting army, had to be obtained and distributed where and when they were most needed. Shortages of waggons, bad roads, reluctant drivers, pilferage on route, and a depreciated currency, all compounded the transportation problems.[187]

Despite these problems, the Ordnance Department managed to keep the infantry supplied with the necessary equipment. To evaluate its performance, we shall examine three supply periods. Generally, eighteenth century armies did not campaign during the winter months. Weather and crude road conditions combined to make movement of troops and supplies difficult. By custom, therefore, the period from December to June would be spent in what was called "Winter Quarters." This was a time to take stock of the year's campaign,

reorganize and rest a battered army if that was the case, and resupply the army in the expectation of new recruits and the opening of a new campaign season once the roads dried and became passable following the Spring thaw and rains. Our test will examine the preparations for the campaign of 1779. This represents the first campaign under which the revised Ordnance Department arrangements of February, 1779, and the new Continental Army organization developed at Valley Force would be able to work together.

The winter quarters period of 1778-1779, our test period, covered three phases. The first, November-December, 1778, to January, 1779, serves to represent the entry of the army into winter quarters at Middlebrook, or Sommerset Courthouse, in New Jersey. During this phase the army took stock of the 1778 campaign, discharged soldiers whose enlistments would expire, and began the reorganization plan approved at Valley Forge. It would be expected that supply stocks might be low during this period from the strain and losses of the previous campaign. Re-supply efforts would also be slow since equipment returns would need to be compiled to see where shortages existed.

The second phase would be that of April, May and June, 1779. Preparing for the opening of that year's campaign, new recruits would be expected and would have to be trained and equipped. Veteran units would also receive new issues to replace old, lost, or worn out equipment. Improving road conditions would allow the movement of large volumes of

supplies necessary to carry out these tasks and new operations against the enemy. The reorganization plan of 1778 should also be just about complete.

The third and final phase, November-December, 1779, to January, 1780, should show a repeat of the supply cycle as the army entered a new period of winter quarters, this time at Morristown, New Jersey.

In order to gauge the ability of the Ordnance Department to re-supply the new army organization, I have elected to examine the re-supply of the infantry brigades in the main under under Washington. These also represent the units for which the supply issues are shown in Hodgdon's letter books, with a few exceptions. The primary units, or infantry brigades, are those shown in Table II, with their average strength for the test periods indicated. Table III represents the issue of basic infantry equipment furnished by the Military Stores Department to the brigades.

The figures shown in Tables II and III indicate several factors in the Continental Army's resupply capability. First, resupply generally took place in spring and summer, as we expected. The new recruits would be arriving and would need equipment. The army would also be receiving stores to support its operations during the next campaign. Secondly, the figures for the spring-summer supply issue of 1779 clearly indicate the volume of material available for the supply of the reorganized army. The Military Stores

TABLE II

PRIMARY MAIN ARMY BRIGADES AT MIDDLEBROOK

Unit (Brigade)	Nov.-Dec. 1778 Jan. 1779 Average Strength	April, May, June 1779 Average Strength	Nov.-Dec. 1779 Jan. 1780 Average Strength[3]
1st Maryland	1380	1232	1214
2nd Maryland	1324	986	967
1st Pennsylvania	1211	1257	1137
2nd Pennsylvania	1045	1086	989
Woodford's	1041	1148	1636
Muhlenberg's	964	1240	1411
Scott's/Maxwell's[1]	1065	925	1085
Total			
Infantry.....	8033	7874	8439
Artillery[2].....	764	920	811
Grand Avg. Total....	8797	8794	9250

[1]Scott's and Maxwell's brigades serve in camp or are detached on assignment. For this study they will be interchangeable.

[2]Since enlisted men in the brigade of artillery were issued arms and accouterments similar to the infantry, they will be added to total.

[3]Strength figures taken from Lesser, Charles H., ed., The Sinews of Independence: Monthly Strength Reports of the Continental Army (University of Chicago Press, 1976). Figures include NCO, Rank and File present and fit for Duty, Rank and File Sick present or on command and extra service. While Lesser's work is flawed, it is the best secondary summary available. His strength columns do not always correlate from one entry to the next and his figures for troops outside the main army are scanty.

TABLE III

BASIC INFANTRY EQUIPMENT ISSUE

	Nov.-Dec. 1778, Jan. 1779		April, May, June 1779		Nov.-Dec. 1779 Jan. 1780	
Muskets						
to[1]	307	(3.5)	2173	(24.7)	790	(8.5)
by	1260		1457		809	
Bayonets						
to	401	(4.6)	2914	(33.1)	837	(9.0)
by	551		491		284	
Cartridge boxes						
to	1098	(12.5)	[2]6343	(72.1)	445	(4.8)
by	572		4058		723	
Bayonet belts						
to	1756	(20.0)	4319	(49.1)	878	(9.5)
by	447		215		343	
Bayonet scabbards						
to	1204	(13.7)	3212	(36.5)	1147	(12.4)
by	2087		739		577	
Cartridges						
to	410,479		270,054		115,140	
by*	31,362		12,527*		13,500*	

*Mostly damaged

[1]"To" and "by" represent the accounting notation used in the military store ledgers. "To" represents the issue of equipment to the brigade. "By" represents the items of equipment turned into military stores by the brigade. The figures also include items turned in to field armorers for repair or received at camp from military stores depots. Figure in parentheses represents the percentage of resupply in average total strength.

[2]This figure represents a complete resupply of Woodford's and Muhlenberg's brigades and a 96.1% resupply of the second Pennsylvania brigade.

Department was able to supply 25% or better of the infantry needs of the main army. This marked a total re-equipment of the main army, because after these units were supplied, the June 1 returns from the issuing center at Pluckemin, New Jersey, indicated over 2,000 muskets, 3,400 bayonets, 4,600 bayonet scabbards, 10,500 bayonet belts, and 8,500 cartridge boxes were still available for issue if necessary.[188]

This supply capability illustrates the presence of an equipment reserve requirement for the Continental Army--an ability, or the desire for the ability, to restock supplies at a certain level based upon troop strength.[189] While the Continental Army organization declined in the absolute number of combat formations, the regiments, its fighting strength, remained relatively constant through mid-1780. See Table IV. This resulted from the consolidation of understrength regiments and the arrival of new recruits. The work of the Ordnance Department in supplying needed arms and accouterments, therefore, did not decline. As we shall see, its work load increased as a result of the need to arm southern militia units.

This massive resupply of the army was not an accidental event, as it had been planned since the fall of 1778. The stores had been stockpiled in New Milford, Connecticut, for the occasion.[190] In particular, this represents a successful effort to supply the army with cartridge boxes, bayonet scabbards and belts, the shortage of which had been critical in the army.[191] Of cartridges and accouterments, the

supplies were more than ample with enough also to supply the eastern brigades wintering in the Hudson Highlands.[192] Thus we see that the entire Continental Army, the main force under Washington and the brigades covering the Highlands, were completely resupplied by the Ordnance Department and sufficient arms existed to mount the Sullivan expedition against the New York Indians at this time. Reporting their success back to Flower, Hodgdon was able to write that the army was "well accoutered and in high spirits."[193] Indeed, enough cartridge boxes were available that the soldiers could be selective enough for the army to ask for leather rather than available tin cartridge boxes.[194] [Complaints had even been received earlier that the soldiers converted the tin boxes into canteens and the officers converted theirs into shaving boxes.][195] Even the following year, and on through the rest of the war, the main Continental Army appears to suffer no overall shortages of infantry equipment.[196]

Two interesting facts relating to the supply situation in 1779 also came to light during the examination of the military stores ledgers. First, during the April, May, June resupply period 593 muskets and 589 bayonets were turned into the camp armorers situated at Pluckemin. Of this amount, 442 muskets were turned back repaired for re-issue, indicating a 75% repair capability while the army was in camp. A total of 226 bayonets, or 38.4%, were also repaired by the camp armorers.[197] This indicates that at least when

TABLE IV

RELATIVE INFANTRY STRENGTH OF MAIN CONTINENTAL ARMY[1]

YEAR	MONTH	STRENGTH	% INCREASE
1777[2]	May	6,795	79%
	October	8,513	
1778	May	14,313	76%
	October	18,647	
1779	May	14,692	
	October	18,294	80%
1780[3]	July	11,038	
	detached for Southern Army in Apr.	3,027	
	TOTAL	14,065	

[1]Figures developed from Lesser. Includes Rank and File present fit for duty and sick present.

[2]Figures based on May and October returns. This period spans the approximate time of active compaigning requiring most military stores. % Increase is over that period in men.

[3]Figures reflect strength following the resupply after battles of Springfield in June, 1780. Detachments for Southern Army begin with resultant loss of consistnt returns.

the army was in stationary quarters for an extended period of time, the field armorers were capable of repairing most of the firearms. The lower figure for bayonet repairs is reasonable in that a broken bayonet would most likely need to be completely re-manufactured, a difficult task to accomplish in a field repair shop. Recent archaeological excavations tend to support this assessment of repair

capability. Work by Mr. John L. Seidel of the University of Pennsylvania, has uncovered a wealth of weapons parts from the area of the artificer or repair shops during the Middlebrook period. An army in short supply of arms would not be likely to leave this volume of material behind even with the transportation problems that existed.[198]

The second significant figure is in the amount of ammunition available to the army. Table III shows approximately 270 thousand cartridges issued from April to June, 1779. This figure does not include over 216 thousand cartridges received by military stores in camp on June 8, 1779, giving us an immediately available ammunition figure of nearly a half million rounds. Standard army procedure called for a reserve of 20,000 rounds per brigade.[199] Our eight brigades then, would total an ammunition reserve of 160,000 rounds, leaving about 330,000 for the men or about 40 rounds per man. This was the figure desired by the army.[200] We can consider the average brigade strength to be about 1,000 men, so the reserve would allow for 20 rounds per man. By comparison, nearly a half century later, a division in Napoleon's army, the functional equivalent of a Continental Army brigade, carried a reserve of 97,000 rounds for 8,000 men, almost half of what was expected of the Continental Army.[201] The November, 1778, to January, 1779, statistic also indicates a large amount of ammunition available, over 400,000 rounds issued to 8,797 men, or nearly 46 rounds per man. Statistics for the following

winter of 1779-80, while showing a decrease in the number of cartridges issued, also show nearly 573,000 rounds were stored at Plunkemin for about 9,250 troops or 62 rounds per man.[202]

The army kept its musket ammunition reserve in stocks distributed in magazines well forward in the supply chain, that were capable of supporting operations whereever the army might move, similar to its primary departmental manufacturing centers such as Springfield, Carlisle, and Philadelphia. Also, if one became depleted the army could draw from another. These ammunition stocks were generally kept at Succasunna, near Morristown, New Jersey; at West Point and Fishkill, New York; and at Litchfield, in western Connecticut. While numbers fluctuated, wastage must be allowed for, and ammunition returns are not always available, it is not uncommon to see over one million rounds in store at these centers and up to 200,000 rounds immediately available at camp or on call.[203] No indications exist in the vast campaign literature of the Continental Army that any battles were lost due to a shortage of ammunition. Surprisingly, evidence of wastage often exists. For example, during the Sullivan expedition of 1779 against the Indians in the New York wilderness, the troops celebrated special occasions, such as July 4th, with three volleys of musketry, and the Spanish Alliance and officer pay raises with a feu de joie, a running fire by the massed troops, which would have expended perhaps 20,000 rounds.

The last celebration Sullivan thought was so poorly executed that he ordered the men to do it again. Also, ammunition stocks were often left behind on the march when they could not be transported. One would not expect such displays in an army fearful of its ammunition supply, especially in Sullivan's situation where he was so far from assistance and resupply depots.[204]

This large supply of small arms ammunition leads to a very interesting hypothesis--that the Continental Army was capable of and practiced a higher and more sustained rate of fire than their opponents. This hypothesis supports exactly what Continental Army doctrine stressed, rapid and aimed fire. Knox stressed this in his instructions to the artillery, along with the American doctrine of anti-personnel fire rather than the counter-battery fire practiced by the British.[205] American infantry doctrine and skill also stressed rapidity and accuracy of fire as American troops were ordered to direct aimed fire at their enemies and were drilled to fire at a rate of four rounds per minute. Washington himself valued "our Superior skill in Fire arms."[206] The British, by contrast, practiced what would be called area fire, pointing in the direction of the enemy and pulling the trigger. European armies did not place a high value on musketry or individual marksmanship, and they did not place a high strategic value on ammunition expenditure or reserves.[207]

An examination of the casualty figures during the American Revolution tends to support this hypothesis. For example, at Monmouth, American casualties totaled about 320, British and German over 420; at Cowpens, American 72, British 310; at Guillford Courthouse, American 261, British about 600.[208] But a more significant test of this theory as well as the success of the Ordnance Department in supporting the new Continental Army organization in battle, will be found in an examination of the two engagements fought at Springfield, New Jersey, in the summer of 1780.

Following the evacuation of Philadelphia and the battle of Monmouth in June, 1778, the war in the North settled into a stalemate. The Continental Army was never big enough to drive the British from their well fortified positions in New York without substantial help from the French navy. The navy's assistance here was critical because of the over-water approaches to the city which had to be controlled. The help of the French navy never materialized, however, because of its involvement at Savannah and other operations in southern waters against the British fleet and island possessions. But more significant, perhaps, for the case of British inactivity was that the Continental Army had become too tough a nut to crack. As early as the summer of 1777, Britain's American commander, Sir William Howe, reported to his superiors in London "...the War is now upon a far different scale with respect to the increased Powers and Strength of the Enemy than it was last Campaign..."[209] At

the Battle of Monmouth, the British noted that no artillery was better served, than that of the Continental Army.[210] By 1780, the Continental Army had become a formidable opponent. New training, doctrine, and a successful Ordnance Department must take a major share of the British praise. So successful had the Ordnance Department indeed become, that when American planners were developing a campaign plan in the spring of 1780, they expected to "neither want Arms nor Ammunition." When the projected troop strength for the 1780 campaign stated that 10,000 additional stand of arms, which consisted of a musket, bayonet, cartridge box and bayonet scabbard, would be "absolutely indispensible," they were found available and ready for service.[211]

By June, 1780, the military situation appeared to be taking a British turn. Charleston had fallen in May, and several mutinies had erupted among Continental Army units in New Jersey. The British commander in New York, Hessian General Wilhelm von Knyphausen, thought he saw an opportunity to defeat a disspirited army. On June 7, 1780, he invaded New Jersey. Seven thousand British and Hessian troops moved into New Jersey in an attempted strike towards the main Continental Army encampment at Morristown. The Continental Army units initially arrayed to delay or stop them numbered about 700 men--General William Maxwell's New Jersey Brigade.[212]

At the end of 1776, Washington formed the Continental Army on a permanent system of brigades.[213] Initially,

Washington was forced into this approach because the strength of his regiments had declined steadily during the year as battle losses and desertion took their tolls. By combining these understrength regiments into brigades, he hoped to obtain sufficient musket strength to launch his Trenton counterattack. He added artillery to each brigade to further augment their firepower. As a result of the consolidation of the weak infantry regiments, each brigade also came up with a higher ratio of officers to enlisted men than found in the individual regiments. This allowed for more effective control by commanders. So successful was this brigade concept at Trenton and Princeton that it was made a permanent part of the army's organization. The brigade became a powerful and basic battlefield unit. With the punch of its artillery and the degree of control exercised by its officers, the brigade possessed the mobility and firepower to act independently of the main army. To further insure the capability of the brigade, each brigade was later assigned armorers and a traveling forge to perform small scale field repairs. Items needing greater work were to be sent to repair centers such as Trenton, Fishkill, etc. All requests for military stores were also to come through the brigade commander and ordnance conductor thus assisting control efficiency.[214] Such was the case at Springfield.

