

THE SCHOOL OF EXPERIENCE:  
GEORGE W. GOETHALS, PROFESSIONAL DEVELOPMENT, AND REFORM  
IN THE U.S. ARMY, 1876-1907

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## **ABSTRACT**

Rory M. McGovern: The School of Experience: George W. Goethals, Professional Development, and Reform in the U.S. Army, 1876-1907  
(Under the direction of Joseph T. Glatthaar)

In the culminating achievements of a lengthy U.S. Army career, George W. Goethals completed the Panama Canal and managed the effort to sustain over two million soldiers abroad during the final year of World War I. At the outset of that career, neither he nor the Army was prepared to accomplish these missions. This thesis studies not only Goethals's life and career up to 1907 when he was ordered to Panama, but also the Army's reforms, methods of developing rising officers, and attitudes about formal training and education during that period. Ultimately, it finds that Goethals's career was shaped by a small amount of training and the interplay of his own talent, personal connections, and luck. It also suggests that prevailing attitudes about training and education helped create an institutional culture that was at odds with structural reforms implemented by Secretary of War Elihu Root after the Spanish American War.

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## LIST OF ABBREVIATIONS

ADAH	Alabama Department of Archives and History, Montgomery, Alabama
CCNY	City College of New York Archives and Special Collections, New York, New York
LC	Manuscript Division, Library of Congress, Washington, D.C.
NARA I	National Archives and Records Administration I, Washington, D.C.
NARA II	National Archives and Records Administration II, College Park, Maryland
RG	Record Group
USMA	United States Military Academy Special Collections and Archives, West Point, New York
VMI	Virginia Military Institute Archives, Lexington, Virginia

## INTRODUCTION

In 1922, journalist Samuel Crowther interviewed George W. Goethals, who had spent the previous three years adjusting to civilian life after retiring from the United States Army. In the culminating achievements of a thirty-nine year military career, Goethals built the Panama Canal and successfully repaired and managed the War Department's dysfunctional logistics system during World War I. Success in Panama had made Goethals somewhat of a celebrity, and enterprising reporters like Crowther would, from time to time, seek interviews with the famed engineer to produce articles that would appeal to an interested national audience. Hoping to explore the challenges associated with building the Panama Canal, Crowther was perhaps a little frustrated when the retired major general observed, "The hardest task I ever had . . . was a bridge that I built over the Spokane River . . . when I was a second lieutenant in the Engineering Corps . . . For I never had built a bridge, and I did not know much about bridge building."<sup>1</sup>

The Army in the nineteenth century was an institution that did not actively develop its leaders. Rather, it gained them by a fortunate combination of circumstances. Those who did grow to become talented officers and leaders usually benefitted, at least to some extent, from occasional service with high-quality mentors who took seriously their implied duty to nurture and challenge junior officers of demonstrated potential. But for the most part, skilled leaders developed largely on their own accord, combining natural talents with exceptional abilities to

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<sup>1</sup> Samuel Crowther, "Don't Fear to Attempt a Thing Just Because it Looks Big," *American Magazine*, January 1922, 93.

learn and apply lessons derived from previous experiences. As in Goethals's case as a young lieutenant in 1882, the Army was an institution that could identify a bridge that needed to be built and send an officer utterly lacking expertise and experience to handle the task, either completely unaware of the officer's lack of qualifications or confident that the officer would somehow eventually figure it out.

Although the Army trusted that officers would learn and develop through personal experiences, it did very little to control or standardize officers' careers in order to ensure some level of parity in the type and quality of experiences from which its officers were expected to learn. Policies and procedures regulating the process by which officers were assigned to different duties throughout their careers were relatively unregulated and highly dependent upon the values and attitudes of the individuals who wrote the orders. Beyond this, officers' careers were shaped to a very small degree by formal, standardized training. More important in determining any given officer's career trajectory was the interplay of that officer's talent, luck, and personal connections.<sup>2</sup>

The lack of career standardization and absence of systems of professional development have helped lead many who have studied the history of the United States Army to conclude that it was not a profession until reforms in the early twentieth century established a rationalized central organization to develop plans and coordinate efforts across the institution, and a formal system of professional development to produce competent, well-trained officers capable of leading at the most senior levels within the institution. Adherents of this school of thought have

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<sup>2</sup> The career patterns of nineteenth-century officers are well developed in Edward M. Coffman, *The Old Army: A Portrait of the American Army in Peacetime, 1784-1898* (New York: Oxford University Press, 1986), 42-103 and 215-286.

referred to the last decades of the nineteenth century as a “Military Renaissance” in which a small body of far-sighted reformers emerged to help start a period of professionalization. According to this interpretation, the Army began to move out of its pre-professional dark ages with individual initiatives that collectively helped set conditions for truly transformational reforms during Elihu Root’s tenure as Secretary of War from 1899 to 1904. This school of thought views the Root reforms as a sharp line of demarcation separating the “old Army” from the new.<sup>3</sup>

Such an interpretation is founded upon modern conceptions of professions and professionalism. It is generally agreed that there are several key characteristics that all professions share. Professions provide stable and full-time employment for practitioners who regard their occupations as a lifelong calling. They are systematically organized to control recruitment, set performance standards, provide formal professional education for their practitioners, and sustain themselves by generating capable leaders and managers. They also possess a service orientation that values the needs of the population on whose behalf the service is provided and specified standards of competence above all else. In short, the most essential characteristics of a profession are a unique corporate culture, a sense of responsibility, an ability to sustain itself, and expert mastery of a distinct body of knowledge that continuously expands by virtue of research and experience within the profession.<sup>4</sup> A critical aspect of a profession,

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<sup>3</sup> This thesis was first formulated in William A. Ganoe, *The History of the United States Army* (New York: Appleton, 1924). In essence, it has been subsequently ratified, although with noticeably different interpretations of the principal drivers and scope of reform, in Walter Millis, *Arms and Men: a Study in American Military History* (New Brunswick, NJ: Rutgers University Press, 1986) [The first edition was published in 1956]; Russell F. Weigley, *History of the United States Army*, Enlarged edition (Bloomington, IN: Indiana University Press, 1984) [The first edition was published in 1967]; James L. Abrahamson, *America Arms for a New Century: The Making of a Great Military Power* (New York: Free Press, 1981); Coffman, *The Old Army*; and Edward M. Coffman, *The Regulars: The American Army, 1898-1941* (Cambridge, MA: Belknap Press, 2004).

<sup>4</sup> This has been drawn from conceptions and definitions of a profession from Paul Starr, *The Social Transformation of American Medicine: The Rise of a Sovereign Profession and the Making of a Vast Industry* (New York: Basic



then, is a system of education and development that transmits specialized knowledge to its newer members, institutionalizes and distributes throughout the profession advances in knowledge based on new developments from the field, and actively trains successful practitioners for higher levels of responsibility within the profession.

There is, however, a danger in evaluating degrees of professionalism in the past by the standards of modern conceptions of professionalism. Some scholars have rightly argued that soldiers of earlier times were indeed professionals. They point out that the original meaning of “profession” was an occupational group to which one professed to belong. In the eighteenth and nineteenth centuries, this central identity was most commonly expressed by continuous self-education, and one’s dedication to a profession was measured by degrees of personal identification and self-study.<sup>5</sup> Although it lacked robust educational and developmental systems and institutions beyond the United States Military Academy at West Point, the Army of the nineteenth century had important professional features, not least of which being that its career officers strongly identified themselves with the Army and its culture and frequently searched for opportunities to learn more about their profession.<sup>6</sup>

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Books, 1982), 15; Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, MA: Belknap Press, 1957), 8-10, Allan R. Millett, *The General: Robert L. Bullard and Officership in the United States Army, 1881-1925* (Westport, CT: Greenwood Press, 1975), 3-4; Timothy K. Nenner, *The Leavenworth Schools and the Old Army: Education, Professionalism, and the Officer Corps of the United States Army, 1881-1918* (Westport, CT: Greenwood Press, 1978), 5-6.

<sup>5</sup> See Ira D. Gruber, *Books and the British Army in the Age of the American Revolution* (Chapel Hill, NC: University of North Carolina Press, 2010), 3-64; Don Higginbotham, *George Washington and the American Military Tradition* (Athens, GA: University of Georgia Press, 1984); and Starr, 30-78.

<sup>6</sup> William B. Skelton, *An American Profession of Arms: the Army Officer Corps, 1784-1861* (Lawrence, KS.: University Press of Kansas, 1992), 107-362. The Army of the nineteenth century was not completely devoid of attempts to develop systems of education and development beyond West Point. Examples include the Artillery School of Practice from 1824-1828 and 1857-1861, the Infantry School of Practice from 1827-1828, and schools of application for the Corps of Engineers, Signal Corps, and Artillery in 1866-1868. With the exception of the latter three schools, these were temporary developments. See Coffman, *The Old Army*, 96-97 and 274; and Skelton, *An American Profession of Arms*, 248-254.

This was not a significant departure from the general state of professions in the United States at the time. For most of the nineteenth century, American society frowned upon consolidated authority of any kind and resisted the broad establishment of autonomous professions. Social views on professionalism and specialization began to change radically late in the century as changes wrought by mass industrialization complicated the way of life of most individuals and groups within American society. As complete self-reliance became increasingly less feasible, acceptance of professional specialization and consolidated professional authority grew significantly. The late 1870s and beyond brought the rise of leading professional associations such as the American Medical Association and the American Bar Association, as well as standardization and reform in professional education and training within the fields of medicine, law, social work, education, and journalism. Social acceptance of specialization also set conditions for business associations, trade unions, and agricultural associations to become more popular and more commonplace.<sup>7</sup> Taking these factors into consideration, it appears that the subsequent period of reform in the U.S. Army that many scholars have referred to in terms of “professionalization” was not the rise of professionalism, but the gradual transition from a conception of professionalism based on personal identity and self-study to one based on formal training and education.

Reflecting the trends of the society they came from and served, officers began to agitate for significant reform in the late nineteenth century. As businesses, railroads, and municipal governments responded to the demands of industrialization and urbanization by creating more scientific systems of management and organization, key Army leaders, up to and including

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<sup>7</sup> Starr, 17-21 and 79-179; Michael McGerr, *A Fierce Discontent: The Rise and Fall of the Progressive Movement in America, 1870-1920* (New York: Oxford University Press, 2003), 128-129, and Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill and Wang, 1967), 113-127.