Faced with overpowering odds, Maxwell's Brigade, with assistance from New Jersey militia units, conducted a

fighting withdrawal towards Morristown. Concentrating his forces near the Springfield bridges, Maxwell delayed von Knyphausen long enough for additional brigades from Morristown to arrive and force the British to retire. On June 23, the British tried a second attack towards Springfield. Again, the fighting power of the brigades and skillful use of terrain by the rebels forced them to retreat.

American doctrine and training which stressed rapidity and accuracy of fire had its first real test and passed with flying colors. The Hessians faced with "unaccustomed resistance" took heavy casualties in their sector. The British elite brigade of Guards suffered equally from the intense level of American musketry with their officers noting "that tremendous and intolerable fire which His Majesty's brigade of Guards sustained..."[215] General Maxwell's Brigade bore the heaviest part of each day's fighting in the "closest action I have seen this war."[216] The intense level of fighting is further attested to by stores issued by the Ordnance Department after the battle. It had to replace damaged arms and equipment and resupply ammunition reserves. Evidence of its success is indicated by the fact that about 2,000 damaged arms were collected by the Department following the two battles. These arms were replaced in army reserve by the end of July. Two brigades, Maxwell's and the First Connecticut expended almost their entire ammunition

reserve, 20,000 rounds and 17,000 rounds, respectively, and these losses were replaced in less than a fortnight.[217] The rate of fire in Maxwell's Brigade equaled nearly 30 rounds per man, far in excess of what most European armies would have considered necessary.[218]

Despite the army's success at Springfield, 1780 was to prove a setback to American hopes. The surrender of Charleston cost the Continental Army over 5,000 men, 8,000 cannonballs, nearly 6,000 muskets, 33,000 rounds of small arms ammunition, and enough gunpowder, 376 barrels, to make a million and half more.[219] At Camden in August, 1780, the American southern field army was destroyed with the loss of nearly 1,000 men, 4,000 muskets and most of the army's waggons and baggage.[220] As if these military defeats were not crushing enough, in September Benedict Arnold attempted to betray the fortress at West Point to the British. American morale sank to its lowest point in the war. To stave off defeat in the South, an American military organization and army would have to be rebuilt from scratch. It was to be the Ordnance Department's most crucial test.

In order to support the defense of the south, Congress, in the 1780 arrangement of the Ordnance Department, provided for a new Continental laboratory at Westham, or Point of Forks, Virginia, not far from Richmond. The establishment of the post was based upon a recommendation by the Board of War and it was to be commanded by Captain Nathaniel Irish of the artificer regiment. Thomas Jonas was appointed

principal field commissary of military stores for the southern army under Horatio Gates and later under Greene.[221]

Having been assigned a working staff of artificers, Irish was ordered to proceed to Carlisle where he was to draw materials needed for the new laboratory such as steel plate, saws, sheets of tin, and gunstockers tools. He was also to recruit an additional blacksmith and carpenter. Irish was to be under the Commander in Chief of the southern army or the commander of the artillery, and only under the most "extraordinary" cases and at his own "discretion" was he to assist or obey requests from the Governor or Council of Virginia.[222]

In the spring of 1781, the Board of War ordered Hodgdon to increase the Virginia staff by contracting for 6 carpenters, 2 gunstockers, 2 wheelwrights, 4 gunsmiths, and 2 mailers. These men were expected to be drawn from the post at Carlisle which had been ordered reduced in personnel that March.[223]

The decline in value of Continental Currency hindered Irish's efforts. In order to provide operating funds, Irish was sent a Bill of Exchange of $10,000 drawn on the State of Virginia so that he might "carry on the business with spirit."[224] Since Virginia was then under invasion by the British, no objection to this was expected from the State and Robert Morris, the newly appointed Superintendent of Finance, wrote to the United States Treasurer, Michael Hillegrass, to issue the draft. Virginia, however, refused

to honor it because it was not drawn against the Continental loan officer. This meant that the State was expected to pay the bill out of its own contribution or appropriation for Continental expenses. The State's payment, however, had already been made so this would have amounted to a new tax.[225] After much debate and wrangling between State and Continental officials the bill was finally cancelled in April, 1782. But how, Hodgdon asked, was he to receive funds?[226]

The issue of the $10,000 bill serves to typify the primary difficulty that faced the Ordnance Department, and the entire American war effort, in this late period--the lack of money. Inflation had caused the exchange rate between paper money and specie to reach 100 to 1. The shortage of funds for contracting the production of shot and shell, accouterments, swords, and firearms, and the repair of these items, as well as the pay, feeding, and clothing for members of the Department served to frustrate the Department's operations. A loan or gift of firearms from the French was one thing, it would not cost any money. Keeping those weapons in operation was another question, one that cost money. Because he could not pay building rents, Hodgdon even had to reduce the size of the Department's operations in Philadelphia, and had to turn to a barter system in order to obtain supplies. It is little wonder then that he frequently closed his correspondence to

subordinates with the caution--"You will be frugal in your expenses."[227]

The strain on the Ordnance Department caused by inflation was compounded in the southern war effort. It not only had it to rebuild the military stocks lost at Charleston and Camden, but it also had to support a new southern army. In addition, it now had to provide massive amounts of equipment to southern militia units, a task it does not appear to have faced to any degree in the North.

The biggest drain on the Military Stores Department does not seem to be the demands of the Continental Army, however, but the incessant pleas of the states to arm their militia forces. The militia was a constant drain, a void into which the Department poured money and munitions. General Greene, as a battlefield commander in the South and earlier as Quartermaster General, had first-hand knowledge of this as many officials often confused the Quartermaster and the Ordnance Department in their requests for supplies.[228] Writing to his brother from Valley Forge, Greene said "This war I am persuaded will terminate in a War of Funds, the longest purse will be triumphant...the militia are a constant drain upon our provisions and military stores of all kinds...we are paying and subsisting thousands and thousands of men that scarcely render the least shadow of advantage to the cause; these men are consuming our provisions, wasting our arms and ammunition...draining our funds and depreciating our currency."[229]

Hodgdon found a way to mitigate at least part of the problem--issuing the militia, wherever possible, with substandard equipment and saving the better quality items for the Continentals. He also imposed a tough accountability system on the various Governors as well. In June, 1779, Knox had completed a 100% resupply of the army with cartridge boxes and other accouterments. The old boxes he directed Hodgdon to supply to the militia. Some poor quality or irreparable items were issued to militia units even as late as 1782 as Hodgdon believed that "parade rather than real service will probably be their use."[230] When requested to supply militia units in 1780, Colonel Flower stated "We never supply militia with anything unless they are called out to actual service, and then only on the application of the Governor...who is made accountable either to return what military stores he may have received or to pay for them at their value if lost in Service."[231] Summing up the army's financial straits in the fall of 1780, an old military stores' veteran Colonel Hugh Hughes, now serving with the Quartermaster Department, wrote to Colonel Lamb "...cash is not so much as known to the new Department and the old Department mortgaged all the stores."[232]

Supply efforts to sustain the southern war effort illustrate the crucial role that the poor financial situation was to play. Large numbers of arms were available to answer demands. These arms, generally however, needed

some repair, requiring workmen and supplies to put them into commission.

In May, 1780, Hodgdon ordered Major Gastelowe, his assistant at Philadelphia, to have 1,500 muskets, new cartridge boxes, bayonets, bayonet belts aand scabbards, ready for immediate shipment. One month later, he requested 3,000 additional muskets and bayonets, and 6,000 cartridge boxes. Flower believed that much more infantry equipment was available than was needed. Anticipating that once the army was on the move the field armorers would not be able to keep up their work, he ordered that all damaged arms were ordered to be sent to the repair center at Trenton, New Jersey.[233]

The inability to purchase material for repairing arms and to pay the workmen was a constant problem. Large quantities of arms could be made available but as Hodgdon wrote "...not a dollar is to be found in any Department."[234] Of the $1 million authorized the Department in January, 1780, by July only about one-third had been supplied. As late as October, with requests for arms increasing because of British activity in the South and because of stock drawdowns, thousands of repairable muskets were available but could not be fixed for issue, Hodgdon lamenting, "...not a man in the Department is this day at work...on account of the stoppage of rations and other grievances." The Board of War, in a report to Congress, was even more specific, stating that an "absolute famine" prevailed among the

workers, no work was being done and no discipline enforced as "the men cannot consistent with any principle of justice be forced to work when the public cannot enable them to eat." The men would wait on their pay [many had not been paid since March] if they could receive food.[235]

In June, 1780, Hodgdon reported that he had 2,800 repairable muskets in store, of which 1,000 of the best could be made ready in a week if pay and rations, and a gill of rum per man each day, were available. He could also produce a thousand cartridge boxes. In July, he requested $54,000 for the repairs almost completed on 1,500 muskets, and if granted $480,000 he could repair the 3,000 muskets on hand at 20 shillings specie each within three months. At a total cost of $1,080,000 he could also supply 5,000 new cartridge boxes at $500,000 and 5,000 bayonet belts at $100,000.[236]

In September, 1780, Hodgdon again requested funds stating that of the muskets on hand, 5,000 stand could be repaired in three months with the best 3,000 in six weeks at an estimated cost of 17 shillings 6 pence specie for each musket, bayonet and scabbard.[237] What is evident here is that between 5,800 and 7,800 muskets were available if only funds to put them in serviceable condition could be obtained. It is significant to note also, that this represents arms in hand and not requests to purchase new ones. This is also consistent with the fall off in arms importation noted by Gluckman.

In October, 1780, realizing that considerations needed to be given for the 1781 campaign, Hodgdon provided a preliminary estimate requesting £42,019 consisting of £25,867 for wages, £15,332 for materials, and £820 for rents. These figures were based on specie payment and in current costs.[238] In December, he submitted what appear to be the detailed cost estimates totalling almost £200,000. Within this figure was allocated £15,000 for the repair of 10,000 muskets and £20,000 for 20,000 new cartridge boxes, plus funds for 500 dragoon swords and 500 pairs of dragoon pistols. Enough flints were requested to support the firing of at least 1 million rounds of small arms ammunition, supporting our belief in a rapid fire doctrine.[239]

In early 1781, Hodgdon submitted additional estimates for the approaching campaign. Among the requests was $180,075 for 1 million musket cartridges, confirming our earlier estimate. In adition he requested almost £900 to repair 1,726 muskets and 1,698 cartridge boxes recently turned in by the Pennsylvania line.[240] [This probably represents the arms turned in from soldiers discharged as a result of the Pennsylvania mutiny in January.]

Hodgdon also prepared an estimate for Congress of the items needed to complete the Southern Army amounting to £21,319 including the repair of 5,000 muskets, 5,000 new cartridge boxes, 200 pairs of dragoon pistols and a half-million musket cartridges. So critically short of money was the Department, however, that Hodgdon had to promise workmen

"a gallon of rum, as soon as the work is finished--and a quart a day while in hand."[241]

Supplying the southern war effort was indeed a formidable task. By the summer of 1781, Hodgdon was calling for "all the pistols repaired or repairable, and every sword that may be found that can be made useful to a Horseman."[242] Almost in despair, he wrote to Colonel Pickering on the Board of War that his efforts did not seem enough, "the demand is by no means completed, the whole country previous to these supplies being unarmed and consequently useless--could I shortly obtain arms sufficient for the whole militia already assembled, and swords and pistols to mount the cavalry that offer themselves and horses as volunteers, I am ready to conclude the ravages that now mark the traces of a graceless Army...would soon terminate, and the ferocity of the Lion, be reduced to the harmlessness of the Lamb."[243] Closing, he asks for the 2,000 muskets and 2,000 cartridge boxes in store at Fishkill.

The Department met the challenge, however, and its efforts helped turn the tide in the South. In June, 1781, Hodgdon was able to report to Knox that in the last three months, 3,000 muskets had been sent south for the Continentals and another 3,000 for the militia, while he regretted that 3-4,000 repairable muskets were laid up in Albany due to a lack of funds.[244] In June, 1,500 muskets were supplied to Maryland, 2,500 to Virginia, and 1,500 to North Carolina, 5,500 arms in all. Many of these arms were

first rate and in the words of William Sharpe, North Carolina delegate, "equal to any in the army, with good bayonets."[245] But so great was the demand that even rampart guns [large bored and heavy weapons normally intended to be mounted in fortifications] had to be pressed into service. It was learned that "on enquiry...with a small alteration, and fixing bayonets to them...are capable of being rendered exceeding good field arms." Nearly 1,000 of these guns were issued to Virginia and Maryland.[246]

The examples we have cited in this last discussion, the Middlebrook resupply and Sullivan's 1779 campaign, the battles of Springfield in 1780, and the rebuilding of the southern war effort in 1780 and 1781, point abundantly to the success of the Ordnance Department. Hard work, innovation in arranging production and supply in the face of a totally debased currency, and effective personnel relationships between departmental leaders and field commanders helped tip the scales, so heavily weighted against the Americans, towards victory.

While the success of the Ordnance Department throughout the war was indeed remarkable, it did not occur in a vacuum. Army supply efforts were mutually interdependent and a failure in one department of ten caused hardship in another. In the case of the Ordnance Department, transportation, or the lack of it, was often a critical factor in its ability to supply the army.