Commanding General William T. Sherman, realized that innovations in tactics, principles of military organization, and technology created complex challenges in warfare that would demand a more rationally organized and better-trained institution. Accordingly, a number of institutional reform initiatives flourished in the late nineteenth century, including the establishment of the School of Application for Infantry and Cavalry at Ft. Leavenworth in 1881, the emergence of professional associations and journals within the various branches of the Army, and reform of the promotions system to include qualifying examinations for all eligible junior officers.<sup>8</sup>

The reformist impulse grew stronger in light of the waning operational requirements of the frontier, which had for more than a century commanded the bulk of Army's attention and resources. As the United States consolidated its control of the West in the late nineteenth century, military leaders and civilian policymakers began to view the role of the Army differently. Without a frontier to police, key figures came to believe that the proper role of the Army in peacetime was to prepare for war. The Army began to close some of its smaller outposts and consolidate larger units on the same bases. It began to conduct training maneuvers with large concentrations of troops in 1885. Lessons learned from these maneuvers as well as from recent European conflicts demonstrated that the Army needed to adapt in order to better manage the complexities of modern warfare. But the various reforms of the 1880s and 1890s

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<sup>8</sup> On late-nineteenth century initiatives, see Coffman, *The Old Army*, 278-281; Walter Millis, *Arms and Men: a Study in American Military History* (New Brunswick, NJ: Rutgers University Press, 1986), 139; Nenner, 3-7 and 21-31; and Russell F. Weigley, *History of the United States Army*, Enlarged edition (Bloomington, IN: Indiana University Press, 1984), 273-281. On organizational reform and scientific management theories, see Wiebe, 133-163 and Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Belknap Press, 1977), *passim*. On rising interest in scientific management theories as they could be applied to warfare in the industrial age, see Brian M. Linn, *The Echo of Battle: The Army's Way of War* (Cambridge, MA: Harvard University Press, 2007), 7-9 and 64-67, and Millis, 137-139. The interpretation that professional reform in the Army developed within the context of changing social attitudes toward professions during the Gilded Age and Progressive Era is consistent with interpretations offered by Dr. Coffman and Dr. Nenner. For an alternate interpretation that professional reform developed independently of society, and was in fact was a product of the Army's isolation from society, see Weigley, 265-292, and Huntington, 227-237.

were a somewhat haphazard collection of individual initiatives, often formidably opposed by older officers commissioned directly from civilian life before and during the Civil War, rather than a concentrated and coordinated system of reform intended to fundamentally transform the Army as an institution.<sup>9</sup>

Throughout the last two decades of the nineteenth century, calls for professional reform grew into a cacophony. Not long after the Progressive Era's reforms began to sweep the country, Secretary of War Elihu Root harnessed and provided direction to the reformist trend within the Army and implemented his far-reaching program of reform between 1899 and 1903. Among structural changes to the Army's organization and administration, Root intended for professional development to become a formally institutionalized process, with schools and training programs available to officers at nearly every grade. As recent scholarship has pointed out, however, the fact that the United States Army entered World War I in 1917 only somewhat better prepared than it entered the Spanish-American War in 1898 indicates that when taken as a whole, Root's reforms and the period of reform preceding Root's tenure in office fell far short of achieving a fundamental institutional transformation of the Army.<sup>10</sup>

It would not be until a younger generation of officers – the generation that included George C. Marshall and Dwight D. Eisenhower – rose to the Army's higher echelons that the transformation would be complete and Army officers would reap the benefits of a modern profession with institutions designed to train and develop its leaders to meet the challenges of

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<sup>9</sup> Coffman, *The Old Army*, 215-283; Abrahamson, 1-62.

<sup>10</sup> See Daniel R. Beaver, *Modernizing the American War Department: Change and Continuity in a Turbulent Era, 1885-1920* (Kent, OH: Kent State University Press, 2006) and Jason Patrick Clark, "The Many Faces of Reform: Military Progressivism in the U.S. Army, 1866-1916" (PhD diss., Duke University, 2009).

future contingencies.<sup>11</sup> The wide space of time between the implementation of Root's reforms and the realization of the promises they offered suggests that there is something that is not yet understood about the dynamics of reform in the Army in the late nineteenth and early twentieth centuries. The notion that the transformation was not complete until a new generation of officers rose to higher rank and higher levels of authority in the aftermath of a crisis in the form of World War I indicates that the missing piece of the puzzle is related to the culture of the officer corps during the long period of reform.

It would be useful, then, to closely examine the formative experiences of a generation of officers whose careers spanned the vast majority of the reform period, from the last decades of the nineteenth century until the close of World War I. The generation of officers that entered the Army between 1870 and 1890 most readily meets this description. It included such well-known figures as John J. Pershing, Peyton C. March, Tasker H. Bliss, and Joseph T. Dickman. They were junior officers when individual reform initiatives abounded in the late nineteenth century, captains and majors during the implementation of the Root reforms, and generals during World War I. The following pages examine that generation through the vehicle of the professional development of one of its representative officers, George W. Goethals of the U.S. Army Corps of Engineers.

Because he was an engineer, some may object to the notion that Goethals can be considered a representative officer of his generation. Compared to the rest of the Army, the Corps of Engineers was a relatively small, highly technical branch, and the frequent interactions

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<sup>11</sup> For excellent discussions of the lasting effects of reforms in training and leadership development, see especially Coffman, *The Regulars*, 233-289 and Forrest C. Pogue, *George C. Marshall: Education of a General, 1880-1939* (New York: Viking Press, 1963), 93-269.

with civilians that were part and parcel of its civil engineering projects had the potential to produce a unique subculture of engineer officers isolated from the broader culture of Army officers. At first glance, some of Goethals's experiences seem to reinforce this view. When the class of 1880 graduated from West Point, Goethals was one of only two who were assigned to the Corps of Engineers.<sup>12</sup> Later in life, he would complain that during his service in the Corps of Engineers, some non-engineer colleagues believed that he "was not considered as belonging to the Army, being then dubbed a 'mud digger.'"<sup>13</sup> But one should neither jump to conclusions based on a simple reading of numbers, nor allow the kind of intra-service branch parochialism that is still a part of the Army today to mask the larger picture.

It is true that the Corps of Engineers was smaller and more technical than branches of the line – infantry, cavalry, and artillery. But for Goethals and his fellow engineers, just as it was for line officers, small amounts of training and the interplay of skill, luck, and personal connections defined career trajectories.<sup>14</sup> In fact, the single major difference was that line officers were subject to even less formal training than engineer officers, who received such little formal training, as will be shown, that they considered it to be a relatively insignificant component of professional development.

Furthermore, the civil aspects of the mission of the Corps of Engineers did not isolate its officers from the mainstream Army officer culture. Engineers like Goethals still weighed in on

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<sup>12</sup> U.S. Department of War, *Annual Reports of the War Department*, 46<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1880, House Executive Document 2, vol. II, Part 1 (Washington, DC: Government Printing Office, 1880), 1.

<sup>13</sup> George W. Goethals to George H. Morgan, February 6, 1925, Folder 40, George W. Goethals Papers, Library of Congress, Washington, DC.

<sup>14</sup> For a good example of professional development of a highly successful line officer of Goethals's generation, see Edward M. Coffman, *The Hilt of the Sword: The Career of Peyton C. March* (Madison, WI: University of Wisconsin Press, 1966), 1-51.

the Army's professional debates and reforms of the day, mixed well with their colleagues from the line during war or when assigned to continental departments during peacetime, and were integrated into both the General Staff and the newly institutionalized military education system after 1903. This preserved not only their identity as Army officers, but also their acceptance within a larger community of Army officers. As one of his friends and colleagues remembered shortly after Goethals's death, "throughout his life he was their leader and the center about which the members of the class gathered whenever they held a reunion."<sup>15</sup> Therefore, in evaluating experiences of and attitudes toward professional reform and professional development, Goethals cannot be disqualified as a representative officer of his generation simply because he was an engineer.

George W. Goethals graduated from West Point in 1880, when the Army was entering the early stages of this transformation. He served until 1919 and retired at the rank of major general, having built the Panama Canal and having led the War Department's logistics efforts during World War I. Reared in the "old Army" under an informal, learn-by-doing approach to professional development, Goethals went on to help implement the Army's new system of professional military education under Secretary Root and then rose to help lead the Army through World War I, the first major test of Army systems after the Root reforms. He individually experienced the entire course of Army reform and transformation before and during the Progressive Era.<sup>16</sup>

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<sup>15</sup> Gustav J. Fiebeger, "George Washington Goethals," *Fifty Ninth Annual Report of the Association of Graduates of the United States Military Academy at West Point, New York, June 8, 1928* (Saginaw, MI: Seeman & Peters, 1929), 127.

<sup>16</sup> Joseph Bucklin Bishop and Farnham Bishop, *Goethals: Genius of the Panama Canal* (New York: Harper & Brothers, 1930). This is the only existing book-length biography of George W. Goethals. Produced two years after

Goethals's development as a junior officer is therefore of particular interest. It is not only the story of how one leader grew and developed within a changing institution, but also of how the institution itself changed. He was not born with the requisite knowledge and skills to build the Panama Canal and sustain an expeditionary force of over two million soldiers deployed across the Atlantic Ocean. Nor did the Army have any established systems or infrastructure to do so at the beginning of his career. He developed the necessary skills at the same time that the Army developed the capabilities and systems needed to meet these challenges.

Typical of the times, Goethals learned these skills largely through practical experience rather than through formal and standardized systems of professional development. In the process, he came to place great value in learning by experience, something he would describe in 1922 as "the only school that is worth anything."<sup>17</sup> Goethals was part of a generation of officers that bridged the gap between the "old Army" and the new, and between two very different approaches to professional development. Yet change did not then, as it does not ever, happen in a vacuum. Those who would implement the change would do so in terms of old concepts that they knew well and still believed to be sound. The generation that built the bridge between the "old Army" and the new as the nineteenth century gave way to the twentieth would do so with familiar tools.

This is the missing piece of the puzzle. The culture of the Army officer corps of the late nineteenth and early twentieth centuries diverged from the spirit of the reforms it implemented. Elihu Root demonstrated that it is possible to transform the Army's organization and systems of

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his death by a father-son pair of journalists whom Goethals befriended in Panama, this work has its limitations, but is a reasonably accurate source for the major outlines of Goethals's life and career.

<sup>17</sup> Crowther, 16.



professional development with a good amount of political acumen and a swift stroke of the pen. Goethals and his generation of officers, however, demonstrated that fundamental institutional transformation cannot be achieved without concomitant change in institutional culture.

## CHAPTER 1

### *Apprentice, 1858-1885*

George W. Goethals was the middle child of John and Marie Baron Goethals. Belgian by birth, John had immigrated to Brooklyn from Amsterdam in 1848; Marie arrived three years later. Although she had also come by way of Amsterdam, they had not met prior to Marie's arrival in Brooklyn. The two married and settled into a house on State Street in Brooklyn, with John having found secure employment as a carpenter in a well-established shop across the East River on 9<sup>th</sup> Street in New York. In 1856, John and Marie Goethals received full American citizenship and welcomed their first child into the world, a boy named John, after his father. George Goethals was born at their home in Brooklyn two years later, on June 29, 1858. A baby girl named Annie was born two years later, completing the recently established Brooklyn branch of the Goethals family.<sup>1</sup>

Goethals led an unexceptional childhood. He grew up in a working-class neighborhood in Brooklyn, with his older brother as his closest playmate. Young George was somewhat introverted, a trait that he never quite outgrew, and appears to have for the most part followed his

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<sup>1</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 1; and Bishop and Bishop, 27. Very little is known about Goethals's early family life. No correspondence between Goethals and his parents or siblings survives today. The relationship was in all likelihood estranged at some point in Goethals's early adulthood, possibly shortly after George entered the Army, when John and Marie moved with Annie to California, where they died in 1888 and 1899, respectively. In later years, George refused to speak to interviewers about his family and childhood, and Annie refused to speak to interviewers about George. George's older brother John granted one lengthy interview to *The Brooklyn Daily Eagle*, in which he remembers their childhood fondly and displays no hostility or ill-will toward his brother.

older brother's lead in their youthful adventures around Brooklyn. He displayed a boyish fascination with the local volunteer fire company and with the soldiers encamped at nearby City Park and Fort Greene during the Civil War, who passed at least some of their time by arming the Goethals children with sticks and drilling them. There is no evidence that John Goethals served in the military during the war, and the war itself had little impact on the lives of the rest of the Goethals family.<sup>2</sup>

Along with his brother, Goethals began his formal education in the fall of 1864 at a public school near their home in Brooklyn. At school, he was studious enough to satisfy his parents, but frequently demonstrated a penchant for mischief. Because they were kept after school so often, George and his brother John cut holes in the fence surrounding the school yard so they could slip away during the noontime recess to eat dinner at home on days they misbehaved in the morning and already knew they would be punished and kept late after school. At times the punishment would be corporal, but this did not keep the Goethals boys from acting out. "We had a theory in those days," recalled John, "that a short hair in the palm of the hand would keep the strap from hurting. The great difficulty was to keep the hair in place."<sup>3</sup>

In 1868, the Goethals family moved across the East River to a home on East Fourth Street near what is now Manhattan's East Village so the elder John Goethals could be closer to work and avoid the inconvenience and occasional hazards of a daily commute by ferry. George was placed in Public School No. 15 to continue his education, now one grade behind his brother John due to his age. At Public School No. 15, Goethals matured into a more serious student. He caught the attention of Nathan P. Beers, the school's headmaster. Seeing promise in George

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<sup>2</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 1.

<sup>3</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 1.

Goethals, Beers advanced him ahead a full year, back into the same class as his brother John, and kept a close eye on his progress.<sup>4</sup>

Young George Goethals did not begin to become a more serious student out of any newly discovered love of learning. Instead, it had much to do with ambition. According to his brother John, “At that time, George had an idea that he wanted to be a lawyer, and he studied hard.”<sup>5</sup> Marie Goethals had always worked to stoke the fire ambition in her children, and in their friends for that matter. A childhood friend of the Goethals boys later recalled with reverence more than a half-century later that Marie would not only foster and encourage her children’s goals, but also urged him, whenever she saw him, to work hard and keep pursuing his dream of attending the U.S. Naval Academy.<sup>6</sup>

Her efforts began to bear fruit as her children became adolescents and young teenagers. Both George and John did well enough in school to place lofty goals within reach. Though driven, Goethals was not focused in his ambitions. Towards the end of his grammar school days, he abandoned his legal ambitions and began to dream of being a doctor. But it was not to be. John also had designs on the medical profession, and the family could only afford to fund one son’s medical training.<sup>7</sup> After graduating in 1872 at the age of fourteen, Goethals would instead spend his summer working as a cashier and bookkeeper in a fruit and vegetable market, then matriculate with the entering class at the City College of New York, which was then free for

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<sup>4</sup> “Goethals, Canal Builder, a Brooklyn Boy,” *Brooklyn Daily Eagle*, October 12, 1913, 2.

<sup>5</sup> “Goethals, Canal Builder, a Brooklyn Boy,” *Brooklyn Daily Eagle*, October 12, 1913, 2.

<sup>6</sup> Bishop and Bishop, 28.

<sup>7</sup> Thomas Goethals interview by author, Vineyard Haven, MA, December 21, 2012.

male residents of the city who had attended public school in the city for at least twelve months, and could pass college's entrance examination.<sup>8</sup>

Goethals applied for admission to City College and took its entrance examination in June 1872. The exam was designed to test applicants' knowledge and aptitude in spelling, reading, writing, arithmetic, English grammar, geography, U.S. history, and algebra. The shy fourteen-year-old must have been nervous as he prepared to be examined and judged; he allowed the registrar to mistakenly record his name as "Goethals, George Washington" without objection or correction, if he had even noticed it in that moment. He had actually been christened George William Goethals, but Washington stuck with him for the rest of his life and into posterity. Goethals may not have even been aware of the error until he arrived at West Point. But as he later explained, after the Army knew him as George Washington Goethals, he had "never seen fit to have the records of the War Department changed, as it requires an unnecessary amount of red tape."<sup>9</sup>

Goethals's performance on the entrance examination was exceptionally unexceptional. He fared well enough to be admitted, but not so well as to stand out in any significant way. Comparatively, he received a low, but not deficient score in English grammar; average scores in writing, arithmetic, U.S. history, and algebra; and high scores in spelling, reading, and geography.<sup>10</sup> George Goethals had a strong intellect, as Nathan Beers had previously

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<sup>8</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 2; for City College's requirements see "Twenty-Fourth Annual Register of the College of the City of New York, 1872-1873," CCNY, 20-21.

<sup>9</sup> For the initial mistake, see Applicant #118, "Applicants for Admission to the College, June 1872," in Admission 1867-1873 book, Box 9, NYCC Office of the Registrar, CCNY. For Goethals's subsequent explanation, see George W. Goethals to E.B. Barnes, November 13, 1912, Container 17, George W. Goethals Papers, LC.

<sup>10</sup> Applicant #118, "Applicants for Admission to the College, June 1872," in Admission 1867-1873 book, Box 9, NYCC Office of the Registrar, CCNY.

recognized, but was not naturally brilliant or gifted. He would have to work hard to achieve any greatness inside or outside of the classroom. Ambition had motivated him to become more studious during his time at Public School No. 15, yet his ambition had perhaps not been quite consistent or focused enough to motivate him to reach his full potential.

Although Goethals's sense of ambition never diminished while at City College, his goals continued to fluctuate. Consistently above average, his academic performance reflected this lack of focus. Early in his time at City College, Goethals gave serious consideration to a career as a naval officer and directed his efforts toward preparing for admission to the U.S. Naval Academy. Accordingly, he performed remarkably well in his studies during his introductory and freshman years, finishing his introductory year ranked thirty-first out of a class of 158, and then ranked eleventh out of a class of 104 at the end of his freshman year.<sup>11</sup> After receiving word from the Secretary of the Navy that there would be no vacancies for midshipmen from his district, Goethals redirected his ambitions toward going into business. On at least two occasions, he was prepared to drop out of City College to pursue potential business opportunities, but ultimately yielded to his father's wishes that he continue his studies. Goethals's academic performance suffered somewhat from this ambivalence. He finished his sophomore year ranked twenty-fourth out of a class of seventy-five.<sup>12</sup>

Although he certainly showed potential, Goethals's collegiate career through 1875 was generally unremarkable, a fact that was noticed and commented upon by his City College

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<sup>11</sup> At that time, City College followed a five-year curriculum, with the first year being the introductory year and the second, third, and fourth years being the freshman, sophomore, junior, and senior years, respectively. See "Twenty-Fourth Annual Register of the College of the City of New York, 1872-1873," Annual Registers, CCNY, 11-15.

<sup>12</sup> Goethals's changing ambitions are outlined in "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 2; his academic standing during his introductory, freshman, and sophomore years can be found in the June 1873, July 1874, and June 1875 Merit Rolls in Box 3 – 1870-1876, Merit Rolls, CCNY.

colleagues many years later. One classmate remembered Goethals only as a “quiet, reserved, almost shy boy” who “was one of the group that tried for a high stand.”<sup>13</sup> Another remembered Goethals as “rather quiet and reserved, undemonstrative, and not a brilliant or exceptional student; just one among many.”<sup>14</sup> More tellingly, a third classmate declared, “My recollections of George W. Goethals at the College include nothing salient. He was an average student, just one of us, without any special distinction.”<sup>15</sup>

As fall turned to winter in 1875, Samuel Sullivan Cox, the Democratic congressman representing New York’s 6<sup>th</sup> District, announced that his district had a vacancy at West Point due to his previous nominee’s academic failure. The news immediately piqued Goethals’s interest. As the son of an immigrant carpenter, however, Goethals had no strong political connections to help him secure the nomination. He sought advice from his old principal, Nathan Beers, who had taken a keen interest in Goethals from an early age at Public School No. 15. Beers was not only happy to help, but was in an excellent position to do so.<sup>16</sup>

The maxim that all politics are local was perhaps never more true than it was in New York City in 1875. Nathan Beers had connections with one of his school’s trustees by the name of Miebling and a coroner named Henry Waltman, who together constituted the essential political power in the Cox’s district. Beers pressured Mr. Miebling, who in turn took Goethals’s case to Waltman. Here Goethals’s Army career almost failed to launch, as the coroner had

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<sup>13</sup> “Statement of Leigh H. Hunt, ’77,” undated, George W. Goethals File, CCNY.

<sup>14</sup> Frank H. Gilbert to Donald A. Roberts, March 3, 1912, George W. Goethals File, CCNY.

<sup>15</sup> A.H. Man to Donald A. Roberts, March 31, 1928, George W. Goethals File, CCNY.

<sup>16</sup> “Goethals, Canal Builder, a Brooklyn Boy,” *Brooklyn Daily Eagle*, October 12, 1913, 2. Beers’s critical role in obtaining the nomination for Goethals is also indicated in George W. Goethals to N.P. Beers, May 1, 1876 and O.B. Ackerly to George W. Goethals, December 17, 1912; both found in Container 18, George W. Goethals Papers, LC.

already promised the nomination to his nephew. The nephew, however, was an only child with a mother who was aghast at the idea of sending her son into the Army. She successfully persuaded him to decline the nomination. Beers and Miehlung renewed their efforts on Goethals's behalf. Henry Waltman relented and sent word to "Sunset" Cox that he had decided that Goethals should have the nomination. Mr. Waltman even took the trouble to fill out the nomination papers himself and forward them to Cox, who waived his usual competitive examination process and officially extended the nomination to Goethals on April 17, 1876. Nominated to matriculate with West Point's class of 1880, George Goethals's military career began as it would advance at several key points in the future, through the timely intervention of interested and influential parties.<sup>17</sup>

Wasting no time, Goethals reported to West Point and was one of 73 cadets to pass the medical and academic examinations required for admission. Another four would be added to the rolls later in the summer.<sup>18</sup> He and his classmates were immediately processed and sent to begin their military training at their first annual summer encampment at West Point.

West Point's most significant military function at that time was to introduce cadets to the military profession. Life at the academy immersed Goethals and like-minded cadets in the military culture and imbued them with a sense of purpose and responsibility and a deep personal

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<sup>17</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 2.

<sup>18</sup> George W. Goethals to N.P. Beers, May 1, 1876, Container 18, George W. Goethals Papers, LC and "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1877," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 23-35. Goethals did not complete his studies at CCNY, but was designated a graduate of the CCNY class of 1877 and granted a Bachelor of Science degree by a special vote of the college faculty in 1922. See S.W. Rudy, *The College of the City of New York: A History, 1847-1947* (New York: The City College Press, 1949), 200.



identification with the Army.<sup>19</sup> Such identification was at the foundation of conceptions of professionalism that had taken root in the early modern era and persisted throughout the nineteenth century, when the Army – reflecting trends in civilian professions such as the medical community – lacked institutional systems of formalized professional development. It was expected that a deeply felt identification with the profession would inspire commitment to it in the form of self-study, which would in turn be perceived as the measure of an officer’s level of professionalism.<sup>20</sup> This unwritten rule from the days of George Washington became a written rule at the end of the nineteenth century, when as part of the Army’s effort to institute a system of annual efficiency reports for its officers, it required each officer to submit a summary of their extracurricular efforts to improve their professional knowledge throughout the course of the year.<sup>21</sup>

There was an ugly side to the socialization process. Hazing of new cadets had been in practice at West Point since at least the 1830s, but had maintained a generally benign and harmless character and was limited only to a cadet’s first summer encampment prior to the Civil War. The postwar years saw a general decline in discipline among the corps of cadets as officers assigned to West Point were disinclined to enforce policies and regulations that seemed petty and trivial in light of their wartime experiences. The consecutive assignments of two weak and ineffective Academy superintendents between 1864 and 1871 only exacerbated this trend. Hazing grew to encompass the entire fourth-class (freshman, or “plebe”) year, and ranged in

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<sup>19</sup> Skelton, *An American Profession of Arms*, 167-180; William B. Skelton, “West Point and Officer Professionalism, 1817-1877,” *West Point: Two Centuries and Beyond*, ed. Lance Betros (Abilene, TX: McWhiney Foundation Press, 2004), 26-35; Coffman, *The Old Army*, 96-103.