Transportation, in the form of waggons, teams, and drivers, was a responsibility of the Quartermaster Department. The Ordnance Department was forced to rely on Quartermaster staff for transporting the stores that had been accumulated with such great trouble and expense and oftentimes the Quartermaster could not provide transportation. Hodgdon was sometimes able to solve this through direct intervention. Relying on his rapport with Knox, Hodgdon could reach up the supply system chain of command directly to Quartermaster General Greene. Hodgdon told Greene that he had only 41 waggons allotted to his department in July, 1779, and that this represented a large decrease from the previous year. He stated that with 59 wagons, the Ordnance Department could keep the army "fully supplied with military stores."[247] This didn't always work, of course, and ordnance supplies could sometimes not be shipped when needed.[248] This same situation also resulted in the plentiful supplies of food and clothing needed desperately at Valley Forge to rot away in warehouses.[249] But here it appears that priorities must have been set in distribution of supplies. An army can fight when it is hungry and it can fight when it is cold and ill-clothed. But no army can fight without weapons. While we cannot document this priority system, the fact that so many thousands of tons of arms, ammunition, accouterments, shot and shell were moved, particularly in support of the southern campaign and the great seige of Yorktown, that it

is reasonable to suggest that the army placed a higher priority on the transportation of ordnance stores than other badly needed items such as food and clothes. The fact that by 1779 waggons and teams were increasingly hard to come by attests to the effective relationship developed between Hodgdon and the Quartermaster Department.

Some transportation problems proved even more difficult. The poor conditions of colonial roads often resulted in ordnance waggons being able to carry only two-thirds of their normal loads.[250] While a waggon load of 300 cartridge boxes and 300 bayonet belts might prove an easy load, heavier loads such as muskets and ammunition would be left along the road when exhausted horses and broken-down waggons proved unable to haul them. Such abandoned stores proved ripe for theft by the local citizens, and dishonest drivers compounded the problem. Hodgdon had to urge his brigade conductors, who were responsible for the waggon trains, to try and obtain guards and to be watchful of the drivers who were often civilian contractors.[251]

While we cannot completely document the solution to these transport problems, the successful outcome of the southern war and the victory at Yorktown indicate the glorious triumph of the Ordnance Department, a department little recognized by historians for the critical role it played in support of the Continental Army. Samuel Hodgdon and the Ordnance Department could not have received a greater compliment than that given by Superintendent of

Finance Robert Morris in 1781. Morris, who controlled the army's pursestrings and who saw his duty to be the raising of revenues and the expenditures of them in the most frugal manner rather than as a patron of the army or its supply departments, noted "Our soldiers...are well armed, (emphasis added) and in a Degree they are clothed; we have also ammunition abundantly sufficient for the common operations of the Field..."[252]

The true test of an army is performance--how well it can bring the strengths of its society to bear on the battlefield. The Military Stores, or Ordnance, Department was one of the factors that enabled the Continental Army to achieve victory on the battlefield.

CHAPTER VI

CONCLUSIONS

Pre-revolutionary Americans developed many of their key political, social, cultural and religious institutions from British roots. These institutions were shaped between 1607 and 1775 to meet special conditions the colonists found in North America. On the eve of their struggle for independence, the revolutionary leaders naturally turned once again to Britain for an institutional model. The Continental Congress, General Washington and other military leaders created an army which reflected their previous exposure to the British Army. Like their other borrowings from British roots, the Americans adapted British military systems to meet their own local needs and conditions. In many respects, the "child" ultimately became superior to the "parent."

This thesis has examined one poorly understood factor in that new American or Continental Army and its ponderous supply system--the Commissary General of Military Stores, or Ordnance, Department. Called into being in January, 1777, the Ordnance Department, like the army it supported, evolved from a British model. While indebted to foreign powers such as France for contributions of arms and equipment, they exerted no influence on the evolution of the Department's administration or operation.

Like the army it supported, the Ordnance Department faced many difficult tasks. The delegates in the Continental Congress sought to limit the concentration of political power by using numerous temporary committees to conduct business. They were also determined to keep the military subordinate to civilian authority, and institutionally structured the army to further this goal. Operational power was shared by separate territorial departments, and the central staff was divided into functional departments. Throughout the war, Congress refused to delegate total responsibility and authority for military affairs to a single head. No matter how costly or inefficient, Congress' regulations forced the army's Ordnance Department to answer to men subject to and abusive of political interests, rather than to the army commanders who needed to know quickly and accurately what stores were available or obtainable. Capable and dedicated soldiers such as Colonel Benjamin Flower fell victim to the political intrigue and suspicions inherent in this sytem.

The original system of military organization which was driven by political concerns fared poorly against the disciplined musket volleys and bayonet charges of professional British and German soldiers during the campaigns of 1776 and 1777. The army's supply system then collapsed during the terrible winter at Valley Forge, when nearly 3,000 men died from starvation, cold, illness and neglect. The resulting scandal and inquiries forced Congress

to reevaluate its political ideologies to the cold realities of military defeat. While still not prepared to grant full control of military departments and functions to army commanders, Congress recognized the need to delegate more authority to men it could trust to do the job. General Nathanael Greene, for example, reluctantly accepted the thankless duty of Quartermaster General after he was prevailed upon by members of Congress who recognized his competence. In a rare concession, they even allowed Greene to handpick his own deputies.

The situation in the more technically oriented Ordnance Department is less clear-cut. General Henry Knox, during the early years of the war, fought in vain to consolidate the army's weapons and combat equipment under a single head. He clearly hoped to centralize matters under an officer comparable to and patterned after Britain's Master General of the Ordnance. Knox clearly envisioned himself in this role and when Congress repeatedly refused to pass legislation to grant him the authority he wanted, Knox pursued a different strategy. Knox summoned forth a subordinate with the proven tact and skill needed to succeed under the restrictions imposed by political realities, and then worked for his promotion. By maneuvering Major Samuel Hodgdon from field commissary to department head, Knox was able to achieve the <u>de facto</u> control he sought. The result was a mature and efficient Ordnance Department responsible

to the needs of field commanders in a matured and professional army.

Administrative reforms did not prevent occasional shortages of ordnance stores, however. Unsound currency, lack of transportation or raw materials and interdepartmental disciplinary problems seemed to always linger. On the other hand, the Continental Army that marched out of Valley Forge in June, 1778 never faced a critical shortage of ordnance stores which seriously affected its military operations. While the southern war of 1780-1781 in particular proved to be a bottomless pit for ordnance stores and severely taxed the department's resources, the Ordnance Department and its leadership met the challenge. Plentiful artillery supplies in 1781 allowed American and French cannon to totally destroy British defensive works at Yorktown. Infantry equipment issues resupplied the main army at Middlebrook and the brigades defending the Hudson Highlands in 1779. Enough infantry equipment and ammunition also existed to provide for Sullivan's independent expedition against hostile Indians in New York that same year, even as the growing torrent of thousands of arms had begun to flow south. Ammunition stocks, the single most critical logistical concern in any army, proved to be one of the department's greatest accomplishments. Enough ammunition was accumulated to meet the battlefield demands of the army's new doctrine of rapid and accurate fire. This system worked so well that General

Sullivan had no concerns about firing away ammunition in frivolous salutes during his wilderness expedition. British casualties at Springfield, Cowpens and Guilford Courthouse attest to the success of these efforts.

In 1780, not only did the Ordnance Department rebuild a collapsed southern army and its ordnance stocks from scratch, but it was also able to supply militia forces with thousands of arms, decisively tipping the scales in the South in America's favor. Professor Bowler asserts that British inability to arm their southern loyalists, even by stripping those in New York of their arms, did much to lose loyalist support in the South. A southern militia, equipped by the efforts of the Ordnance Department, contributed to that loss.

The true costs of this succes in fiscal or human terms cannot accurately be assessed. Table V only hints at the monetary costs involved. In 1779, $3 million was advanced to Colonel Flower's Department out of a total Board of War appropriation of $7.5 million. The Board of War had its own funds for operations similar to those performed by the Ordnance Department and it paid, on its own, $87,621 to buy arms, $20,000 to William Henry to repair arms, and $300,000 to purchase military stores--tasks that should normally have been left to Flower.[253] In 1780, expenditures for the Ordnance Department came to about $3.5 million. The Board of War received about $7 million out of a total Congressional expenditure of approximately $71.5 million.[254]

Thus, it would appear that the Ordnance Department received at least $6.4 million directly, during 1779 and 1780. By comparison, Thomas Mifflin estimated the Quartermaster Department's expenditures from August 1775 to April 1778 to be about $8 million.[255] Not withstanding the effects of inflation in 1779 and 1780, the Ordnance total seems impressive. Yet, it never seemed to be enough.

TABLE V[256]

Congressional Expenditures, 1775-1779

	1775-76	1777	1778	1779
Pay of the army	$ 9,371,302	$ 9,633,351	$14,730,073	$15,788,372
Commissary of Provisions	2,539,555	5,755,307	21,003,016	52,761,773
Commissary of Military Stores	---	256,390	504,623	3,044,837
Quartermaster Department	756,553	3,133,302	17,806,571	56,585,666
Clothing Department	657,874	1,053,182	3,742,985	7,710,523
Hospital Department	18,150	482,050	1,145,000	1,496,144
Barrackmaster General	---	25,000	75,000	773,000
Miscellaneous	6,712,233	6,087,751	7,958,001	11,543,543
TOTAL	$20,055,667	$26,426,333	$66,965,269	$149,703,858

Evaluation of the human costs is even more difficult. Since supply officers do not serve in combat actions, the counting of dead and wounded will not suffice. It is a different kind of human toll which must be gauged in assessing the success of the Ordnance Department. Many supply officers suffered financial ruin and loss of honor for their efforts in America's "glorious cause." Service in the supply line was looked upon by many as an onerous, thankless task. While some men sought wealth, most labored under a spirit of patriotism and their only reward was the personal satisfaction of a job well done. In the Ordnance Department, while few men left in disgrace, many were dismissed or cashiered due to incompetency or their inability to work with departmental leaders. Enlisted men and their families suffered perhaps more due to lack of pay, clothing and provisions. Their sacrifices are noteworthy since many were artisans whose skills would have brought adequate compensation in civilian practice.

For Colonel Flower, association with the wrong political faction lead to his alienation from Washington and Knox and to his eventual ouster as Departmental head. The impact of his trial in the Sweers case on events cannot be measured, but the strain of his defense and confinement so soon after his near fatal illness at Valley Forge must have contributed to his already weak constitution. In April, 1781, death relieved Colonel Flower of further efforts in the Department to which he had contributed so much of his

labor and life, and deprived him of the satisfaction of seeing the Ordnance Department realize its full potential and contribution to victory.

For Major Samuel Hodgdon, the rewards were many. Following Flower's death, Hodgdon petitioned the Board of War for the position of Commissary General of Military Stores. In July, 1781, Hodgdon's petition was approved by resolve of Congress and, undoubtedly, with the influence of Knox.[257] Success would crown his efforts by victory in the southern war that culminated in the ability of the Ordnance Department to supply shot and shell to American and French seige guns at Yorktown. Unfortunately, Hodgdon was forced to oversee the reduction of his Department in 1782 by a war weary Congress and to accept work in the Quartermaster Department to compensate for corresponding reductions in his salary, but his labor and loyalty to his duty and superior would be rewarded later by Henry Knox, then Secretary of War.

In a short time Congress dismembered what had taken so long to build. Being the compassionate man that he was and always mindful of the welfare of his men, Hodgdon left instructions for one of his last wartime acts. Congress had ordered the Army's invalid soldiers to West Point which now was to be their residence. Expressing his principal concern for their "comfortable removal" Hodgdon wrote the conveying officer "Humanity demands a particular attention to the Situation of the Invalids, who have this day left this city

for West Point...and as you have the immediate charge of them while on the road, I have thought best to furnish you with the sum of forty dollars for the express purpose of procuring the wood necessary for cooking and comfortable lodging for the party under your command."[258]

So the end came, quietly, to the Commissary General of Military Stores, or Ordnance, Department. The final American victory at Yorktown was a victory for Knox, Flower, Hodgdon, all the "voices from below" who, through dedication and self-sacrifice, had worked to bring the Ordnance Department to maturity. In spite of Congressional regulations which produced divided and confusing responsibilities, by forging effective relationships with his subordinates, Knox was able to achieve effective control over a "most intricate department."

The men of the Ordnance Department, Hodgdon's gentlemen in black faced red, who dedicated themselves to making the military stores system work in spite of every type of shortage, succeeded in supplying the Continental Army with materials of victory. Their story has long been ignored by historians. The evidence supplied in this thesis, taken from sources previously little studied by historians, suggests that the old "rag, tag, and bobtail" image of the Continental Army may be, at least in respect to Ordnance, due for a reexamination. The names of Benjamin Flower and Samuel Hodgdon are not to be found in the American Parthenon of the Revolution among those of Washington, Jefferson or

Adams. But for them, who toiled behind the scenes in what must often have seemed hopeless and thankless tasks, it is doubtful if any of those we now call "heroes" would have been more than a brief and unnoticed flicker in the history of the British Empire.

Nathanael Greene once remarked "who ever heard of a Quartermaster General in History?" There was no glory or rewards to be earned of the type men recognized from the staff duties necessary to an army. But Benjamin Flower best summed up the rewards of the little men who go unnoticed through history. In a letter to an armorer who was disappointed in not getting the coat to which he was entitled for his service, Flower wrote, "The Zeal and Integrity you have shown during a four years service in my department intitles you to every acknowledgement on my part, and a generous reward from the Publick--[however]...you will always have the pleasing consolation of having honestly aim'd at doing your duty, even if that compensation should not be made to you as fully as you have a right to expect."[259]

APPENDIX A

CONGRESSIONAL VOTE TO INDICT COL. FLOWER
MONDAY, AUGUST 3, 1778

"That Colonel Benjamin Flower, commissary general of military stores, be immediately arrested and closely confined in the gaol in this town:"

To this amendment was moved,

"That a member of this house be appointed forthwith to repair to the place where Cornelius Sweers, late deputy commissary of military stores, is confined, and to take the deposition of the said Cornelius Sweers, relative to the charge made by him against Colonel Benjamin Flower, for frauds in his office; and in case it should appear, on the deposition of the said Cornelius Sweers, that Colonel B. Flower is charged with frauds and malpractices in the discharge of his office, in such case notice be given to the Board of War, who are hereby ordered to arrest the said Benjamin Flower without delay, and to confine him in gaol, taking care to secure his money and effects, and all his papers of a public nature."