<sup>20</sup> Gruber, 23-34; Starr, 18 and 30-112; and Higginbotham, *passim* – with a succinct summary of the professionalism theme on pp. 118-124.

<sup>21</sup> George W. Goethals, “Officer’s Individual Report,” May 24, 1890, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

severity from periodic public humiliation to significant physical violence. Despite the efforts of stronger superintendents, such hazing continued through Goethals's cadet years and beyond, until a congressional investigation in the wake of a cadet's death in 1900 produced legislation barring the worst forms of hazing in 1901.<sup>22</sup>

The immediacy of the sharp change from a civilian to a military existence and the hazing that accompanied it made the transition a harsh experience for all cadets at the time. Although Goethals had as difficult an adjustment to military life as all of his classmates, he adjusted well to life at the academy. Perhaps this was because the competitive environment at West Point and the clear end of a commission as a U.S. Army officer finally provided George with a well-defined goal on which he could focus his ambitions and energies. He emerged from his summer training in a frame of mind that would allow him to reach his full potential in the classroom.

Goethals attended the academy during a time when it was relatively stagnant as an institution of higher education. Significant changes were being implemented elsewhere in higher education, including the transition to the elective system, expansion and diversification of curricula, and adoption of more inclusive and engaging forms of pedagogy. But West Point remained committed to a highly technical curriculum focused on mathematics and science and conducted instruction through rote recitation and frequent grading through which cadets' academic proficiency would be assessed and competitively ranked. This was a conscious decision by the Army and by West Point's leaders, who believed that theirs was the best method

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<sup>22</sup> Stephen A. Ambrose, *Duty, Honor, Country: A History of West Point* (Baltimore, MD: Johns Hopkins University Press, 1966), 219-231; Theodore J. Crackel, *West Point: A Bicentennial History* (Lawrence, KS: University Press of Kansas, 2002), 141-145; Lance Betros, *Carved from Granite: West Point Since 1902* (College Station, TX: Texas A&M University Press, 2012), 22-24; and Donald B. Connelly, "The Rocky Road to Reform: John M. Schofield at West Point, 1876-1881," in *West Point: Two Centuries and Beyond* (Abilene, TX: McWhiney Foundation Press, 2004), 175-178.

to condition cadets' minds to analyze and solve military problems, and that the academic system that produced Generals Grant, Lee, Jackson, and Sherman required no adjustments.<sup>23</sup>

Nevertheless, Goethals excelled academically at West Point. The introduction to the profession that West Point provided led Goethals to identify deeply with the Army and to channel his ambitions toward excelling within West Point's intensely competitive environment and setting early favorable conditions for success as an Army officer. He put all of his energies into his studies. When "lights out" was sounded at ten o'clock each night, Goethals would lie prone on the floor while his roommates draped a large blanket over him, taking care to weigh it down along the edges with books at regular intervals, so he could continue to study by the undetected light of a kerosene lamp well into the night.<sup>24</sup> According to his older brother, their father wrote Goethals to express his concern about too much study at the expense of sleep, "George's reply was that he would not be satisfied to merely plod through his studies, that he was there for work and he was going to do all in his power to come out at the head of his class."<sup>25</sup> Goethals very nearly achieved that goal. He was rated second in his class at the end of every academic year. At the end of his first-class (senior, or "firstie") year, he was still rated second overall, although he was the top cadet in Civil and Military Engineering after achieving a perfect score in that department.<sup>26</sup>

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<sup>23</sup> Ambrose, 191-198; Betros, 2-3 and 18-21; Crackel, 137 and 159-160; and Bishop and Bishop, 42.

<sup>24</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 2; and "Statement of Leigh H. Hunt, '77," undated, George W. Goethals File, CCNY.

<sup>25</sup> "Goethals, Canal Builder, a Brooklyn Boy," *Brooklyn Daily Eagle*, October 12, 1913, 2.

<sup>26</sup> "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1877," 20; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1878," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 16; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1879," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 14; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1880," Official Registers

Goethals also thrived outside of the classroom at West Point. Although he remained somewhat introverted and clung to a long-held fear of public speaking that he would never escape,<sup>27</sup> Goethals began to feel more confident and socially at ease in relationships with his fellow cadets on an individual basis. As he became more socially comfortable during his cadet years, he became very popular. Gustav Fiebeger, a product of West Point's class of 1879 and one of the few close friends that Goethals carried through his entire adult life, left the following recollection of Goethals's personality shortly after his graduation in 1880:

It was not long before we discovered in Goethals the qualities which had made him popular with his class. With a winning personality, he was dignified, yet friendly, modest, but self-confident, honorable and upright, cheerful in disposition, quick at repartee and somewhat sarcastic in a pleasant way, military in carriage and neat in dress, never coarse in language or thought. His loyalty and prompt obedience made him popular with all his commanding officers. His temperament was artistic and his tastes were for the beautiful in art. He loved music, had a fine tenor voice, and thoroughly enjoyed the opera at the old Academy of Music in New York, which many of us attended several nights each week during the season.<sup>28</sup>

Well-liked within the corps of cadets, many of whom referred to him playfully as "Goat," the class of 1880 elected Goethals to be their class president and selected him to design the class ring. Years later, Fiebeger would recall of Goethals's relationship with his classmates that "throughout his life he was their leader and the center about which the members of the class gathered whenever they held a reunion."<sup>29</sup>

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of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 12 and 28.

<sup>27</sup> George W. Goethals to Lewis Sayre Burchard, June 11, 1927, George W. Goethals File, CCNY.

<sup>28</sup> Gustav J. Fiebeger, "George Washington Goethals," *Fifty Ninth Annual Report of the Association of Graduates of the United States Military Academy at West Point, New York, June 8, 1928* (Saginaw, MI: Seeman & Peters, 1929), 127.

<sup>29</sup> Quotation from Fiebeger, 127. See also Bishop and Bishop, 40-51. For Goethals's nickname of "Goat," see George H. Morgan to George W. Goethals, August 22, 1911, Container 14, George W. Goethals Papers, LC.

Over two June days at the end of four long years at West Point, Goethals received his diploma from William T. Sherman, then the Army's Commanding General, and was one of only two members of the class of 1880 to be commissioned as a second lieutenant in the Corps of Engineers.<sup>30</sup> While his formal education was over, what he and his contemporaries perceived to be his real military education was about to begin. West Point provided an introduction to the profession and a formal education to its cadets, but only a limited amount of practical military training. Recognizing that the academy did not produce expert practitioners of all its branches, the Army generally entrusted lieutenants' technical training to the units to which they first reported after graduation. The Army experimented with the concept of schools of application – formal schools with standardized curricula to provide branch-specific training to newly commissioned lieutenants – for infantry, cavalry, and artillery in the 1820s, and again for artillery from 1857-1861. These measures proved limited and temporary due to a lack of interest, resources, funding, and in the latter case, the outbreak of the Civil War. Within three years of the war's end, the Corps of Engineers, the Signal Corps, and the Artillery each opened new schools of application. These evolved in concept and content over time, but remained for the most part incomplete experiments when Goethals and West Point's class of 1880 graduated.<sup>31</sup>

After a brief stay at West Point to serve as an assistant instructor of practical astronomy until the next Engineer School of Application class began in the fall of 1880, Goethals made the short trip from West Point to Willets Point, New York, a post occupying 136 acres on a peninsula extending into the Long Island Sound in northern Queens County. Henry L. Abbot, a Civil War veteran with a distinguished record, originally designed the Engineer School of

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<sup>30</sup> Ambrose, 199; *Annual Reports of the War Department*, 46<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1880, vol. II, Part 1, 1.

<sup>31</sup> Coffman, 96-97 and 274; and Skelton, *An American Profession of Arms*, 248-254

Application “with a view to meet the actual needs of young officers resulting from the fact that while admirably trained in the rudiments of their profession . . . they had still much to learn about the use and care of delicate surveying, astronomical, and other instruments in constant use by the Corps of Engineers.”<sup>32</sup>

From such humble conceptual beginnings, Abbot modified the course almost annually until 1885, when it had grown into a two-and-a-half year long curriculum, and was declared complete and ratified by the War Department. At the time Goethals attended, however, the school was slightly less than two years in length. In addition to familiarization with specialized engineering equipment, Goethals conducted extensive study of survey procedures, military reconnaissance, astronomy – Willets Point had a state of the art observatory that would discover a comet in June 1881 – meteorology, field fortifications, military photography, harbor mining, and coastal defense.<sup>33</sup>

While undoubtedly more helpful to Goethals than sending him straight from West Point to his first assignment, much of the material had little immediate relevance for a junior officer. Not much of the course beyond the familiarization with engineering equipment and the instruction in survey and reconnaissance would prove relevant to Goethals’s duties in his first twenty years of service. The Engineer School of Application was still a developing concept, and was the last formal training the Army gave to Goethals, who graduated from the school in the

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<sup>32</sup> Bishop and Bishop, 53; Gustav J. Person, “The Engineer School of Application at Willets Point,” *Engineer* 42 (May-August 2012): 49-50; Quotation from Henry L. Abbot, “Early Days of the Engineer School of Application,” *United States Army Engineer School of Application Occasional Papers*, No. 14. (Washington, DC: Engineer School of Application, 1904), 4.

<sup>33</sup> U.S. Army Corps of Engineers, *Annual Report of the Chief of Engineers to the Secretary of War for the Year 1881*, 47<sup>th</sup> Cong., 1<sup>st</sup> sess., House Executive Document 1, pt. 2, vol. II (Washington, DC: Government Printing Office, 1881), 419-425.

second year of a career that would last nearly four decades. Fortunately for those who came later, the curriculum that the War Department officially sanctioned in 1884 included more practical instruction in civil and military engineering.<sup>34</sup> But these changes came too late to benefit Lieutenant Goethals, who reported for duty on the staff of the Department of the Columbia in November 1882.<sup>35</sup>

Headquartered at Vancouver Barracks in Washington Territory, the Department of the Columbia encompassed all of Oregon, Washington Territory, and the district of Alaska, as well as most of Idaho Territory. Since August 1881, the department was commanded by Brigadier General Nelson A. Miles, who was famous for his campaigns in the Indian Wars, and who would become the Commanding General of the Army by the end of the century.<sup>36</sup> Goethals was fortunate to be assigned to a functioning frontier department, gaining uncommon exposure to Army life outside the Corps of Engineers. In 1883, only ten out of the 103 officers of all ranks in the Corps of Engineers were assigned to commands that included units and soldiers of the line.<sup>37</sup> At the same time, this undoubtedly proved to be a challenging assignment for a young lieutenant whose only previous experiences were in schoolhouse environments at West Point and the Engineer School of Application. As the only engineer officer assigned to the command, he was the senior engineer in the department, and was expected to be the resident expert on all

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<sup>34</sup> Abbot, 35-37.

<sup>35</sup> George W. Goethals, "Annual Report for the fiscal year ending June 30, 1883," October 1, 1883, File 3570, Box 42, Entry 52, RG 77, NARA I, 1.

<sup>36</sup> Robert Wooster, *Nelson A. Miles & the Twilight of the Frontier Army* (Lincoln, NE: University of Nebraska Press, 1993), 133. For general information about the Department of the Columbia, see Walter R. Griffin, "George W. Goethals, Explorer of the Pacific Northwest, 1882-1884," *The Pacific Northwest Quarterly* 62, no. 4 (October 1971): 130-133 and Wooster, chapter 8.

<sup>37</sup> For strength and disposition of Corps of Engineers officers, see U.S. Department of War, *Report of the Secretary of War*, 48<sup>th</sup> Cong., 1<sup>st</sup> sess., 1883, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1883), 3-4.

engineering matters. Goethals had only his own theoretical knowledge to rely upon, and had no mentor to develop him.

On the other hand, Goethals was not entirely lucky to be assigned to serve on the staff of the ever petulant and irascible Nelson Miles. “Always fearful of conspiracies,” a twentieth-century biographer astutely notes, “Miles divided the world into two clearly distinguishable factions: those wise enough to agree with him and those mean-spirited enough to allow their jealousies to affect their judgment.”<sup>38</sup> Surviving service under a commander with an infamously quick temper and legendary ability to bear grudges would be a tall order for any officer. For a new lieutenant finding his way in the Army on his first assignment without the benefit of a mentor, it would prove to be an impossible task.

Things started well enough for Goethals. Miles, who was on leave in Boston and Washington for the first six months of the young lieutenant’s assignment to Vancouver Barracks, had identified regional development to support the expansion of railroads and white settlements at the top of his department’s priorities.<sup>39</sup> A considerable amount of land within the Department of the Columbia had not yet been adequately explored and mapped. As the department’s engineer, Goethals spent much of his time exploring and mapping, particularly in northern Washington and Idaho territories. The bulk of his assignment to Vancouver Barracks was spent in the field on reconnaissance missions and exploration parties, as well as identifying suitable routes for and laying out wagon roads, railroads, and telegraph lines.<sup>40</sup>

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<sup>38</sup> Wooster, 269.

<sup>39</sup> Wooster, 134-135.

<sup>40</sup> See George W. Goethals to Chief of Engineers, May 24, 1883, File 2172, Box 41, Entry 52, RG 77, NARA I; George W. Goethals to Chief of Engineers, May 31, 1883, File 2176, Box 41, Entry 52, RG 77, NARA I; George W. Goethals to Chief of Engineers, May 15, 1883, File 2181, Box 41, Entry 52, RG 77, NARA I; George W. Goethals,



Continuing the work ethic he developed at West Point, Goethals was completely dedicated to his work. His energetic efforts drew the notice of all who observed him, even at the highest levels. Notably, Goethals was tasked with reconnoitering and planning the route for part of General Sherman's tour of the Pacific Northwest in the summer of 1883. Goethals deeply impressed Sherman, who reported to Secretary of War Robert T. Lincoln:

Genl. Miles had intrusted [sic] to Lieut. Goethals, a most intelligent young Engineer officer of the Army, the task of reconnoitering the route, who had done so in advance of our arrival . . . Lieut. Goethals submitted to me . . . his report with sketches, which I found most valuable and accurate, so that I resolved to adhere strictly to his advice though it differed somewhat from my own preference based on the best information at Washington.<sup>41</sup>

Sherman was so satisfied that he told Miles that in his opinion, Goethals was "one of the most promising men in the Army,"<sup>42</sup> and forwarded the maps Goethals prepared to Lincoln so they could be copied and used in the various War Department offices in Washington.<sup>43</sup> Miles expressed his own confidence in Goethals by entrusting him with escorting General Sherman's party for two weeks in August 1883, before ordering him to assist a cavalry detachment in attempting to locate a pass through the Cascade Mountains.<sup>44</sup>

While most of Goethals's duties involved reconnaissance and mapmaking, he also gained limited practice in civil and military engineering while at Vancouver Barracks, principally in site

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"Annual Report for the fiscal year ending June 30, 1883," October 1, 1883, File 3570, Box 42, NARA I; and George W. Goethals to Chief of Engineers, April 1, 1884, File 1450, Box 44, Entry 52, RG 77, NARA I.

<sup>41</sup> William T. Sherman to Robert T. Lincoln, August 30, 1883, Reel 47, William T. Sherman Papers, Library of Congress, Washington, DC. I am indebted to Major J.P. Clark for generously providing me copies of correspondence from Sherman to Lincoln from 1881-1883.

<sup>42</sup> Nelson A. Miles to George W. Goethals, March 11, 1908, Container 7, George Washington Goethals Papers, LC.

<sup>43</sup> William T. Sherman to Robert T. Lincoln, August 30, 1883, Reel 47, William T. Sherman Papers, Library of Congress, Washington, DC.

<sup>44</sup> See Griffin, "George W. Goethals, Explorer of the Pacific Northwest, 1882-1884," 133-139 for an excellent account of this expedition.

selection and planning for the construction of new buildings on post, planning a new post cemetery, and laying roads within the department.<sup>45</sup> In October 1883, the Spokane River washed out the only bridge that gave access to Fort Spokane, home of the 2<sup>nd</sup> Infantry Regiment. Miles hurried Goethals to the site to consult with the regimental commander and build a new bridge as quickly as possible. This was the experience that Goethals later described to Samuel Crowther as “the hardest task I ever had,” in an interview eight years after he completed the construction of the Panama Canal. Relatively unschooled and completely inexperienced in building bridges more intricate than a simple pontoon bridge, and in the unfortunate position of still being the most knowledgeable officer present, Goethals set to work. He quite literally learned on the job how to build a bridge. Goethals would recall in 1922 that “it might not have been hard for a bridge engineer. He would have known exactly what to do. I did not; I had to find out as we went along. I had to read books all night and give orders all day. However, we built the bridge – and on time.”<sup>46</sup>

Goethals entered his second year of duty at Vancouver Barracks glowing with satisfaction over his work and the praise it brought him, unaware that he was soon to experience the perhaps inevitable fall from Nelson Miles’s grace. Since assuming command of the Department of the Columbia, Miles had developed a keen interest in Alaska, unsuccessfully badgering both Secretary of War Lincoln and Congress to appropriate funds for him to organize an expedition to explore its interior. Miles eventually took matters into his own hands.

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<sup>45</sup> George W. Goethals to Chief of Engineers, May 15, 1883, File 2181, Box 41, Entry 52, RG 77, NARA I; George W. Goethals, “Annual Report for the fiscal year ending June 30, 1883,” October 1, 1883, File 3570, Box 43, Entry 52, RG 77, National Archives and Record Administration I, Washington, DC, 20-21; George W. Goethals to Chief of Engineers, April 1, 1884, File 1450, Box 44, Entry 52, RG 77, NARA I; George W. Goethals to Chief of Engineers, July 1, 1884, File 2482, Box 45, Entry 52, RG 77, NARA I.

<sup>46</sup> Crowther, 93. See also Griffin, “George W. Goethals, Explorer of the Pacific Northwest, 1882-1884,” 139.

Inventing the justification of “frequent reports of disturbances of the peace between the whites and Indians in Alaska,” he dispatched a seven-man expedition up the Yukon River led by his aide-de-camp, Lieutenant Frederick Schwatka. Although they did not reveal much that was not already known about the region, Schwatka’s subsequent reports reanimated public interest in Alaska and encouraged Miles to dispatch more expeditions.<sup>47</sup>

Possibly because of his impressive performance reconnoitering for Sherman’s tour, Miles approached Goethals in early 1884 about leading one such Alaskan expedition, a small three-man party. Goethals declined the assignment. Having somehow found the time to begin a courtship and become engaged to Effie Rodman, the daughter of a prosperous whaler from New Bedford, Massachusetts and visiting sister of one of his fellow lieutenants, Goethals had a wedding on the mind. Lucky to have found and successfully wooed an eligible young lady in a remote and barren social setting, Goethals was eager to marry and had no interest in interrupting those plans. The young lieutenant’s refusal enraged Miles. Always fearful of conspiracies and quick to assume ill-intent, it did not take much for Nelson Miles to banish someone from his trusted inner circle. After this incident, Goethals was most definitely on the outside. Miles quickly sent a letter to the Adjutant General requesting Goethals’s relief. The request was promptly forwarded to the Chief of Engineers for consideration, who decided to transfer Goethals to an engineering district in Cincinnati, under the command of Lieutenant Colonel William E. Merrill. The Adjutant General issued the necessary orders, and Goethals departed Vancouver Barracks in September, 1884.<sup>48</sup>

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<sup>47</sup> Wooster, 135-136; and George W. Goethals to Chief of Engineers, May 31, 1883, File 2182, Box 41, Entry 52, RG 77, NARA I. Quotation from Wooster, 136.

<sup>48</sup> This incident is outlined in Bishop and Bishop, 56-58. Although the accompanying letters do not survive in the archives, the Office of the Chief of Engineers recorded receiving a letter from the Adjutant General in March 1884,

His time at Vancouver Barracks provided Goethals with the first practical experiences of his career. He learned much about working with troops of the line, reconnaissance, and mapmaking – skills that would prove useful later, during the Spanish American War. At the same time, he was an inexperienced officer in the unenviable position of being the sole expert on all things related to engineering in the Department of the Columbia. While he proved on more than one occasion to be capable of learning on the job and performing his duties well, he suffered from the absence of a more experienced engineer officer to serve as his mentor. By 1884, Goethals had been an engineer for four years. In that time, he had gained no practical experience in fortification projects and river and harbor improvements to which 53% of the officers in the Corps of Engineers were dedicated when Goethals had first reported to Vancouver Barracks.<sup>49</sup>

In all likelihood, Goethals was blissfully unaware of this deficiency. The problem with entrusting young officers to develop themselves is that they tend to be very unaware of what they do not know. But Goethals would soon find a legitimate teacher. By the sheer stroke of luck of angering Miles to that point that Miles requested his relief at the precise moment a duty position for an engineer lieutenant was opening in Cincinnati, Goethals was about to be assigned to a titan in the field who would not only point out his lack of experience, but would take innovative measures to teach him.

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noting that “Commanding General wants Carter in place of Goethals,” and “Comdg Genl [sic] Columbia wants Carter in place of G- as Engr. Officer,” on pages 73 and 144 in Volume 6, Entry 48, RG 77, NARA I. The recommendation by the Chief of Engineers to transfer Goethals to Cincinnati is found in John Newton to Adjutant General, August 8, 1884, File 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I. On Miles’s personality, see Wooster, 269.

<sup>49</sup> *Report of the Secretary of War*, 48<sup>th</sup> Cong., 1<sup>st</sup> sess., 1883, vol. II, 3-4. River and harbor improvements were far and away the highest priority for the Corps of Engineers at the time. 55 officers out of 103 within the Corps of Engineers were assigned to duties related to such works.