On which amendment, the yeas and nays being required by Mr. [William] Duer,

New Hampshire,		
Mr. Bartlett,	no	no
Massachusetts Bay,		
Mr. S. Adams,	no	no
Dana,	no	no
Lovell,	no	
Holten,	no	
Rhode Island,		
Mr. Marchant,	no	no
New Jersey,		
Mr. Scudder,	no	div.
Boudinot,	ay	
Pennsylvania,		
Mr. R. Morris	ay	ay
Maryland,		
Mr. Chase,	no	
Forbes,	no	no
Plater,	ay	
Virginia,		
Mr. R.H. Lee,	ay	
Banister,	ay	ay
T. Adams,	ay	
Harvie,	ay	
Connecticut,		
Mr. Sherman,	no	
Hosmer,	no	no
A. Adams,	no	
New York,		
Mr. Duer,	ay	ay
G. Morris,	ay	
North Carolina,		
Mr. Penn,	no	no
South Carolina,		
Mr. Laurens,	ay	
Drayton,	no	div.
Mathews,	no	
Heyward,	ay	
Georgia,		
Mr. Telfair,	ay	ay

So it passed in the negative.

Another amendment was moved in the words following:

"Colonel Benjamin Flower, commissary general of military stores, being charged with mal-conduct in the execution of his office,

"**Ordered**, that he be arrested and safely kept until the further order of Congress:"

On the question to agree to this amendment, the yeas and nays being required by Mr. [Samuel] Case,

New Hampshire,		
Mr. Bartlett,	ay	ay
Massachusetts Bay,		
Mr. S. Adams,	ay	
Dana,	ay	ay
Lovell,	ay	
Holten,	ay	
Rhode Island,		
Mr. Marchant,	ay	ay
Connecticut,		
Mr. Sherman,	ay	
Hosmer,	no	ay
A. Adams,	ay	
Virginia,		
Mr. R.H. Lee,	ay	
Banister,	no	div.
T. Adams,	ay	
Harvie,	no	
North Carolina,		
Mr. Penn,	ay	ay
New York,		
Mr. Duer,	ay	
G. Morris,	ay	ay
New Jersey,		
Mr. Scudder,	ay	
Boudinot	ay	ay
Pennsylvania,		
Mr. R. Morris,	ay	ay
Maryland,		
Mr. Chase,	no	
Plater,	ay	ay
Forbes,	ay	
South Carolina,		
Mr. Laurens,	ay	
Drayton,	no	
Mathews,	ay	div.
Heyward,	no	
Georgia,		
Mr. Telfair,	ay	ay

So it was resolved in the affirmative.

Ordered, That the Board of War carry into execution the foregoing order.

Ordered, That the continental treasurer make no further payments of money to Colonel Benjamin Flower, or his order, upon any warrants heretofore granted, until farther order of Congress.

* From J.C.C., Vol. XI, August 3, 1778.

APPENDIX B

KEY DEVELOPMENT CHRONOLOGY FOR COMMISSARY GENERAL OF MILITARY STORES OR ORDNANCE DEPARTMENT

1775	May 27	Committee appointed to investigate arms and military stores supply.
	August 17	Ezekiel Cheever appointed Commissary of Artillery Stores.
	September 18	Secret Committee of Trade established to import arms and stores.
1776	January 15	Cannon Committee established.
	January 23	Committee appointed to establish a War Office.
	February 23	Musket Committee established.
	May 23	Establish arms manufactory at Lancaster, Pa., and a gun lock factory at Trenton, N.J.
	June 12	Establishment of a Board of War and Ordnance.
	September 27	Transfer Secret Committee of Trade Duties to Board of War.
	September 27	Knox submits "Hints" for improving United States Artillery.
	December 27	Establish magazine and laboratory at Carlisle, Pa.
1777	January 16	Benjamin Flower appointed Commissary General of Military Stores.
	January 30	All arms to be stamped "UNITED STATES."
	February 1	Samuel Hodgdon appointed by Knox as Commissary of Military Stores for Northern Army.
	May 3	Washington requests all Military Stores be placed under one person or body.

1778 February 11 — First regulations for Military Stores or Ordnance Department. Confirms position of Commissary General of Military Stores and establishes duties, staff, and pay levels:

Com. Gen. Mil. Stores	- $100/mo. and 6 rations/day
Deputy Com. Gen. Mil. Stores	- $75/mo. and 5 rations/day
Com. of Mil. Stores	- $60/mo. and 4 rations/day
Deputy Com. of Mil. Stores	- $50/mo. and 3 rations/day
Conductor	- $40/mo. and 2 rations/day
Clerk	- $40/mo. and 2 rations/day

(Com. Gen. receives forage for 2 horses per mo., all other staff forage for 1 horse.)

1779 February 18 — Second arrangement of Ordnance Department establishes independent field staff:

Field Com. Mil. Stores	- $75/mo., $40 subsistence and 1 ration
Deputy Field Com. Mil. Stores	- $60/mo., $30 subsistence and 1 ration
Conductor	- $40/mo., $10 subsistence and 1 ration
Clerk	- $40/mo., $10 subsistence and 1 ration
Surveyor of Ordnance	- $70/mo. and artill. pay

1779	August 18	Departmental enlisted personnel allowed $10/mo. subsistence rather than food ration.
	December 23	Rather subsistence allowed in February 18 arrangement, field officers to be allowed: Field Commissary - $400/mo. Deputy Field Commissary - $300/mo. Conductor - $100/mo. Clerk - $100/mo. Civil staff allowed clothing but no rank.
1780	February 1	Hodgdon directed from main army to take "sole charge" of Flower's Ordnance Department.
	February 11	Hodgdon appointed Deputy Commissary General of Military Stores at $1,250/mo.
	July 26-August 12	New pay arrangement and staff for Ordnance Department: 1 Com. Gen. Mil. Stores - $360-$1,750/mo. 1 Deputy Com. Gen. Mil. Stores - $240-$1,000/mo. 1 Commissary - Springfield, Mass. Carlisle, Penn. Virginia Deputies at subordinate posts.
	July 29	Laboratory established near Richmond, Virginia, under Captain Nathaniel Irish.
1781	January 12-31	New arrangements of Ordnance Department: Com. Gen. Mil. Stores - $115/mo. and 3 rations Deputy Com. Gen. Mil. Stores - $90/mo. and 2 rations

1781	January 12-31	Com. Mil. Stores	- $70/mo. and 2 rations
		Deputy Com. Mil. Stores	- $55/mo. and 2 rations
		Conductor	- $45/mo. and 1 ration
		Clerk	- $40/mo. and 1 ration
		Field Com. Mil. Stores	- $90/mo. and 2 rations
		Deputy Field Com. Mil. Stores	- $70/mo. and 2 rations
		Conductor	- $45/mo. and 1 ration
		Clerk	- $40/mo. and 1 ration
		Surveyor of Ordnance	- $40/mo.
	February 7	Congress established Secretary at War and Superintendent of Finance.	
	April 28	Colonel Flower dies.	
	July 12	Hodgdon appointed new Commissary General of Military Stores.	
1782	September 3	Last arrangement of Military Stores or Ordnance Department: Secretary at War head of Department. Commissary General abolished.	
		Field Com. of Mil. Stores	- $50/mo. and 2 rations
		Deputy Field Com. of Mil. Stores for Southern Army	- $40/mo. and 2 rations
		Deputy Field Com. of Mil. Stores for West Point	- $40/mo. and 2 rations

1782	September 3	Conductor and Clerks	- $30/mo. and 1 ration

established as:

1 Field Com. and 2 clerks/conductors with Main Army

1 Deputy Field Com. and 2 clerks at West Point and Southern Army

1 Conductor at Fort Pitt

FOOTNOTES

1. Cunliffe, Marcus, "How Independence was Signed, Sealed and Then Delivered," Smithsonian, Vol. 14, No. 6, September 1983, p. 59.

2. This section is based on the following sources in order of citation. Clinton, Sir Henry, Narrative of Lieutenant-General Sir Henry Clinton, K.B., Relative to His Conduct during Part of His Command of the King's Troops in North America, Particularly to that Which Respects the Unfortunate Issue of the Campaign of 1781 (London, 1783); Burgoyne, Lieutenant General John, A State of the Expedition from Canada (London, 1780); Stedman, Charles, History of the Origin, Progress, and Termination of the American War (2 vols., London, 1794); Wilkinson, James, Memoirs of My Own Time (3 vols., Philadelphia, 1816); Heath, William, Memoirs of Major-General William Heath, by Himself, to Which is Added the Accounts of the Battle of Bunker Hill by Generals Dearborn, Lee and Wilkinson, William Abbot, ed. (New York, 1901); Lee, Henry, Memoirs of the War in the Southern Department of the United States (2 vols., Philadelphia, 1812); Weems, Mason L., The Life of George Washington (Philadelphia, 1837); Stryker, William S., The Battles of Trenton and Princeton (Cambridge, 1898); Johnston, Henry P., Campaign of 1776 Around New York and Brooklyn Including a New and Circumstantial Account of the Battle of Long Island and the Loss of New York, With a Review of Events to the Close of the Year (Brooklyn, 1876); Fuller, J.F.C., A Military History of the Western World (3 vols., Funk and Wagnalls, 1956); Greene, Francis V., The Revolutionary War and the Military Policy of the United States (New York, 1911); Billias, George A., General John Glover and His Marblehead Mariners (New York, 1960); Morison, Samuel E., History of United States Naval Operations in World War II (15 vols., Boston, 1947-62); Willcox, William B., Portrait of a General: Sir Henry Clinton in the War of Independence (New York, 1962); Shy, John, A People Numerous and Armed: Reflections on the Military Struggle for American Independence (Oxford, 1976); Royster, Charles, A Revolutionary People at War: The Continental Army and American Character, 1775-1783 (Chapel Hill, 1979); Bailyn, Bernard, The Ideological Origins of the American Revolution (Cambridge, Mass., 1967); Wright, Robert K., Jr., The Continental Army (Washington, D.C., 1983); Houlding, J.A., Fit for Service: The Training of the British Army, 1715-1795 (Clarendon Press, 1981); Higginbotham, Don, The War of American Independence: Military Attitudes, Policies and Practice, 1763-1789 (New York, 1971); Bowler, R. Arthur, Logistics and the

Failure of the British Army in America, 1775-1783 (Princeton, 1975); Syrett, David, Shipping and the American War, 1775-1783: A Study of British Transport Organization (The Athlone Press, 1970); Creveld, Martin Van, Supplying War: Logistics from Wallenstein to Patton (New York, 1983); Parker, King L., "Anglo-American Wilderness Campaigning 1754-1764: Logistical and Tactical Developments," Ph.D. dissertation, Columbia University, 1970.

3. Hoffman, Ronald, ed., Arms and Independence: The Military Character of the American Revolution (Charlottesville, 1984), pp. vii-viii.

4. This section is based upon the following: Risch, Erna, Quartermaster Support of the Army: A History of the Corps, 1775-1939 (Washington, D.C., 1962); Huston, James A., The Sinews of War: Army Logistics, 1775-1953 (Washington, D.C., 1966); Lemisch, Jesse, "Jack Tar in the Streets: Merchant Seamen in the Politics of Revolutionary America," William and Mary Quarterly, Vol. XXV (1968); Salay, David L., "Arming for War: The Production of War Material in Pennsylvania for the American Armies during the Revolution," Ph.D. dissertation, University of Delaware, 1977; Creveld, Supplying War..., p. 2.

5. Wright, pp. 151-153, 183-186; Flexner, James T., George Washington in the American Revolution (1775-1783) (Boston, 1968), p. 546.

6. About the time of the Civil War Centennial a unique phenomenon began to spread across America. Military history buffs, with a desire to relive a lost period that many find obsessionally addicting, began to organize "Living History" associations. The purpose of these associations was to meticulously research the material culture of soldiers during particular historic periods, something previously ignored by professional historians. Information was compiled on equipment, uniforms, life styles, etc., with the intention of fielding authentically appearing "soldiers" for the re-enactment of Civil War battles.

This researcher became involved with this phenomenon as it related to the approaching revolutionary war Bi-Centennial while employed by the National Part Service at Morristown, New Jersey, the site of several winter encampments by the Continental Army. That experience has been invaluable in providing insight to the supply and equipment issue of this study. Learning how easily a musket can become non-functional, how leather gear quickly wastes away from constant exposure to weather,

dirt, and sweat, how bayonet drill wears out the bayonet scabbard, because of the constant sheathing and unsheathing of the weapon, rather than the bayonet's belt, and, likewise, how removing cartridges from cartridge boxes over the years and in the haste of "battle" breaks up the bindings which hold the protective flap to the box and the box to its belt. All these personal experiences with the equipment of the revolutionary war infantryman have made evident the constant and critical need to maintain and provide these items to soldiers. Indeed, the absence or breakage of a totally simple and unglamorous item like a pick and brush set, used to clear a powder-fouled musket that refused to fire, would soon render the soldier defenseless.

7. Trussell, John B.B., Jr., Birthplace of an Army: A Study of the Valley Forge Encampment (Harrisburg, 1976), pp. 53-61.

8. Wright, Robert K., Jr., The Continental Army (Washington, D.C., 1983), pp. 23-24.

9. Carp, E. Wayne, To Starve the Army at Pleasure: Continental Army Administration and American Political Culture (Chapel Hill, 1984), pp. 20-21.

10. Ibid., p. 232, ftn. 4.

11. Ford, Worthington C., ed., Journals of the Continental Congress, 34 vols. (Washington, D.C., 1904-37), Vol. 2, p. 67 (hereafter cited as J.C.C.); Henderson, H. James, Party Politics in the Continental Congress (McGraw-Hill, 1974), pp. 104-105, 164-180.

12. For a discussion on the colonials' views of the British Army 1755-1763, see Rodgers, Alan, Empire and Liberty: American Resistance to British Authority, 1755-1763 (University of California Press, 1974), Chapter VI passim; on shortages of arms, defective powder, and incompetency in the Board of Ordnance as scandal see Fortescue, John W., A History of the British Army, Vol. II, pp. 572-573 and Houlding, pp. 141, 148.

13. For a general overview of the development and organization of the eighteenth century British army see Curtis, Edward E., The Organization of the British Army in the American Revolution (AMS Press, New York, reprint 1969) and Rodgers, Colonel H.C.B., The British Army of the Eighteenth Century (London, 1977).

14. Mackesy, Piers, The War for America, 1775-1783 (Harvard University Press, 1964), pp. 12-13; Syrett, pp. 1-2.

15. Mackesy, pp. 14-15.

16. Crevald, p. 1.

17. Ibid., Chapter 1, passim.

18. Bowler, pp. 247, 262; Fortescue, Vol. III, p. 547.

19. Curtis, p. 21. British privates had a saying, "Yankee flint was as good as a glass of grog."

20. Bowler, pp. 147-155; Houlding, pp. 148-149; Darling, Anthony D., Red Coat and Brown Bess (Museum Restoration Service, Ottawa, 1970), p. 21.