Early in his new assignment with the U.S. Army Corps of Engineers First Cincinnati District, Goethals was tasked to conduct the preliminary examination for a potential river improvement project near New Albany Harbor, Indiana. The young officer dutifully examined the river and its commercial traffic and spoke at length with local landowners. In his report, Goethals wrote, “When the river is high enough to cover the bottom lands, it is stated that the force of the current sweeps over these lands from the mouth of Falling Run to Middle Creek, and it is anticipated that in time the soil will be entirely cut away, and the channel will then run in this direction instead of crossing into the Kentucky shore, as it does now. What the farmers ask for is some protection from erosion.”<sup>50</sup> As Lieutenant Colonel William E. Merrill, chief of the First Cincinnati District, prepared to forward a copy to the Chief of Engineers in Washington, D.C., he drafted a letter to be included with Goethals’s report. “It has been suggested,” he mused, “that there is a probability of the river changing its channel, and making a cut-off through Middle Creek. I cannot see the slightest likelihood of such a change, as the route by way of Middle Creek is as long as the present channel, and there is therefore every inducement for the river to continue through the present open door rather than to batter down the side wall to make a new channel, neither shorter nor straighter than that in which it now flows.” Merrill’s inexperienced subordinate had much to learn about rivers and river improvements.<sup>51</sup>

Before he could be taught to any great extent, Goethals applied for six weeks of leave beginning in late November 1884. He had not taken leave of any kind since September 1882, but as Goethals’s refusal of the Alaskan detail attests, he had personal matters to attend to. With

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<sup>50</sup> Goethals to Lieut. Col. W. E. Merrill, October 11, 1884, quoted in U.S. Department of War, *Report of the Secretary of War*, 49<sup>th</sup> Cong., 1<sup>st</sup> sess., 1885, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1885), 1829-1830.

<sup>51</sup> Merrill to Brig. Gen. John Newton, October 14, 1884, quoted in *Report of the Secretary of War*, 49<sup>th</sup> Cong., 1<sup>st</sup> sess., vol. II, 1885, 1829-1830.

the leave approved, Goethals traveled directly to the Rodman home in New Bedford, Massachusetts, where he and Effie wed on December 3, 1884.<sup>52</sup>

Returning for duty in early January, Goethals found that the First Cincinnati District was an excellent place to learn. Its responsibilities included river improvements along the Ohio River and several of its tributaries – including the Monongahela River in Pennsylvania and West Virginia, the Allegheny River in Pennsylvania, and the Muskingum River in Ohio. Work on the Ohio River demanded the vast majority of the district’s time and resources, so much so that the Chief of Engineers created the Second Cincinnati District in 1880 to take responsibility for several tributaries of the Ohio and relieve some of Merrill’s burden. The engineers on the Ohio were continuing a half-century effort, as Army engineers had been involved in improvement projects on the Ohio since 1824 when Henry Clay included Ohio River projects in his larger “American System,” intending to improve inland commerce by making the river more navigable. At normal stages, navigation was problematic at many points; at lower stages, it was impossible.<sup>53</sup>

Prior to the Civil War, the focus was on maintaining a consistent channel at least thirty inches deep, which would allow easy passage for the shallow-draft steamers commonly used on the river. Engineers busied themselves with dredging channels in some sections of the river and constructing wing dams along river embankments in other parts, attempting to increase the depth of the water by concentrating its flow. They also frequently removed snags in the river caused

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<sup>52</sup> George W. Goethals to Adjutant General, October 31, 1884, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I; Bishop and Bishop, 58.

<sup>53</sup> Leland R. Johnson, *The Ohio River Division, U.S. Army Corps of Engineers: The History of a Central Command*, (Cincinnati, OH: U.S. Army Corps of Engineers Ohio River Division, 1992), 18-21; and Leland R. Johnson, *The Davis Island Lock and Dam, 1870-1922* (Pittsburgh, PA: U.S. Army Engineer District – Pittsburgh, 1985), 5-8.

by the buildup of rocks, trees, and other debris after storms and flood stages. These efforts allowed commerce to flow relatively freely, except during winter months when flows of ice threatened commercial shipping, especially on the uppermost reaches of the river and its northern tributaries.<sup>54</sup>

After the Civil War, the Corps of Engineers became more heavily engaged on the Ohio River. In addition to managing improvement efforts, Congress bought the Louisville and Portland Canal at the Falls of the Ohio near Louisville, Kentucky, and assigned its operation to the Army. Additionally, technology and shipping techniques were rendering old approaches to river improvements obsolete. By 1870, the heyday of shallow-draft steamboats had passed, quickly being replaced by towboats pushing or pulling a system of several interconnected barges. The new barge-towboat system was ideal for transporting bulk goods and commodities by river, but carried a deeper draft. A consistent channel depth of six feet was now needed. Dredging and building wing dams would no longer suffice.<sup>55</sup>

In June 1870, Merrill took charge of what would later become known as the First Cincinnati District. He had graduated at the top of West Point's class of 1859 and saw service in the Civil War shortly thereafter. Wounded and taken prisoner while on a reconnaissance mission early in the war, he continued to serve after his exchange and became the chief engineer for the Union Army of the Cumberland. Reverting from a brevet rank of colonel to a regular Army rank of major after the war, Merrill was assigned to the Mississippi River commission, where he soon gained a reputation as a leading expert on the construction of large railroad bridges over inland waterways. He had an aptitude for solving complex problems in nontraditional ways. This

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<sup>54</sup> Johnson, *The Ohio River Division*, 21-26; and Johnson, *The Davis Island Lock and Dam*, 8-12.

<sup>55</sup> Johnson, *The Ohio River Division*, 26-27; and Johnson, *The Davis Island Lock and Dam*, 12.

aptitude and the need to change the channel along the upper Ohio River from a depth of thirty inches to one of six feet were the major stimuli that produced the Davis Island Lock and Dam. This was the most radical and significant improvement project on the Ohio River in the late nineteenth century, and the project was entering its final year of construction when Goethals reported for duty.<sup>56</sup>

The need for the Davis Island Lock and Dam arose because Pittsburgh was a hostage of its climate. Although its position at the confluence of the Allegheny, Monongahela, and Ohio Rivers imbued it with vast commercial potential that attracted industrialists to the area, the water levels around Pittsburgh dropped sharply during dry weather, often to a depth of mere inches, bringing to a standstill all shipping and river trade. Such dry spells usually lasted for several months, causing seasonal economic downturns that extended downriver to Cincinnati, Louisville, and other burgeoning towns where industries and communities were utterly dependent upon coal shipments from Pittsburgh.<sup>57</sup>

The situation in 1871 was particularly extreme. The Ohio River became prohibitively shallow in May, and did not rise again until the following winter. Coal and goods earmarked for points downriver lingered idly in Pittsburgh's once bustling warehouses. Moreover, coal mined from the Monongahela River Basin that fueled Pittsburgh's factories and plants no longer had a navigable water route to the city's industrial northern district. It now had to be transported from the landings on the Monongahela in convoys of mule-drawn wagons through the heart of downtown Pittsburgh, causing traffic jams and significant damage to city streets not designed to

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<sup>56</sup> Johnson, *The Davis Island Lock and Dam*, 17-18; and *Report of the Secretary of War*, 49<sup>th</sup> Cong., 1<sup>st</sup> sess., 1885, vol. II, 1784-1785.

<sup>57</sup> Johnson, *The Davis Island Lock and Dam*, 2.



bear the weight of such heavy loads. Reacting to what had become an intolerable situation, Pittsburgh's industrial and business leaders, with the active support of businesses and communities down the Ohio River Valley, petitioned the Corps of Engineers to take action to develop a permanently navigable harbor on the Ohio River at Pittsburgh.<sup>58</sup>

Merrill had already been considering ways to canalize the Ohio in order to increase its channel depth to six feet and had come to believe that a system of locks and dams was the appropriate solution. When the petition to develop a harbor at Pittsburgh reached his desk, Merrill proposed to build the first lock and dam in the projected Ohio River system five miles downriver from Pittsburgh, near Davis Island. This drew strong objections from Pittsburgh's coal shippers.<sup>59</sup>

Utterly confused as to why coal shippers would oppose a measure that would ostensibly make shipping easier, Merrill accompanied a coal barge on a trip downriver. He learned that locks are especially problematic to towboats guiding large numbers of barges. A boat with several barges connected by a complex system of chains and cables would have to pause in front of a lock, "break tow" to get all barges through, and pause again on the far side of a lock to reassemble their barges. As the coal fleets could only move downriver on water rises that usually only lasted for three days, forcing the fleet to break tow and pass through a lock one at a time would mean that only one third of Pittsburgh's coal fleet could be used during any given water rise.<sup>60</sup>

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<sup>58</sup> Johnson, *The Ohio River Division*, 26-27; and Johnson, *The Davis Island Lock and Dam*, 2.

<sup>59</sup> Johnson, *The Davis Island Lock and Dam*, 21; and Johnson, *The Ohio River Division*, 26.

<sup>60</sup> Johnson, *The Davis Island Lock and Dam*, 21-22.

Merrill was forced to reconsider his plans. He determined that in order to meet the needs of all parties concerned, he would have to develop a unique lock and dam system with two defining characteristics. First, the locks would have to be of larger dimensions than existed at the time, which would allow single ships and smaller tow-and-barge systems through at any time. Second, the locks would be complemented by not-yet-designed movable dams that could be raised in order to build a navigable harbor upriver from the dam at low water stages, and lowered to allow large coal shipments to pass through intact during high water stages. Nothing of the sort had ever been attempted in the United States, so Merrill was forced to look abroad for inspiration, triggering an unprecedented international exchange of hydraulic technology between the United States and Europe.<sup>61</sup>

Pouring over European models, Merrill was drawn to the Chanoine dams then in use on the Seine River, which employed a series of rectangular wooden or metal panels, known as “wickets,” placed side by side. In the lowered position, the wickets lie parallel with the river bottom, resting flat on top of a dam foundation with metal supports and mechanical apparatuses that, when activated, raise the wickets upward at steep angle to reach the raised position. In the raised position, the force of the water pushing downriver against the face of the wickets locks the supports into place in the dam foundation, thus forming an effective dam. Merrill planned a system in which a Chanoine dam would connect on one side of the river with a lock, which he designed to be 110 feet wide and 600 feet long.<sup>62</sup>

Researching and creating this plan took a long time; advocating for the plan and convincing all interested parties took even more time. Merrill did not need to expend much

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<sup>61</sup> Johnson, *The Davis Island Lock and Dam*, 2-3 and 22.

<sup>62</sup> Johnson, *The Davis Island Lock and Dam*, 3, 108, and 133; and Johnson, *The Ohio River Division*, 28.

effort convincing the Chief of Engineers of the soundness of his lock design; the expanded dimensions eventually became the standard for lock chambers constructed on inland American rivers and would continue to be the standard until the late twentieth century. But it took a few years of adroit public advocacy before Merrill finally placated local opposition in 1878. Only then did Merrill begin construction.<sup>63</sup>

When construction began, it was limited to one lock and dam at Davis Island. Merrill believed that a system of similar locks and dams would prove to be the most effective solution to the problem of creating a consistent six-foot channel in the Ohio River. At the same time, he understood that his concept for the Davis Island Lock and Dam was quite radical and needed to be proven before it could be replicated. Seven years after construction began and only months before it would be completed, Merrill wrote:

In building the Davis Island Dam the engineer in charge had two objects in view. One was to improve the harbor of Pittsburgh, and the other, and more important object, was to demonstrate the only way of radically improving the navigation of the Ohio River. It was not to be expected that one movable dam would have any appreciable influence on navigation, but it could prove beyond cavil or misapprehension what a movable dam could do, how far it was adapted to the uses of the craft that navigate the Ohio, and how much it would cost. By the middle of August [1885] the Davis Island Dam will be in operation. It is hoped and expected that the work will be so successful as to lead to a demand for others like it, but it has been thought best not to press the matter until the pioneer dam has fully demonstrated its usefulness.<sup>64</sup>

Merrill was responsible for more than just the Davis Island Lock and Dam, and certainly could not handle his entire mission alone. Like other engineer district chiefs, he was regularly provided with civilian assistants and one engineer lieutenant. In his dealings with his lieutenants, Merrill demonstrated that he was not only a visionary engineer, but also far ahead of his time in

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<sup>63</sup> Johnson, *The Davis Island Lock and Dam*, 3.