21. This discussion based upon Curtis, pp. 8-9, 39-44.

22. Bowler, p. 18; Rogers, pp. 35-37; Curtis, pp. 41-44.

23. Syrett, p. 10.

24. Curtis, p. 41; Fortescue, pp. 547-572; Houlding, Chapter II, passim; Parker, p. 289.

25. Wright, John W., Some Notes on the Continental Army (New York, 1975), pp. 3-4, 79.

26. Wright, R.K., pp. 29-40.

27. Ibid., pp. 23, 26.

28. For a discussion of the initial organization of the Continental Army which this section is derived from, see Wright, R.K., Chapter 2, passim.

29. Ibid., pp. 22, 27.

30. Salay, pp. 73-119; Nuxoll, Elizabeth M., "Congress and the Munitions Merchants: The Secret Committee of Trade during the American Revolution, 1775-1777," Ph.D. dissertation, City University of New York, 1979, p. 28.

31. J.C.C., Vol. II, pp. 253-254; A stand of arms consisted of a musket, fitted bayonet, cartridge box, bayonet scabbard and belt. Oral communication, William L. Brown III, National Park Service, September 17, 1983.

32. Peterson, Harold L., The Book of the Continental Soldier (Harrisburg, 1968), p. 30.

33. Carp, p. 219; Henderson, pp. 104-105, 164-180; Rossie, Jonathan G., The Politics of Command in the American Revolution (Syracuse, 1975), pp. ix, 72, 76.

34. Carp, p. 21.

35. Ibid., pp. 65-67.

36. For a discussion of the "spirit of '75," see Royster, Chapter 1, passim.

37. J.C.C., Vol. IV, p. 85.

38. J.C.C., Vol. V, p. 432; Taylor, Robert J., ed., The Papers of John Adams (Cambridge, Mass., 1979), p. 252.

39. J.C.C., Vol. V, pp. 729, 831.

40. J.C.C., Vol. V, p. 438; Ryerson, Richard A., The Revolution is Now Begun: The Radical Committees of Philadelphia, 1765-1776 (University of Pennsylvania Press, 1978), pp. 119-120.

41. Risch, p. 12.

42. Taylor, pp. 252-253.

43. Ibid., p. 378.

44. Paulin, Charles O., The Navy of the American Revolution: Its Administration, its Policy, and its Achievements (Cleveland, 1906), p. 96.

45. Carp, pp. 29-30.

46. Hatch, Louis C., The Administration of the American Revolutionary Army (New York, 1904), p. 11.

47. Wright, R., pp. 87, 89.

48. Ibid., p. 91.

49. Ibid., pp. 99-119.

50. Papers of Henry Knox, U.S. National Archives Record Group LM-39, Vol. III, September 27, 1776.

51. Ibid. Adams had written to Knox in 1775 about setting up an academy to train officers in fortification, gunnery and other subjects and asking whether the Harvard University had books on those subjects. Ibid., November 11, 1775.

52. Risch, pp. 12-13; Huston, p. 7.

53. Washington Papers, Library of Congress, Series 4, Reel 58, Knox to Washington, May 13, 1779.

54. Fitzpatrick, John C., ed., The Writings of George Washington from the Original Manuscript Sources, 1745-1799, 39 Volumes (G.P.O., 1931-1944), Vol. VII, Washington to Flower, January 16, 1777, pp. 20-22.

55. J.C.C., Vol. VII, p. 228.

56. J.C.C., Vol. VIII, p. 613.

57. J.C.C., Vol. VII, January 30, 1777, p. 74; February 24, 1777, p. 151; January 31, 1777, p. 85; Gluckman, Arcadi, United States Muskets, Rifles and Carbines (New York, 1948), pp. 60-61.

The proper stampings were not always carried out, however. In June, 1777, Henry Beekman Livingston, Commander of the 4th New York Regiment of General Enoch Poor's New Hampshire Brigade, wrote that Northern Army headquarters at Fort Edward, New York, directed "...all French muskets marked N:H with the number of the Battalion be immediately delivered to Brigadier General Poor...." No mention is made of the U.S. stamping six months after they were required. Also, a musket in my personal collection, a French model 1766, is marked NH2B but bears no U.S. impression. This problem was to persist as late as 1782. Letter of November 3, 1969 from Edward A. Hoyt to William Muese, Park Historian, Saratoga National Park, supplied by Mr. A.W. Tommell, March, 1983; Hodgdon, Samuel, Letter Books, National Archives, Numbered Record Books Concerning Military Operations and Service, Pay and Settlement of Accounts, and Supplies in the War Department Collection of Revolution War Memoirs, Microfilm Publication M853, Vol. 92, Hodgdon to Ruddock, May 4, 1782. (Hereafter referred to as Hodgdon, Vol. __.)

58. J.C.C., Vol. VII, January 23, 1777, p. 59.

59. Reed, John F., Valley Forge - Crucible of Victory (Philip Freneau Press, 1969), pp. 10-11; Trussell, pp. 22, 39; Bodle, Wayne R. and Thibaut, Jacqueline, Valley Forge Historical Research Report, 3 Volumes (1980), Vol. I, p. 252.

60. Smith, Paul H., ed., Letters of Delegates to Congress, 9 Vols. to date (G.P.O., 1980-81), Vol. 9, Committee at Camp to Henry Laurens, 1 March, 1778, pp. 184-185; Committee at Camp to Laurens, 11 February, 1778, pp. 72-74; Hazard, Samuel, Pennsylvania Archives (Philadelphia, 1853), Vol. VI, pp. 136, 450.

61. Reed, p. 9.

62. Carp, p. 29. Thomas McKean, for example, at one point served on 33 committees and chaired five more. p. 234, note 37.

63. Risch, pp. 12-13; Huston, p. 7.

64. Bodle and Thibaut, Vol. 1, pp. 196-197.

65. Honor and glory were the chief inducements for service by military officers. Their positions, threatened by foreign officers accelerated an already touchy situation from Congress having granted political favors through army commissions to associates over combat veterans. The French volunteers were supposed to provide needed expertise in specialized areas such as Louis Duportail, selected to head the Continental Army Engineers, Thomas Conway and Johann DeKalb as combat infantry officers, and Philippe Du Coudray to provide artillery and ordnance expertise. When Knox learned he was to serve under Du Coudray, the new Inspector General of Ordnance and Military Manufactories, he threatened to resign. Du Coudray's accidental drowning in September, 1777, put an end to this threat. It also marked the death of any French influence in the development or operation of the Military Stores or Ordnance Department. Carp, Chapter 6, pp. 161-165; Wright, R.K., p. 129.

66. Wright, R.K., pp. 124-126.

67. J.C.C., Vol. X, pp. 144-149; Smith, Vol. 9, p. 76; Wright, R.K., p. 136.

68. Carp, pp. 38, 43.

69. Ibid., pp. 47, 50.

70. Smith, Vol. 9, p. 76.

71. Washington Papers, Series 4, Reel 55, Knox to Washington, December 30, 1778. Congress denied granting sole authority to department heads in other areas as well. See Carp, p. 41. At Valley Forge, Washington's loss of confidence in the Military Stores Department resulted in his efforts to produce ordnance stores in Camp and to rely more heavily on Knox; Bodle and Thibaut, Vol. II, pp. 375-379, 463.

72. J.C.C., Vol. XIII, February 18, 1779, pp. 201-204.

73. Carp, pp. 176-177.

74. Hodgdon, Vol. 110, Hodgdon to Board of War, October 19, 1780; J.C.C., Vol. XVII, p. 723; J.C.C., Vol. XV, pp. 1403-1404; J.C.C., Vol. XIV, p. 978; J.C.C. Vol. XIX, pp. 49-51. Hodgdon, at this time, had taken over Flower's departmental duties.

75. Ward, Harry M., The Department of War, 1781-1795 (Pitts-burgh, 1962), p. 233.

76. J.C.C., Vol. XIX, pp. 126-127.

77. Ferguson, E. James, ed., The Papers of Robert Morris, 1781-1784 (University of Pittsburgh Press, 1973), p. xxi.

78. Hodgdon, Samuel, Vol. 92, Hodgdon to Morris, January 3, 1784; Hodgdon to Levi Hollingsworth, February 26, 1784; Ferguson, E. James, ed., The Papers of Robert Morris, 1781-1784 (University of Pittsburgh Press, 1973), Vol. 3, p.189.

79. Hodgdon, Vol. 92, Hodgdon to Morris, January 3, 1784; Hodgdon to Levi Hollingsworth, February 26, 1784.

80. J.C.C., Vol. XXIII, pp. 540-541; Risch, p. 332.

81. Papers of the Continental Congress, National Archives, Microfilm Publication M247, Reel 54, Item 42, p. 5, Reel 23, item 12A, Vol. 2, p. 12. (Hereafter cited as P.C.C., M. ___, r. ___, i. ___, v. ___, p. ___).

82. Hodgdon, Vol. 92, Hodgdon to Committee of Congress on Arrangements, April 8, 1782.

83. Ibid., Hodgdon to Sargent, August 16, 1782; Hodgdon to Emes, August 16, 1782; Hodgdon to Emes, November 5, 1782; Hodgdon to Emes, January 6, 1784; Hodgdon to Jones, August 23, 1782.

84. Hodgdon, Vol. 92, Hodgdon to Lincoln, February 18, 1783; Hodgdon, Vol. 93, Hodgdon to Pickering, November 14, 1783.

85. Ibid., Hodgdon to Captain John Briant, February 16, 1784; Hodgdon to Clark, January 12, 1784.

86. Knox Papers, Vol. LIII, Washington to Knox, September 5, 1782.

87. Reed, George E., Pennsylvania Archives, Third Series (Harrisburg, 1897), Vol. XIV, p. 260; Pennsylvania Archives, Fifth Series, Vol. III, p. 1085; Steven Rosswurm, oral communication, March, 1984.

88. The Sunday Baltimore Sun, March 13, 1927, and April 8, 1928. Rebecca's daughter, Flower's niece, was to make the "Star Spangled Banner" which flew over Fort McHenry in 1814.

89. P.C.C., M247, r. 54, i. 42, p. 5; r. 23, i. 12A, Vol. 2, p. 12.

The Associator battalions, formed during the early days of war fever, were distinct from regular militia units. They were all volunteers, well uniformed, armed, and equipped, and while all were not members of the silk-stocking elites, they were generally prosperous artisans and merchants. Thomas Mifflin and Richard Peters served with them initially. It is as a member of the Associators that Lt. Flower may have gained recognition by fellow officers Mifflin and Peters, the radical members of the legislature. For further details on the Associators, see Katcher, Philip, Rebels and Loyalists: The Revolutionary Soldier in Philadelphia (Atwater Kent Museum, Phila. 1976), pp. 9-13; Stillé, Charles J., Major General Anthony Wayne and the Pennsylvania Line in the Continental Army (Philadelphia, 1893), p. 17; Ryerson, Richard A., The Revolution is Now Begun: The Radical Committees of Philadelphia, 1765-1776 (University of Pennsylvania Press, 1978), pp. 119-124.

90. Hazard, Pennsylvania Archives (Philadelphia, 1853), Vol. V, p. 27, Council of Safety to Flower, 18 September, 1776. Jameson, Hugh, "Equipment for the Militia of the Middle States, 1775-1781" in Higginbotham, Don, Military Analysis of the Revolutionary War (KTO Press, Millwood, N.Y., 1977), p. 127.

91. Washington Papers, Series 4, Reel 58, Knox to Washington, May 18, 1779.

92. Ibid.

93. Fitzpatrick, Vol. 15, pp. 79-80; J.C.C., Vol. X, pp. 144-149.

94. Gluckman, pp. 60-61. Gluckman apparently stopped counting in 1781. Looking at the entries in the Hodgdon letter books, it appears that by 1783 at least 130,000 arms may have been imported from France. Hodgdon, Vol. 92, Hodgdon to Morris, December 23, 1783.

95. Salay, p.118.

96. Risch, p. 26.

97. Katcher, pp. 9-13; Commanger, Henry, S., et al., The Spirit of Seventy-Six: The Story of the American Revolution as Told by Participants, 2 Vols. (Bobbs-Merrill, 1958), Vol. 1, p. 95. "We have five regiments in this city and the country of Philadelphia, complete in arms and uniforms..."; Risch, p. 339-340, gunpowder seems to have been the most overriding shortage in the early war.

98. York, Neil L., "Clandestine Aid and the American Revolutionary War Effort: A Reexamination," Military Affairs, Vol. XLIII, No. 1, February, 1977, p. 29.

99. Smith, Vol. 6, pp. 529, 548.

100. Hammond, Otis G., Letters and Papers of Major General John Sullivan Continental Army, 3 Volumes (New Hampshire Historical Society, 1930), Vol. 1, pp. 329-330; Risch, pp. 362-363. This same accountability problem also appeared as late as 1780, when Congress was informed that powder ship-ments had gone directly into the Pennsylvania State magazine without the knowledge of Continental officers. Hodgdon, Vol. 110, Hodgdon to Commercial Committee, September 9, 1780; Vol. 92, Hodgdon to Branch of War, January 8, 1781.

101. Risch, p. 355.

102. Hammond, Vol. 1, pp. 342-343, Flower to Sullivan, May 23, 1777.

103. Ibid., p. 352, Sweers to Sullivan, June 1, 1777.

104. Ibid., pp. 371-372, Flower to Sullivan, 5 AM, June 5, 1777.

105. The Sunday Baltimore Sun, March 13, 1927. For saving the Philadelphia stores Flower was supposedly presented with a sword by Washington but no record of the sword is present in his Will.

So hurried and confused was the Philadelphia evacuation that large quantities of military stores just disappeared--250,000 musket cartridges at the State magazine just vanished. They may have been issued hurriedly to troops retreating through the city or dumped into the Delaware River. Shortages of waggons caused state and continental stores to become jumbled. Bodle and Thibaut, Vol. II, p. 358.

106. It has been suggested that Flower suffered from the effects of mercury poisoning. Mercury was used in the felting process which conditioned the rabbit skins used

in the felting process which conditioned the rabbit skins used to produce a higher grade of felt wool. Along with such symptoms as severe gastrointestinal pain, paralysis and fainting, insanity often occurred as well, leading to the expression "the mad hatter." See Bodle and Thibaut, Vol. II, p. 353; Freeman, Charles, Luton and the Hat Industry, p. 31; Brooks, Cleanth, "In Search of the New Criticism," The American Scholar, Winter 1983/84; oral communication Mr. Charles Baier, January 28, 1984.

107. Bodle and Thibaut, Vol. II, p. 372. The Board of War took it upon itself to order military stores from post to post without ever informing Washington. Ibid., pp. 372, 388.

108. For a good discussion on corruption, see Carp, Chapter 5, passim.

109. Ibid., pp. 159, 161.

110. P.C.C., Flower to Hancock, June 8, 1777, M.247, r. 95, i. 78, v. 9, p. 91; Flower's deposition, August 19, 1778, M.247, r. 76, i. 62, p. 639.

111. Ibid., Flower deposition.

112. Ibid

113. The following discussion is based upon P.C.C., Sweers to Board of War, June 25, 1778, M.247, r. 102, i. 78, v. 20, p. 231; Sweers to Laurens, July 17, 1778, ibid., p. 235; Sweers to Laurens, August 3, 1778, ibid., p. 239; J.C.C., Vol. VII, April 9, 1777, p. 248; P.C.C., Sweers to Laurens, ibid., August 3, 1778; Ibid., Sweers to Laurens, August 2, 1778, p. 241; Ibid., Sweers to Laurens, August 6, 1778, p. 245; Ibid., Sweers to Laurens, August 17, 1778, p. 251; P.C.C., Sweers deposition, August 12, 1778, M.247, r. 66, i. 53, p. 155.

114. J.C.C., Vol. XI, pp. 741-742.

115. This discussion is based upon Henderson, H. James, Party Politics in the Continental Congress (McGraw-Hill, 1974), pp. 104-105, 164-180.

116. J.C.C., Vol. XI, p. 742. See Appendix A for details of the vote.

117. P.C.C., Arnold to Laurens, August 5, 1778, M.247, r. 179, i. 162, p. 136.

118. P.C.C., Laurens to Arnold, August 5, 1778, M.247, r. 23, i. 13, v. 2, p. 40; Henderson, p. 232; Flexner, James T., The Traitor and the Spy: Benedict Arnold and John Andre (New York, 1953), pp. 231-237.

119. P.C.C., Pickering to Laurens, August 4, 1778, M.247, r. 157, i. 147, v. 2, p. 163.

120. Ibid.

121. P.C.C., Pickering to Laurens, August 8, 1778, M.247, r. 100, i. 78, v. 17, p. 189.

122. P.C.C., Flower to Laurens, August 5, 1778, M. 247, 4. 95, i. 78, v. 9, p. 171.

123. P.C.C., Flower to Laurens, August 7, 1778, ibid., p. 175.

124. J.C.C., Vol. XI, August 10, 1778, p. 769.

125. P.C.C., Flower deposition, August 19, 1778, M.247, r. 76, i. 62, p. 639.

126. J.C.C., Vol. XI, August 24, 1778, p. 830.

127. Bodle and Thibaut, Vol. II, p. 435.

128. Pickering, Octavius, The Life of Timothy Pickering, 4 Vols. (Boston, 1867), Vol. 1, pp. 226-227.

129. A similar record of a successful merging of power occurred with the Inspector General, von Steuben, and the Adjutant General, Alexander Scammell. These two officers developed a partnership in the control and direction of army administration. So effective did their relationship become that Congress combined the two offices in 1780. Wright, R., p. 145.

130. Daughters of the American Revolution, Patriot Index, Entry No. 24952 (hereafter cited as DAR); Hodgdon, Vol. 110, Hodgdon to Board of War, October 6, 1779.

131. Seybolt, Robert F., The Town Officials of Colonial Boston, 1634-1775 (Harvard University Press, 1939), p. 329; Thacher, James, Military Journal of the American Revolution (New York, 1969), pp. 351-352. It is quite likely that Hodgdon was related to Alexander Hodgdon who became the Secretary of the Commonwelath of Massachusetts during the 1790's. This may allow us to place Samuel in at least a solid middle class social status.

132. This connection with Knox was to serve Hodgdon well in a later period. During Knox's tenure as Secretary at War in the 1790's, Hodgdon served as Quartermaster of the United States Army. While insinuations of incompetency were directed against him for the ill-prepared and disastrous military campaign led by General Arthur against the Ohio Indians, Knox shielded Hodgdon from any blame or disgrace. Rather than being incompetent, Hodgdon may simply have been too old for the job. For details on Hodgdon's and other army problems, see Kohn, Richard H., Eagle and Sword: The Federalists and the Creation of the Military Establishment in America, 1783-1802 (MacMillan: New York, 1975), pp. 114-115, 247; Guthman, William H., March to Massacre: A History of the First Seven Years of the United States Army, 1784-1791 (McGraw-Hill: New York, 1975), pp. 206-218.

133. DAR, Entry No. 509059; Hodgdon, Vol. 111, Hodgdon to Flower, October 10, 1778; Hodgdon to James Lovell, May 7, 1779.

134. Hodgdon, ibid.

135. Ibid. The Board's support of French and Flower would not have been unexpected since Flower was an excellent terms with many of them and the Board was not then noted as being pro-Washington. See also ftn. 137.

136. Ibid.

137. Pickering Papers, Massachusetts Historical Society, Flower to Pickering, August 28, 1780.

138. Rossman, p. 98.

139. Hodgdon, Vol. 111, Hodgdon to FLower, August 17, 1778; Hodgdon to Pickering, September 14 and October 10, 1778; Hodgdon to Lovell, May 7, 1779; Hodgdon to Flower, May 28, 1779.

140. Ibid., Hodgdon to Knox, August 28, 1779; Hodgdon to Ruddock, August 28, 1779.

During his illnesses, Flower would often stay at "Springfield" the estate of Colonel John Patton near Reading. From there Flower would journey to visit his "good friend" Mifflin's farm "Angelica" also near Reading. It appears likely that John Patton was also friends with Mifflin because the executive officer of Patton's Continental Regiment, John Parke, had been an assistant to Mifflin in 1775. Mifflin appears to have always favored artisans and like Flower, Parke's father

was a hatmaker before the war. See Pickering Papers, Flower to Pickering August 28, 1780; Hodgdon, Vol. 110, May 30, 1780; Rossman, pp. 188, 197, 242; Malone, Dumas, ed., Dictionary of American Biography, Vol. 14, on John Parke, pp. 210-11; Heitman entries on John Patton and John Parke, pp. 430 and 424 respectively.

141. Ibid., Hodgdon to Ruddock, February 20, 1780. This move must have been intended to aid the ill Flower, whose health must have been getting worse. Writing to his friend on the Board of War, Timothy Pickering, Flower told of "my inability to do business...arising from the continuance of a disease I contracted in the Public Service and from great exertion to do my Duty in an arduous Department...my Disease though slow in its progress will...be certain in its fatal consequences...," Pickering Papers, Flower to Pickering, August 26, 1780.

142. Hodgdon, Vol. 111, Hodgdon to Colonel John Lamb, June 12, 1779, and February 20, 1780. At this time the Continental Artillery and artificers wore black regimental coats with red or scarlet facings. Military Collector and Historian, Vol. XXVII, No. 2, Summer 1975, pp. 82-84.

143. Hodgdon, Vol. 110, Flower to Carlisle Superintendent Samuel Sargent, December 20, 1780.

144. Ibid., Sargent apparently took heed of Flower's warning as no further complaints on Carlisle were heard after this, and Sargent appears to have remained at his post until his death in November, 1782. Hodgdon, Vol. 92, Hodgdon to Sargent, August 16, 1782; Hodgdon to Captain Emes, November 5, 1782.

145. Ibid., Hazard, Vol. VIII, p. 469, Nicola to President Reed, July 31, 1780; Washington Papers, Series 4, Reel 58, Knox to Washington, May 13, 1779; Petition of William Cockran and Thomas Swaine, June 1, 1778, P.C.C., M.247, r. 53, i. 42, v. 2; J.C.C., Vol. XXIII, December 18, 1782, p. 813; Hodgdon, Vol. 110, Hodgdon to Godfrey, April 29, 1780; Hodgdon to Board of War, August 21, 1780; Hodgdon to [?], August 24, 1780; Heitman, p. 171.

146. John Lamb Papers, New York Historical Society, Reel #1, March 6, 1779; Lamb to Board of War, February 21 and 22, 1780; Lamb to Eayers [February], 1780.

147. Hodgdon, Vol. 110; Hodgdon to Board of War, July 10, 1780.

148. Ibid.

149. J.C.C., Vol. XVII, July 26, 1780.

150. Washington Papers, Series 4, Reel 58, Knox to Washington, May 13, 1779; Risch, p. 325.

151. Hodgdon, Vol. 110, Hodgdon to Captain Nathaniel Chapman, September 6, 1780; Hodgdon to Joseph Hiller, October 24, 1780.

152. Ibid., Hodgdon to Cheever, September 6, 1780.

153. Hodgdon, Vol. 92, Hodgdon to Cheever, January 23, 1781.

154. Hodgdon, Vol. 111, Hodgdon to Pearson, September 3, 1779.

155. Reed, J., Valley Forge..., pp. 8-9; Fitzpatrick, Vol. 10, pp. 116, 378, 390; Tussell, p. 91.

156. Hodgdon, Vol. 111, Hodgdon to Pickering, August 1, 1779; Hodgdon to Knox, September 27, 1779; Hodgdon to Board of War, October 6, 1779; Carp, pp. 58-61.

157. J.C.C., Vol. XIV, May 1779, pp. 602-605. Artificers in the Quartermaster Department had just done what amounted to blackmail in an effort to get their wages increased also. Even Greene, who initially opposed pay increases for his artificers, finally acquiesced to their demands. The word must have spread. Carp, pp. 63-64.

158. Wright, R.K., p. 145, Carp, p. 33. This combination of effective personal relationships which arose from dominating characters and talent also arose in British military history. Marlborough and Wellington used personal relationships to solidify the fragmented British army supply system into an effective and unified organization under their control. See Barnett, Correlli, Britain and Her Army, 1509-1970: A Military, Political, and Social Survey (London, 1970), pp. 134-135, 246, 260-61, for an analysis on Marlborough and Wellington.

159. Hodgdon, Vol. 110, [May?], 1780.

160. Ibid., Hodgdon to Board of War, [June?], 1780.

161. Ibid., Hodgdon to Hoey, June 15, 1780.

162. Ibid., Hodgdon to Board of War, [June], 1780.

163. J.C.C., Vol. XVIII, November 25, 1780.

164. Hodgdon, Vol. 110, Hodgdon to Captain Chapman, September 6, 1780; Vol. 92, Hodgdon to Barber, March 12, 1781; Hodgdon to Board of War, March 20, 1781.

165. Ibid., Hodgdon to Sargent, December 12, 1780; Hodgdon to Sargent, May 12, 1780. Civilians suffered the effects of inflation as well. Wheat prices rose from 4 shillings a bushel in 1776 to 150 shillings by 1779. See Carp, p. 106.

166. Pickering Papers, Flower to Pickering, August 28, 1780.

167. Bodle, et al., Vol. II, p. 396, Fitzpatrick, Vol. 15, p. 158; Hodgdon, Vol. 110, Hodgdon to the Board of War, June 17, 1780; Washington papers, Series 4, Reels 58 and 64, Board of War to Washington, May 24, 1779 and Steuben to Washington, March 15, 1780; Hodgdon, Vol. 105, passim.

168. Hodgdon, Vol. 111, Hodgdon to Major Pearson, August 2, 1779; Hodgdon to Pearson, September 3, 1779.

169. Ibid., Hodgdon to Pearson, June 30, 1779. Seventy-five years later, ammunition size was still a problem in the army. By 1863, 79 official models of muskets existed in the Union army and 23 models of carbines. Each of these had separate ammunition requirements. Wolf, Richard I., "Arms and Innovation: The United States Army and the Repeating Rifle, 1865-1900," Ph.D. dissertation, Boston University, 1981.

170. Hammond, Vol. 3, Knox to Sullivan, March 22, 1781, p. 300; Knox Papers, Vol. IV, Nicola to Knox, April 30, 1778; Hodgdon, Vol. 79, May 25, 1782.

Early in the war when the shortage of leather contributed to a resulting shortage in cartridge boxes, the army turned to a box made of tin. These proved unsatisfactory. The troops used them as canteens and the officers as shaving kits. From using copies of these in Bicentennial reenactments, I found that they tended to cut the hand if poorly made, and being narrow, the cartridges were difficult to remove. The Ordnance Department's new leather model proved highly popular and Hodgdon claimed confidence "that the saving [in] the ammunition by the invention of the new... boxes will pay for the whole in one year." It appears these were the boxes used to resupply the army in 1779.

171. Sebastian Bauman Papers, New York Historical Society, 1 reel, Bauman to Knox, October 22 and 31, 1779.

172. Hodgdon, Vol. 111, Hodgdon to Pearson, September 3, 1779; Hodgdon to Pearson, October 5, 1779; Hodgdon to Pearson, November 11, 1779; Bauman Papers, Knox to Bauman, October 21, 1779.

Quality control did not affect the Ordnance Department alone. Food arrived uneatable. Clothing, shoes, blankets, and many other items were so badly made that they could stand little wear. While lack of sufficient industrial expertise would explain most of the defects the Ordnance Department dealt with, common greed and the desire to profit contributed to the problems in other supply departments. As one officer wrote in 1778, "The people at home are destroying the Army by their conduct much faster than Howe and all his army can possibly do by fighting us." Carp, p. 61. Cannon production in the infant arms industry also suffered during the early war years. In 1776, 150 cannon failed proof at Hopewell furnace in Pennsylvania. Bodle, Vol. II, p. 365.

173. Lamb Papers, Reel #2, Knox to Lamb, August 1781; Bauman Papers, Bauman to Knox, August 17, 1780. It must be said that this gauge problem could have resulted, in part, from the mixed bag of artillery that the Americans had. English and French pieces, while rated as a given weight or size for shot, such as 8" mortar or 6 pounder gun, actually differed a little from the specification, making them somewhat incompatible.

174. J.C.C., Vol. XVII, July 24 and 25, 1780.

175. Hodgdon, Vol. 110, Hodgdon to Board of War, July 18, 1780.

176. Ibid., Hodgdon to Board of War, July 24, 1780.

177. Ibid., Hodgdon to Paymaster Thorne, March 22, 1780; Hodgdon to Board of War, March 28, 1780.

178. Ibid., Hodgdon to Ogden, April 28, 1780.

179. Ibid., Hodgdon to Thompson, May 5, 1780.

180. Ibid., Certificates from Thomas Potts to Hodgdon, September 21, 1780; Vol. 92, Hodgton to Deputy Quartermaster General Weisse, July 12, 1781.

181. Hazard, p. 467; Hodgdon Vol. 110, Hodgdon to Mr. Vancarro, August 8, 1780.

182. Hodgdon, Vol. 110, Hodgdon to James Byers, Superintendent of the Foundry, August 8, 1780; Hodgdon to Board of War, November 27, 1780.