<sup>64</sup> *Report of the Secretary of War*, 49<sup>th</sup> Cong., 1<sup>st</sup> sess., 1885, vol. II, 1799.

the practice of professional development. His lieutenants came to look up to him as an almost fatherly figure as he demonstrated genuine interest in their professional education.<sup>65</sup> Merrill's approach to professional development was based on an implicit recognition that lieutenants at the time did not follow a standardized career path and had individual bases of knowledge built upon individual bases of experience. Accordingly, he tailored his approach to each officer's level of experience.

Prior to Goethals's arrival, Merrill's assistant was Lieutenant Frederick A. Mahan, who had served under Merrill on the Ohio since 1872. Mahan was the son of Dennis Hart Mahan, who had served as the chair of West Point's Department of Civil and Military Engineering from 1832 until his death in 1871 and had written the texts still used in the academy's engineering classes. The lieutenant arrived with an uncommon breadth of theoretical knowledge and practical experience. This led Merrill to develop Mahan by challenging him with incrementally increasing levels of responsibility. Merrill first had Mahan assist him in studying foreign concepts of movable dams, and then brought Mahan into the planning process for the Davis Island project. As the plans continued to be developed, Merrill placed Mahan in charge of several smaller dam construction and channel improvement projects elsewhere along the Ohio River. Mahan succeeded at every turn and Merrill decided that he was ready for a major project.<sup>66</sup>

In 1875, he approached the Chief of Engineers, Brigadier General Andrew A. Humphreys, to extend Mahan's assignment at Cincinnati so that he could assign Mahan as the engineer directly in charge of construction at Davis Island once construction began. More

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<sup>65</sup> Johnson, *Davis Island Lock and Dam*, 17.

<sup>66</sup> Johnson, *Davis Island Lock and Dam*, 34-45.

concerned with the immediate utility of officers' assignments than with professional development through exposing officers to varied duties, Humphreys readily agreed to this arrangement. From 1878 to 1884, Mahan was the engineer in charge of construction at Davis Island, with responsibility for the site, the execution of the plan, and the hiring and management of a civilian staff and labor force. Merrill saw to the rest of his district, loosely supervised Mahan, and maintained personal control of higher organizational systems and logistics supporting the Davis Island project.<sup>67</sup>

In 1884, after twelve years of service in the same assignment, Mahan was promoted to captain and transferred out of the First Cincinnati District, to be replaced in September of that year by Lieutenant Goethals. Merrill learned of his new subordinate's background and knew that he did not have the requisite knowledge or experience to manage the Davis Island construction site. Accordingly, he made arrangements for one of his civilian assistants to take over for Mahan. He had other plans to remedy the lieutenant's lack of experience in inland river engineering. Wanting to make a good first impression, Goethals reported to Merrill in his full and immaculately clean dress uniform. Merrill looked him over and curtly informed Goethals that if he wished to continue to wear that uniform, he could remain in the office for clerical duties; but if he wanted to learn how to be an engineer, he would thereafter report in clothes more suitable for hard work in the field.<sup>68</sup>

Merrill was as much a product of the school of experience as Goethals would become and was an avid proponent of the benefits of experiential learning. Fittingly, he advised Goethals that the best way to learn river engineering was through practical experience. What separated

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<sup>67</sup> Johnson, *Davis Island Lock and Dam*, 45 and 56-59.

<sup>68</sup> Johnson, *Davis Island Lock and Dam*, 87-88; and Bishop and Bishop, 58-60.

him from most other district commanders, though, was that instead of sending Goethals out on projects of his own to sink or swim, he instead created a controlled and calculated program of instruction.

Frequently wearing overalls on duty, Goethals became a student in Merrill's improvised academy of river improvements. Some of Goethals's education involved conducting the preliminary examinations of potential new projects within the division, from which he could learn how to discern which projects were necessary, desirable, and feasible. Most of his training took place within civilian work crews. He started at the very bottom and worked his way up as he mastered the various tasks, serving first as a rodman on hydrographic surveys, then as the chief of a surveying party, then as the foreman of a concrete team, and finally as the chief of construction for a small project. Goethals's assignments took him not only through the various aspects of the Davis Island Lock and Dam project as it finally progressed toward completion, but also to various other construction, repair, and dredging projects along the Ohio and some of its tributaries from Pennsylvania to Kentucky.<sup>69</sup>

Goethals found this practical approach to teaching and learning engineering to be very effective, and it stuck with him as the preferred method for professional development for the rest of his time in the service. In 1908, the Corps of Engineers began sending new officers to the field to gain practical experience prior to attending the Engineer School of Application. Reporting to the Chief of Engineers on his first group of three "student officers," Goethals wrote, "I started them in as chainmen and rodman on preliminary surveys and have worked them up. Promotion from one step to the other has been made after proficiency has been established in the

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<sup>69</sup> Johnson, *The Davis Island Lock and Dam*, 88; Bishop and Bishop, 58-61; *Report of the Secretary of War*, 49<sup>th</sup> Cong., 1<sup>st</sup> sess., 1885, vol. II, 1785-1833.

particular class of work on which they were engaged.”<sup>70</sup> Writing from Panama in 1910 to his oldest son, then a lieutenant in the Corps of Engineers who would soon be assigned to the Canal Zone, Goethals outlined his plan for his son’s professional development in a manner reminiscent of Merrill’s methods, beginning with railroad management. “I don’t know how long it will take you to master the method employed in operating a railroad,” he wrote, “but I shouldn’t imagine that it will require much of your time, after which you can go under Mr. Williamson on lock work, starting in as a foreman & working your way up as far as opportunity will permit.”<sup>71</sup>

The Davis Island Lock and Dam was completed in the late summer of 1885, and subjected to two months of tests before it was finally opened for public use on the seventh of October. The Ohio River Commission and Pittsburgh Chamber of Commerce planned a grand opening and dedication ceremony for the occasion and asked Lieutenant Colonel Merrill for a list of officers who contributed to the effort, so that they could invite those officers to the ceremony. Merrill included Goethals on the list, but Goethals was unable to attend, having been ordered to West Point in August 1885 to serve as an instructor in the Department of Civil and Military Engineering.<sup>72</sup>

Goethals served under Merrill for only eleven months, but they were eleven critical months of intensive education that was not limited to practical training on how to execute the

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<sup>70</sup> George W. Goethals to Brigadier General Marshall, April 19, 1909, Container 8, George W. Goethals Papers, LC.

<sup>71</sup> George W. Goethals to “Toodles” [George R. Goethals], February 27, 1910, Container 3, George W. Goethals Papers, LC. Contrary to some contemporary and later critics who described him as a cold and distant person, Goethals appears to have had a very warm and loving relationship with his sons. In all of his correspondence with his eldest son, George R. Goethals, he only refers to his son by nicknames, which include “Toodles,” “Dodo,” “Dodie,” and “old man.”

<sup>72</sup> Johnson, *The Davis Island Lock and Dam*, 91-92; Bishop and Bishop, 61; and “Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1886,” Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 6.

various tasks associated with engineering on inland waterways. Merrill provided Goethals with equally valuable examples of how to be an effective organizational leader – a topic not included in Goethals’s courses of study at West Point and the Engineer School of Application. Dedicating so much time and effort to researching movable dams and developing an innovative new concept for the Davis Island Lock and Dam, Merrill likely felt an urge to direct its construction personally. But he was able to step back and delegate authority to trusted subordinates, direct higher-level organizational systems and logistics efforts supporting the construction effort, and give proper attention to the rest of his district. By replacing Mahan with a civilian assistant in 1884, Merrill maintained this practice when Goethals arrived, allowing Goethals to observe an effective system of organizational leadership in operation.<sup>73</sup>

Furthermore, Merrill provided Goethals with a positive example of leadership, actively taking care of those who worked for him. Merrill’s concern for his subordinates did not stop with his lieutenants. He made a point of negotiating with railroads in his district to secure reduced fares for those of his contracted laborers who commuted by rail from their homes to their work sites. Also, while work was nearing completion, Merrill pressed his superiors for funds to be included in his appropriations to make a payment to the family of at least one of three civilian workers who were killed in construction accidents at Davis Island.<sup>74</sup>

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<sup>73</sup> Theories of “scientific management” only began to gain wide adherence in the late nineteenth century; see Wiebe, 133-163 and Chandler, *passim*. The United States Military Academy went well into the twentieth century to incorporate study of organizational leadership and management into its academic curriculum – the Department of Behavioral Sciences and Leadership was formed in 1946, first-class cadets were required to take a class in “Military Leadership” after academic reforms in the late 1950’s, and the Department of Systems Engineering was formed in 1989. See Betros, 137-141; and Crackel, 281 and 291.

<sup>74</sup> Johnson, *The Davis Island Lock and Dam*, 59 and 97.



Goethals's short tour with the First Cincinnati District was especially important to his professional development. He departed Cincinnati with a base of professional knowledge vastly larger than he possessed when he arrived. In fact, it is difficult to imagine that Goethals's later career would have assumed the course that it did without his experiences on the Ohio River under Merrill's tutelage. He would go on to solve technical engineering problems on the Tennessee River and in Panama by applying lessons learned on the Ohio in 1884 and 1885.

More importantly, the systematic approach to organizational management and the accessible and active style of leadership that Goethals would become known for in Panama strongly reflect William Merrill's influence. In his 1922 interview with Samuel Crowther, Goethals described his main concern in Panama in terms of organizational leadership: "My chief interest in Panama was not in the engineering but in the men. I felt that the canal would be built if we could manage the men. We managed the men and the canal was built." As he saw it, Panama presented more significant organizational challenges than it did engineering problems, and Merrill helped prepare him to rise to the occasion.<sup>75</sup>

Goethals's assignment under Merrill on the Ohio River was the capstone of the preparatory phase of Goethals's career in which he was both a student and an apprentice. As a student at City College, West Point, and the Engineer School of Application, Goethals grew intellectually, gained a foundation of engineering theory and principles, and most importantly, became socialized to his profession, developing a deeply felt personal identification with the Army that captured both his imagination and his ambition. His first assignment at Vancouver

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<sup>75</sup> Crowther, 92. For insightful analyses of Goethals in Panama, see David McCullough, *The Path Between the Seas: the Creation of the Panama Canal, 1870 – 1914* (New York: Simon & Schuster, 1977), 508-615; Julie Greene, *The Canal Builders: Making America's Empire at the Panama Canal* (New York: Penguin, 2009), 53-345; and Walt Griffin, "George W. Goethals and the Panama Canal," (PhD diss., University of Cincinnati, 1988).

Barracks provided practical experience in reconnaissance and civil engineering; and through the high praise he received from senior officers, it also built Goethals's confidence in himself and in his prospects for a successful Army career. From his subsequent assignment on the Ohio River, Goethals learned critically important lessons in river improvements, construction engineering, management, and organizational leadership that would prove to be essential as his career moved forward.