183. Salay, p. 220. These iron producing centers were in close proximity to the ordnance depots shown on Map 1.

184. Hodgdon, Vol. 92, James Boyer to Board of War, November [21/22], 1781.

185. Salay, pp. 222, 276.

186. Hawke, David, The Colonial Experience (Bobbs-Merrill Co., 1966), p. 402; Bining, Arthur C., Pennsylvania Iron Manufacture in the Eighteenth Century (Harrisburg, 1973), pp. 162-163; Keach Johnson, "The Genesis of the Baltimore Ironworks," Journal of Southern History, XIX (May 1953), pp. 155-79; Irene D. Nau, "The Iron Plantations of Colonial New York," New York History, XXXIII (January 1952), pp. 3-24; Spencer C. Tucker, "Cannon Founders of the American Revolution," National Defense, LX (July-August 1975), pp. 33-7.

187. Washington papers, series 4, reel 58, Board of War to Washington, May 24, 1779; Hodgdon, Vol. 110, Hodgdon to Board of War, July 15, 1780; Hodgdon, Vol. 111, Hodgdon to Erskine, November 10, 1779; Smith, Paul H., ed., Letters to Delegates to Congress, 9 Vols. to date (G.P.O., 1980-81), Vol. 9, Committee at Camp to Henry Laurens, 1 March, 1778, pp. 184-185; Committee at Camp to Laurens, 11 February, 1778, pp. 72-74; Hazard, Samuel, Pennsylvania Archives (Philadelphia, 1853), Vol. VI, pp. 136, 450. The Ordnance Department, like its British counterpart, often used its own ships to transport stores, particularly along the Hudson. Hodgdon, Vol. 111, Hodgdon to Knox, October 26, 1778; Carp, pp. 57-65.

188. Figures presented were developed from the records of Major Samuel Hodgdon who was principal Field Commissary for the Ordnance Department found in National Archives, Microfilm Publication M. 853, r. 39, v. 130; r. 40, v. 118-120; and M. 859, r. 68.

189. Modern military practice requires a percentage replacement factor for various types of equipment. For example, during World War II, army replacement factors for vehicle reserve pools initially [1942] were set at 3.5% of the total vehicles a unit was to have. Even simulated combat conditions in the United States proved that this reserve was insufficient and units could not be resupplied even here. By April, 1943, Ordnance supplies at the California Desert Training Center

raised these stocks to 18%. While resupply efforts for state-side units may not have received high priority. The lack of army service troops at combat zone depots caused overseas shortages as well. On a smaller scale, the Continental Army's Ordnance Department and artificers faced similar problems. See Miller, Sidney L., The Desert Training Center and C-AMA, Historical Section-Army Ground Forces, 1946, pp. 74-78.

The Continental Army attempted a similar reserve concept. In June, 1778, Washington directed Flower to maintain a 300 arm reserve for "occasional demand." In the Sullivan expedition against the Indians in 1779, Washington considered the 200 arm reserve "sufficient for any contingencies we may reasonably suppose can happen," as Sullivan's troops were fully supplied upon departure. These figure represent about a 3% reserve.

See Bodle, et al., Vol. II, p. 429; Fitzpatrick, Vol. 15, pp. 160, 171.

190. Hodgdon, Vol. 111, Hodgdon to General Maxwell, October 12, 1778; Hodgdon to Flower, November 8, 1778; Hodgdon to Major Gostelowe, November 8, 1778; Hodgdon to Commissary at New Milford, Connecticut, December 22, 1778.

191. Ibid., Hodgdon to Gostelowe, October 5, 1778; Hodgdon to General Maxwell, October 12, 1778.

192. Ibid., Hodgdon to John Ruddock, Commissary of Military Stores at Fishkill, N.Y., July 16, 1779.

193. Ibid., Hodgdon to Flower, June 3, 1779. See also ftn. 204.

194. Ibid., Hodgdon to Major Pearson, July 6, 1779.

195. Smith, pp. 21-22, Charles Carroll of Carrolton to Washington, September 27, 1777.

196. Hodgdon, Vol. 110, Hodgdon to Board of War, June 10, 1780; Flower to Board of War [May], 1780.

197. M. 853, See footnote 188.

198. "Dig in Jersey Revealing Revolutionary War Site," New York Times, March 6, 1984, Sec. B, p. 2. While not catalogued, over 10,000 objects have been excavated to date, more than any other revolutionary war site including Valley Forge.

199. Hodgdon, Vol. 111, Hodgdon to Pearson, May 14, 1779.

200. Ibid., Hodgdon to Flower, January 10, 1779.

201. Creveld, Martin Van, Supplying War-Logistics from Wallen-stein to Patton (Cambridge University Press, 1977), p. 57.

202. M. 853, r. 40, v. 120, Pluckemin return, January 1 to February [1], 1780.

203. M. 859, r. 69; M. 853, r. 40, v. 120; Hodgdon, Vol. 110, Hodgdon to Board of War, [June] 1780; Hodgdon to Knox, June 24, 1780; Hodgdon, Vol. 111, Hodgdon to Pearson, October 5, 1779.

204. Cook, Frederick, Journals of the Military Expedition of Major General John Sullivan Against the Six Nations of Indians in 1779 (New York, 1972 reprint), pp. 13, 20, 31, 36, 234, and 240. Sullivan's troops were completely supplied prior to their departure and after 3,600 arms were sent southwards. Washington Papers, Series 4, Reel 58, Board of War to Washington, May 24, 1779.

205. Hodgdon placed large calls for artillery ammunition to replace that depleted at Monmouth. Hodgdon, Vol. 111, Hodgdon to Ruddock, July 19, 1778.

206. Wright, Robert K., Jr., Organization and Doctrine in the Continental Army, 1774-1784, Ph.D. dissertation, College of William and Mary, 1980, pp. 6, 14, 168, 182; Curtis, p. 17; Fitzpatrick, Vol. 7, p. 198; Steuben, Friedrick, L.G.A., Baron von, Regulations for the Order and Discipline of the Troops of the United States, 1779. Steuben's simplified drill would allow easier training and faster loading.

207. Wright, ibid.; Crevald, p. 57. Crevald argues that resupply of ammunition did not become a critical factor in European warfare until Napoleon.

208. Peckman, Howard H., ed., The Toll of Independent Engagements and Battle Casualties of the American Revolution (University of Chicago Press, 1974). While the British were usually the attacking force, a fact which might also have served to increase their casualties, they relied on the bayonet and not firepower in their tactics.

209. Bodle, et al., Vol. II, p. 362.

210. Fitzpatrick, Vol. 12, p. 131.

211. Washington Papers, Series 4, Reel 64, Steuben to Washington, March 15, 1780.

212. Details on the Springfield battles are from Smith, Samuel S., Winter at Morristown, 1779-1780, The Darkest Hour (Monmouth Beach, N.J., 1979).

213. Wright, R.K., Continental Army, p. 98.

214. Hodgdon, Vol. 111, Hodgdon to Colonel W. Davis, June 13, 1779; Hodgdon to Major Pearson, May 14, 1779.

215. Smith, p. 34; The Trial of the Honorable Colonel Cosmo Gordon of the Third Regiment of Foot-Guards for Neglect of Duty Before the Enemy, on the 23rd of June, 1780, near Springfield, in the Jerseys (London, 1783), pp. 75, 97, 144.

216. Historical Magazine, Vol. III, No. 6, June, 1859, Letter from Maxwell to Governor of New Jersey, 14 June, 1780.

217. M. 853, r. 39, v. 151, June 18, 1780.

218. Rothenberg, Gunther E., The Art of Warfare in the Age of Napoleon (Indiana University Press, 1978), p. 65; Crevald, p. 57; Fleming, Thomas, The Forgotten Victory: The Battle for New Jersey - 1780 (New York, 1973), pp. 189, 231. We earlier noted that the reserve in one of Napoleon's Division's a half-century later, was for just over 10 rounds per man.

219. Ward, vol. 2, p. 703; one barrel of powder could make 4,000 rounds. Lamb, LTRBK, p. 9.

220. Ibid., p. 732; Carp, p. 61.

221. Hodgdon, Vol. 110, Hodgdon to Jones, June 26, 1780; Hodgdon to Irish, August 23, 1780; Hodgdon to Sargent, August 8, 1780.

222. Ibid., Hodgdon to Irish, August 23, 1780.

223. Hodgdon, Vol. 92, Board of War to Hodgdon, April 6, 1781; Hodgdon to Sargent, April 17, 1781.

224. Ibid., Hodgdon to Irish, July 11, 1781.

225. Ferguson, Vol. 1, pp. 260-261; Vol. 2, p. 302.

226. Hodgdon, Vol. 92, Hodgdon to Morris, April 4, 1782.

227. Hodgdon, Vol. 110, Hodgdon to Robert McFee, Conductor of Military Store, April 1, 1780.

228. Showman, Richard K., ed., The Papers of General Nathanael Greene, Vol. II, 1 January, 1777 to 16 October, 1778 (Chapel Hill, 1980), p. 338.

Part of this confusion arose because in the 1778 reorganization of the Quartermaster Department a new position was added--Deputy Quartermaster for Military Stores. This new position was to be responsible for the army's camp kettles, canteens, haversacks, saddlery, etc. not the kinds of items handled by the Ordnance or Commissary General of Military Stores Department. With names so similar, confusion undoubtedly arose. Bodle, et al., Vol. 2, pp. 354-355, 439.

229. Showman, ibid., pp. 302, 316.

230. Hodgdon, Vol. 111, Hodgdon to Knox, July 21, 1779; Vol. 92, James Boyer to Mr. Moore, November 22, 1781; Hodgdon to Philip van Reneselear, Storekeeper at Albany, N.Y., May 30, 1782.

231. Hodgdon, Vol. 110, Flower to Robert Patton, Deputy Quartermaster General, May 22, 1780.

232. Lamb Papers, Reel 2, Hughes to Lamb, October 28, 1780.

233. Hodgdon, Vol. 110, Hodgdon to Gostelowe, May 12, 1780; Hodgdon to Gostelow, June 9, 1780; Flower to Board of War, May, 1780.

234. Ibid., Hodgdon to Eayers, Springfield, May 2, 1780.

235. Hodgdon, Vol. 110, Hodgdon to Board of War, October 19, 1780; HOdgdon to Board of War, August 7, 1780; J.C.C., Vol. XVIII, October 24, 1780.

236. Ibid., Hodgdon to Board of War, June 17, 1780; Hodgdon to Board of War, July 18, 1780.

237. Ibid., Hodgdon to Board of War, September 8, 1780. In addition to these stocks of 1780, in the spring of 1779, Congress sent over 2,600 muskets to Carlonia and nearly 1,000 to Virginia, plus a supply of old cartridge boxes. On the latter items, "a great surpplusage" existed. See Washington Papers, Series 4, Reel 58, Board of War to Washington, 24, May 1779.

238. Ibid., Hodgdon to General Cornell, October 23, 1780.

239. Hodgdon, Vol. 92, January 1781, February 17, 1781.

240. Ibid., February 17, 1781.

241. Ibid., Resolve of Congress, February 19, 1781; Hodgdon to Lt. Hoey, Superintendent of the Laboratory, February 26, 1781.

242. Ibid., Hodgdon to Jones, June 12, 1781.

243. Ibid., Hodgdon to Pickering, June 17, 1781.

244. Ibid., Hodgdon to Knox, June 9, 1781; Hodgdon to Knox, July 18, 1781. While it has not been possible to determine the numbers of southern militia that received these arms, the southern army seldom could muster more than 1,500 regulars for battle. The arms stocks appear to have been more than adequate for the Continentals. Baker, Thomas E., Another Such Victory (Eastern Acorn Press, 1981), pp. 18, 34.

245. Burnett, Edmund C., ed., Letters of Members of the Continental Congress (Washington, D.C., 1933), Vol. 6, p. 161, William J. Hayne to Governor of North Carolina, June 28, 1781. The Virginia figures represnet additions to the 4,000 muskets that State reported as being in its possession in March, 1781. See Reynolds, Donald E., "Ammunition Supply in Revolutionary Virginia," The Virginia Magazine of History and Biography, Vol. 73, No. 1, January 1965, p. 72.

246. Ibid., p. 69, Virginia delegates to Governor, April 27, 1781, and May 8, 1781; Daniel Carroll to Governor of Maryland, April 24, 1781.

247. Hodgdon, Vol. 111, Hodgdon to Greene, July 10, 1779. This is at a time when Greene estimated that each brigade of the army would require 29 waggons plus all the waggons needed by support groups. Risch, pp. 78-79. Exact counts of all the waggons involved at this period does not exist and the routine practice of hiring civilian waggons makes such a calculation extremely difficult if not impossible. This issue, however, is analogous to Crevald's concerns regarding the Afrika Corps and its lorries.

248. Washington Papers, Series 4, Reel 58, Board of War to Washington, May 24, 1779.

249. Carp, pp. 60-65.

250. Hazard, Vol. VI, Flower to the Pennsylvania Council of Safety, April 28, 1778.

251. Hodgdon, Vol. 110, Flower to the Board of War [May], 1780; Hodgdon to Waggoners, May 30, 1779; Hodgdon to Isaac Warner, Conductor, June 17, 1780; Vol. 111, Hodgdon to Knox, August 12, 1779.

252. Carp, E. Wayne, "The Origins of the Nationalist Movement of 1780-1783: Congressional Administration and the Continental Army," Pennsylvania Magazine of History and Biography, Vol. CVII, No. 3, July 1983, p. 385; Ferguson, Vol. 1, Morris to John Jay, July 4, 1781, p. 227.

253. J.C.C., Vol. XV, pp. 143-1434.

254. J.C.C., Vol. XVIII, pp. 1221-1223.

255. Rossman, p. 168.

256. Carp, To Starve..., p. 69.

257. Hodgdon, Vol. 92, entry for July 11, 1781.

258. Hodgdon, Vol. 93, Hodgdon to Pickering, November 14, 1783; Hodgdon to Lt. M[?]Lane, November 19, 1783.

259. Hodgdon, Vol. 110, Flower to John Hall, December 20, 1780.

BIBLIOGRAPHY

I. Primary Sources

A. Unpublished

Library of Congress - George Washington Papers, Series 4.

National Archives - Henry Knox Papers, Record Group LM-39.
Papers of the Continental Congress, Record Group 360.
Samuel Hodgdon Letter Books, Receipt Books, and Miscellaneous Numbered Records in the War Department Collection of Revolutionary War Records, Record Group 93.

New York Historical Society - Sebastian Bauman Papers.
John Lamb Papers.
John Lamb Letter Book.

Massachusetts Historical Society - Timothy Pickering Papers.

Flag House, Baltimore, Md. - Benjamin Flower's Will.

B. Published

ABBATT, WILLIAM, ed. Memoirs of Major-General William Heath, by Himself, to Which is Added the Accounts of the Battle of Bunker Hill by Generals Dearborn, Lee and Wilkinson. New York: William Abbatt, 1901.

BURGOYNE, LIEUTENANT GENERAL JOHN. A State of the Expedition from Canada. London, 1780.

BURNETT, EDMUND C., ed. Letters of Members of the Continental Congress, 7 vols., Washington, D.C. 1921-1936.

CLINTON, SIR HENRY. Narrative of Lieutenant-General Sir Henry Clinton, K.B., Relative to His Conduct During Part of His Command of the King's Troops in North America, Particularly to that Which Respects the Unfortunate Issue of the Campaign of 1781. London, 1783.

COOK, FREDERICK. Journals of the Military Expedition of Major General John Sullivan Against the Six Nations of Indians in 1779. New York: Books for Libraries Press, 1972.

FERGUSON, E. JAMES, ed. The Papers of Robert Morris, 1781-1784. 4 vols. Pittsburgh: University of Pittsburgh Press, 1973.

FITZPATRICK, JOHN C., ed. The Writings of George Washington from the Original Manuscript Sources. 39 vols. Washington: G.P.O., 1931-1944.

FORD, WORTHINGTON C., ed. Journals of the Continental Congress. 34 vols. Washington: G.P.O., 1904-1937.

HAMMOND, OTIS G., ed. Letters and Papers of Major General John Sullivan Continental Army. 3 vols. Concord, N.H.: New Hampshire Historical Society, 1930.

HAZARD, SAMUEL. Pennsylvania Archives. Philadelphia, 1853.

LEE, HENRY. Memoirs of the War in the Southern Department of the United States. 2 vols. Philadelphia, 1812.

LESSER, CHARLES H., ed. THe Sinews of Independence: Monthly Strength Reports of the Continental Army. Chicago: University of Chicago Press, 1976.

REED, GEORGE. Pennsylvania Archives. Third Series, Harrisburg, 1897. Fifth Series, Harrisburg.

ROBERTSON, ARCHIBALD. His Diaries and Sketches in America, 1762-1780. New York: Arno Press, 1971.

SHOWMAN, RICHARD K., ed. The Papers of General Nathanael Greene, 2 vols. Chapel Hill: University of North Carolina Press, 1976-1980.

SMITH, PAUL H., ed. Letters of Delegates to Congress. 9 vols. Washington: G.P.O., 1980-1982.

TAYLOR, ROBERT J., ed. The Papers of John Adams. Cambridge, Mass.: The Belknap Press, 1979.

THACHER, JAMES. Military Journal of the American Revolution. New York: Arno Press, 1966.

WILKINSON, JAMES. Memoirs of my Own Time. 3 vols. Philadelphia, 1816.

II. Secondary Sources

BAILYN, BERNARD. The Ideological Origins of the American Revolution. Cambridge, Mass.: The Belknap Press, 1967.

BAKER, NORMAN. Government and Contractors: The British Treasury and War Supplies, 1775-1783. London: Athlone Press, 1971.

BAKER, THOMAS E. Another Such Victory. Eastern Acorn Press, 1981.

BARNETT, CORRELLI. Britain and Her Army, 1509-1970: A Military, Political, and Social Survey. London, 1970.

BILLIAS, GEORGE A. General John Glover and His Marblehead Mariners. New York: Holt, Rinehart and Winston, 1960.

BINING, ARTHUR C. Pennsylvania Iron Manufacturing in the Eighteenth Century. Harrisburg: Pennsylvania Historical and Museum Commission, 1973.

BODLE, WAYNE K., and THIBAUT, JACQUELINE. Valley Forge Historical Research Report. 3 vols. 1980.

BOWLER, R. ARTHUR. Logistics and the Failure of the British Army in America, 1775-1783. Princeton: Princeton University Press, 1975.

CARP, E. WAYNE. To Starve the Army at Pleasure: Continental Army Administration and American Political Culture. Chapel Hill: University of North Carolina Press, 1984.

COMMANGER, HENRY S., et al. The Spiring of Seventy-Six: The Story of the American Revolution as Told by Participants. 2 vols. Indianapolis: The Bobbs-Merrill Co., 1958.

CREVALD, MARTIN VAN. Supplying War - Logistics from Wallenstein to Patton. Cambridge: Cambridge University Press, 1977.

CURTIS, EDWARD E. The Organization of the British Army in the American Revolution. New York: AMS Press, 1969.

DARLING, ANTHONY D. Red Coat and Brown Bess. Ottawa: Museum Restoration Service, 1970.

DAUGHTERS OF THE AMERICAN REVOLUTION. DAR Patriot Index. Washington, D.C., 1966.

FLEMING, THOMAS. The Forgotten Victory: The Battle for New Jersey - 1780. New York: E.P. Dutton and Co., 1973.

FLEXNER, JAMES T. The Traitor and the Spy: Benedict Arnold and John Andre. New York: Harcourt, Brace and Co., 1953.

_____. George Washington in the American Revolution (1775-1783). Boston: Little, Brown and Co., 1968.

FORTESCUE, JOHN W. A History of the British Army, 13 vols. London: MacMillan and Co., 1899-1935.

FULLER, J.F.C. A Military History of the Western World. 3 vols. Funk and Wagnalls, 1956.

GLUCKMAN, ARCADI. United States Muskets, Rifles and Carbines. New York: Otto Ulbrich Co., 1948.

GREENE, FRANCIS V. The Revolutionary War and the Military Policy of the United States. New York: Charles Scribner's Sons, 1911.

GUTHMAN, WILLIAM H. March to Massacre: A History of the First Seven Years of the United States Army, 1784-1791. New York: McGraw-Hill Book Co., 1975.

HATCH, LOUIS C. The Administration of the American Revolutionary Army. New York: reprint, 1971.

HAWKE, DAVID. The Colonial Experience. Indianapolis: The Bobbs-Merrill Co., 1966.

HEITMAN, FRANCIS B. Historical Register of Officers of the Continental Army during the War of the Revolution, April 1775 to December 1783. Washington, D.C., 1914.

HENDERSON, H. JAMES. Party Politics in the Continental Congress. New York: McGraw-Hill Book Co., 1974.

HIGGINBOTHAM, DON. The War of American Independence: Military Attitudes, Policies, and Practices, 1763-1789. New York: Macmillan Co., 1971.

_____, ed. Military Analysis of the Revolutionary War. Millwood, New York: KTO Press, 1977.

HOFFMAN, RONALD and ALBERT, PETER, ed. Arms and Independence: The Military Character of the American Revolution. Charlottesville: University of Virginia Press, 1984.

HOULDING, J.A. Fit for Service: The Training of the British Army, 1715-1795. Oxford: Clarendon Press, 1981.

HUSTON, JAMES A. The Sinews of War; Army Logistics, 1775-1953. Washington: G.P.O., 1966.

JOHNSON, VICTOR L. The Administration of the American Commissariat During the Revolutionary War. Philadelphia: University of Pennsylvania Press, 1941.

JOHNSTON, HENRY P. Campaign of 1776 Around New York and Brooklyn Including a New and Circumstantial Account of the Battle of Long Island and the Loss of New York, With a Review of Events to the Close of the Year. Brooklyn: Long Island Historical Society, 1876.

KATCHER, PHILIP. Rebels and Loyalists: The Revolutionary Soldier in Philadelphia. Philadelphia: Atwater Kent Museum, 1976.

KOHN, RICHARD H. Eagle and Sword: The Federalists and the Creation of the Military Establishment in America, 1783-1802. New York: The Free Press, 1975.

LEAKE, ISSAAC Q. Memoir of the Life and Times of General John Lamb. New York: Benchmark Publishing Co., 1970.

MACKESY, PIERS. The War for America, 1775-1783. Cambridge, Mass.: Harvard University Press, 1964.

MALONE, DUMAS. Dictionary of American Biography. Vol. 14. New York: Charles Scribner's Sons, 1934.

MIDDLEKAUFF, ROBERT. The Glorious Cause: The American Revolution, 1763-1789. New York: Oxford University Press, 1982.

MILLER, SIDNEY L. The Desert Training Center and C-AMA. Historical Section - Army Ground Forces, 1946.

MORISON, SAMUEL E. History of United States Naval Operations in World War II. 15 vols. Boston, 1947-62.

PAULIN, CHARLES O., The Navy of the American Revolution: Its Administration, its Policy, and its Achievements. Cleveland: Burroughs Co., 1906.

PECKHAM, HOWARD H., ed. The Toll of Independence: Engagements and Battle Casualties of the American Revolution. Chicago: University of Chicago Press, 1974.

PETERSON, HAROLD L. The Book of the Continental Soldier. Harrisburg: Stackpole Co., 1968.

PICKERING, OCTAVIUS. The Life of Timothy Pickering, 4 vols. Boston, 1867.

REED, JOHN F. Valley Forge - Crucible of Victory. Monmouth Beach, N.J.: Philip Freneau Press, 1969.

RISCH, ERNA. Supplying Washington's Army. Washington: G.P.O., 1981.

RODGERS, ALAN. Empire and Liberty: American Resistance to British Authority, 1755-1763. Berkeley: University of California Press, 1974.

ROGERS, H.C.B. The British Army of the Eighteenth Century. London: George Allen and Unwin LTD, 1977.

ROSSIE, JONATHAN G. The Politics of Command in the American Revolution. Syracuse: Syracuse University Press, 1975.

ROSSMAN, KENNETH R. Thomas Mifflin and the Politics of the American Revolution. Chapel Hill: University of North Carolina Press, 1952.

ROTHENBERG, GUNTHER E. The Art of Warfare in the Age of Napoleon. Indiana University Press, 1978.

ROYSTER, CHARLES, A Revolutionary People at War: The Continental Army and American Character, 1775-1783. Chapel Hill: University of North Carolina Press, 1979.

RYERSON, RICHARD A. The Revolution is Now Begun: The Radical Committees of Philadelphia, 1765-1776.

Philadelphia: University of Pennsylvania Press, 1978.

SEYBOLT, ROBERT F. The Town Officials of Colonial Boston, 1634-1775. Harvard University Press, 1939.

SHY, JOHN. A People Numerous and Armed: Reflections on the Military Struggle for American Independence. New York: Oxford University Press, 1976.

STEDMAN, CHARLES. The History of the Origin, Process and termination of the American War. 2 vols. Dublin, 1794.

STILLE, CHARLES J. Major-General Anthony Wayne and the Pennsylvania Line in the Continental Army. Philadelphia: J.B. Lippencott, 1893.

STRYKER, WILLIAM S. Battles of Trenton and Princeton. Cambridge: The Riverside Press, 1898.

SYRETT, DAVID. Shipping and the American War, 1775-1783: A Study of British Transport Organization. New York: Oxford University Press, 1970.

TRUSSELL, JOHN B.B., JR. Birth Place of an Army: A Study of the Valley Forge Encampment. Harrisburg: Pennsylvania Historical and Museum Commission, 1976.

TUSTIN, JOSEPH. Diary of the American War: A Hessian Journal, Captain Johann Ewald. New Haven: Yale University Press, 1979.

WARD, CHRISTOPHER. The War of the Revolution. John R. Alden, ed. 2 vols. New York: Macmillan Co., 1952.

WARD, HARRY M. The Department of War 1781-1795. Pittsburgh: University of Pittsburgh Press, 1962.

WILLCOX, WILLIAM B. Portrait of a General: Sir Henry Clinton in the War of Independence. New York: Alfred A. Knopf, 1964.

WRIGHT, JOHN W. Some Notes on the Continental Army. Vails, Gate, New York: Temple Hill Association, 1975.

WRIGHT, ROBERT K., JR. The Continental Army. Washington: G.P.O., 1983.

III. Dissertations

NUXOLL, ELIZABETH M. "Congress and the Munitions Merchants: The Secret Committee of Tarde During the American Revolution, 1775-1777," Ph.D. dissertation, City University of New York, 1979.

PARKER, KING L. "Anglo-American Wilderness Campaigning 1754-1764, Logistical and Tactical Developments," Ph.D. dissertation, Columbia University, 1970.

SALAY, DAVID L. "Arming for War: The Production of War Material in Pennsylvania for the American Armies During the Revolution," Ph.D. dissertation, University of Delaware, 1977.

WOLF, RICHARD I. "Arms and Innovation: The United States Army and the Repeating Rifle, 1865-1900," Ph.D. dissertation, Boston University, 1981.

WRIGHT, ROBERT K., JR. "Organization and Doctrine in the Continental Army, 1774-1784," Ph.D. dissertation, College of William and Mary, 1980.

IV. Magazine Articles

BROOKS, CLEANTH. "In Search of the New Criticism," The American Scholar. Winter, 1983/84.

CARP, E. WAYNE. "The Origins of the Nationalist Movement of 1780-1783: Congressional Administration and the Continental Army," Pennsylvania Magazine of History and Biography. CVII, No. 3, July 1983.

CUNLIFFE, MARCUS. "How Independence was signed, sealed and then delivered," Smithsonian. Vol. 14, No. 6, September 1983.

JOHNSON, KEACH. "The Genesis of the Baltimore Ironworks," Journal of Southern History. Vol. XIX, May 1953.

JONES, JAMES T., and ELTING, JOHN R. "The Regiment of Artillery Artificers (Flower's Artillery Regiment), 1777-1783," Military Collector and Historian. Vol. XXVII, No. 2, Summer 1975.

LEMISCH, JESSE. "Jack Tar in the Streets: Merchant Seaman in the Politics of Revolutionary America," William and Mary Quarterly. Vol. XXV, 1968.

MAXWELL, WILLIAM. Letter to the Governor of New Jersey, 14 June, 1780. Historial Magazine. Vol. 111, No. 6, 1859.

NAU, IRENE D. "The Iron Plantations of Colonial New York," New York History. Vol. XXXIII, January 1952.

REYNOLDS, DONALD E. "Ammunition Supply in Revolutionary Virginia," The Virginia Magazine of History and Biography. Vol. 73, No. 1, January 1965.

TUCKER, SPENCER C. "Cannon Founders of the American Revolution," National Defense. Vol. LX, July-August 1975.

YORK, NEIL L. "Clandestine Aid and the American Revolutionary War Effort: A Reexamination." Military Affairs, Vol. XLIII, No. 1, February 1977.

V. Newspapers

The Sunday Baltimore Sun, March 13, 1927 and April 8, 1928.

New York Times, March 6, 1984.

VI. Other Sources

A. Oral Communications

BAIER, CHARLES. Supplied information on the effects of Mercury poisoning.

BROWN, WILLIAM. National Park Service, supplied information on weapons nomenclature.

SEIDEL, JOHN L. Doctoral candidate, University of Pennsylvania. Supplied information on he Pluckemin Archaeological Project.

TOMMELL, ANTHONY W. U.S. Marine Corps. Museum. Supplied information on musket markings.