Goethals's success to date was the product of a combination of talent, training, luck, and personal connections. As an individual, Goethals was exceptionally intelligent and ambitious, and after he focused his ambitions on the singular goal of a successful career as an Army officer, exceptionally dedicated and driven. As for training, West Point and the Engineer School of Application focused and directed Goethals's considerable abilities and facilitated Goethals's entrance into the profession with a foundation of theoretical knowledge. Luck was decisive in two key instances. Had Samuel Cox's original nominee for West Point not failed out, or had the mother of Coroner Waltman's nephew been more amenable to the idea of her son in the Army, Goethals would never have entered West Point and may have become lost to history as an anonymous shopkeeper in New York. Later, had Brigadier General Miles not requested Goethals's relief at all, or had he not requested it at the exact moment that Lieutenant Mahan earned his promotion to captain and created a vacancy for an engineer lieutenant under Merrill, Goethals would have missed a key developmental experience, and the future trajectory of his career would have been fundamentally altered.

Personal connections mattered more than any other factor in this phase of Goethals's career. The first important connection was Nathaniel Beers, without whose active advocacy for Goethals's nomination to West Point in 1876, Goethals may not have entered the Army in the

first place. Second, and perhaps more important, was Lieutenant Colonel William Merrill. No policies existed at the time standardizing the development of junior officers in the various engineer districts. Merrill's approach was unique and individually tailored to quickly imbue Goethals with knowledge absolutely necessary for success within the Corps of Engineers – knowledge that he had until then missed out on due to the nature of his first assignment at Vancouver Barracks.

As Goethals moved beyond this phase of his career, his formal education and apprenticeship as an officer, the dynamics of the interplay between training, talent, luck, and personal connections would change considerably. Few institutional professional development systems beyond West Point and the schools of application existed in the late nineteenth century U.S. Army.<sup>76</sup> As a result, the degree to which training influenced the development of any given officer decreased sharply, and the degree to which talent, luck, and personal connections affected officers' careers increased dramatically.

In the late summer of 1885, Lieutenant George W. Goethals was a successful and promising young officer. Armed with his past schooling and with five years of experience, he was on his way to join the faculty at West Point to help mold a new cohort of budding officers. Neither he nor the Army were masters of his fate, and the Army would from now on do very little to develop and prepare him for future challenges

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<sup>76</sup> Coffman, *The Old Army*, 278-281; Millis, 139; Nenninger, 3-7 and 21-31; and Weigley, 273-281.

## CHAPTER 2

### *Journeyman, 1885-1894*

Orders to serve as an instructor at the U.S. Military Academy were not easy to come by. In 1886, at the end of Goethals's first year as a member of the faculty, the Chief of Engineers reported that only five out of 108 officers in the Corps of Engineers were detached for duty at West Point. Four of those officers served under Professor James Mercur in the Department of Civil and Military Engineering, responsible for teaching engineering theory and concepts related to designing and constructing fortifications and basic structures to cadets in their first-class (senior) year.<sup>1</sup>

The assignment of officers to academic departments, in this case the Department of Civil and Military Engineering, typically began with a request from the department's professor. As vacancies or the need for additional instructors arose, department heads submitted lists of "qualified" officers directly to the War Department, at which point the appropriate bureau chief would make the final selection. Department heads usually determined an officer's qualification based on that officer's performance as a West Point cadet. Typically, professors' lists of

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<sup>1</sup> U.S. Department of War, *Report of the Secretary of War* (1886), 49<sup>th</sup> Cong., 2<sup>nd</sup> sess., House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1886), 4; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1878," *Official Registers of Officers and Cadets, USMA*, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 6; and Betros, 21. Two of those officers assigned to Company E of the Army's lone engineer battalion. The company was posted at the academy and was responsible for cadets' field training in Practical Military Engineering, covering instruction of tactical engineering, signaling, and telegraphy. The "Official Register" lists one officer, Lieutenant James G. Warren, under both the Department of Civil and Military Engineering and the Department of Practical Military Engineering while the *Report of the Secretary of War* lists him only as assigned to Company E, or the Department of Practical Military Engineering.

requested officers consisted of their best students from four or five years earlier. Although Professor Mercur had not been a part of the faculty when Goethals was a cadet, Goethals's record as having finished first in his class in the Department of Civil and Military Engineering with a perfect score of 300 of 300 possible points was still known at the academy.<sup>2</sup> To fill pending vacancies in his department, Mercur submitted a request for two officers to be detailed to his department in the summer of 1885. In the request, he included a list of five desired officers, with Goethals first in order of preference. Brigadier General John Newton, the Chief of Engineers, endorsed the request, approving the detail of both Goethals and 1<sup>st</sup> Lieutenant John Biddle, who had been third in order of preference.<sup>3</sup>

Interestingly, Newton did not make his decision based on the Mercur's preferences, the developmental needs of the officers under consideration, or on his sense of Goethals's and Biddle's aptitude for the job. He selected Goethals and Biddle because he viewed them as unimportant to the work in the districts to which they were assigned, stating that for the others, "to relieve them from their present duties would be disadvantageous to the interests of the service." This statement sheds light on General Newton's philosophy on assignments. For him, "the interests of the service" outweighed all other factors and was viewed through the lens of near-term utility. As with the case of Lieutenant Mahan on the Ohio River, the long-term benefits of the developmental opportunities inherent in exposing officers to a variety of assignments were not considered to be high on the list of "the interests of the service."<sup>4</sup>

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<sup>2</sup> Ambrose, 202; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1880," 6, 12, and 28; Richard C. Drum to Chief of Engineers, June 19, 1885, File 2413, Box 49, Entry 52, RG 77, NARA I.

<sup>3</sup> Chief of Engineers to Adjutant General, June 22, 1885, File 2413, Box 49, Entry 52, RG 77, NARA I.

<sup>4</sup> *Ibid.*

Serving as an instructor in the Department of Civil and Military Engineering was an opportunity for Goethals to enhance his knowledge of engineering theory and practice. If serving under Merrill on the Ohio River was an education in and of itself, serving as an instructor at the academy was a postgraduate course. The established methods of pedagogy at West Point relied on daily classroom recitation. While this was not the best way to teach cadets, it certainly forced instructors to have a firm command of all assigned texts. In order to fulfill his duties as an instructor, Goethals had to spend many hours studying and committing concepts to memory.<sup>5</sup>

This could have been a pointless exercise, as Goethals's perfect score in the department in 1880 indicated that he had already memorized the assigned text, front to back. But as with many things in life, timing is everything. The Department of Civil and Military Engineering had begun to revise Dennis Hart Mahan's old texts in 1882 in order to incorporate technological and procedural advances and innovations. By the time Goethals joined the faculty in 1885, the department was using new texts reflecting the most up-to-date knowledge from the field. In studying to fulfill his responsibilities as an instructor, Goethals had to absorb new concepts, expanding and enhancing the base of knowledge he could apply to engineering problems later in his career.<sup>6</sup>

Goethals spent two years as an instructor before advancing to assistant professor in 1888 prior to the start of his last academic year in the department. In his new position, he would be responsible for much of the engineering instruction for the rising "firsties" of the class of 1889.

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<sup>5</sup> Betros, *Carved from Granite*, 20.

<sup>6</sup> Crackel, 162.

One member of this class, Cadet Charles Young, had been born into slavery in Kentucky in 1864. In 1889, he was the lone African American at the United States Military Academy.<sup>7</sup>

Young was not the academy's first black cadet. Twenty-two African Americans had been admitted prior to Young, starting in 1870. These cadets faced many more challenges than their white colleagues, however, and only two of Young's predecessors had actually graduated. James W. Smith of South Carolina was the first African American admitted in 1870. Rather than face the usual hazing routine that was the lot of every other fourth-class cadet, Smith faced complete social isolation and ostracism from the rest of the corps of cadets. This would become the cadets' standard response to the arrival of African American cadets. Smith struggled with this situation and became involved in a brawl with a group of cadets late in his plebe year, which caused him to be turned back into the next class, and eventually dismissed. This also marked the start of a trend; those African American cadets who broke under the strain of social isolation and actively fought back would face a more hostile environment, began to fall behind in their studies, and would ultimately resign or face dismissal.<sup>8</sup>

Henry O. Flipper was the first African American to overcome the obstacles and graduated with the class of 1877, at the end of Goethals's first year as a cadet. He found that the officers at the academy generally treated him fairly, but that he faced ostracism and derision from the corps of cadets. He responded in kind, bearing the silent treatment silently and refusing to respond to personal slights or break down in the face of social isolation. As a result, he found the pressures

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<sup>7</sup> "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1889," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 6; Shellum, 3 and 123.

<sup>8</sup> Crackel, 145; and Shellum, 41-43; and Ambrose, 231-237.

to be manageable and graduated in June 1877, ranked fiftieth in a class of sixty-four. The second black cadet to make it through all four years and graduate from the academy was John H. Alexander, who emulated Flipper's quiet and determined approach in the face of adversity and graduated a decade later, ranked thirty-second out of sixty-four in the class of 1887.<sup>9</sup>

Reporting to West Point on June 14, 1884, and being among sixty-nine out of 130 nominees to pass the entrance medical and academic examinations, Young joined the class of 1888 while John Alexander was in his third-class (sophomore) year. While he emulated Flipper's and Alexander's responses to adversity, Young did not adjust well to the academic demands of the academy. He performed well in English and French classes, but was one of fifteen cadets found deficient in mathematics during examinations in June 1885. The Academic Board elected to retain him, but forced Young and five of his fellow classmates to repeat their plebe year and be turned back to the class of 1889.<sup>10</sup>

Cadet Young recovered from this setback and managed to meet all standards up to his first-class year before again falling into serious academic trouble. Never gifted in the technical subjects, Young finished the first semester of his first-class year ranked forty-eighth out of forty-nine in Civil and Military Engineering. He continued to struggle in Goethals's class. In the spring examinations at the end of his final semester, Goethals declared him deficient in engineering, endangering Young's ability to graduate and receive a commission.<sup>11</sup>

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<sup>9</sup> Shellum, 43-45; Crackel, 145-147; "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1877," 13; and "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1878," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 10.

<sup>10</sup> Crackel, 147; and Shellum, 38 and 54-56.

<sup>11</sup> Shellum, 116 and 123-125



The Academic Board met in June, and in its initial deliberations, found Young to be deficient in engineering and recommended him for dismissal. However, Goethals's "sympathy was aroused."<sup>12</sup> He intervened and prevailed upon the board to grant Cadet Young a reprieve to study and face re-examination prior to September 1, 1889. While preparing to leave West Point at the end of the summer, Goethals set aside one or two hours every day for the entire summer to tutor Young and assist him in preparing for his re-examination. Two days after Goethals left for his next assignment, Young satisfactorily passed the exam and was awarded a commission as a second lieutenant of cavalry. He was the last in the class of 1889 to graduate, and was both the third and the last African American to commission from West Point until Benjamin O. Davis, Jr. graduated with the class of 1936.<sup>13</sup>

Young was profoundly grateful for Goethals's efforts. He would proclaim in later years that he could never forget "the disinterested help of . . . General Goethals." Thinking about those who treated him well during his cadet years, Young went on to rhapsodize that "the world is better and only worth living perhaps, because it has its Skerretts, Bethels, Goethals, Gordons, Barnums, Haans, and Langhorns with the others of that stripe."<sup>14</sup>

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<sup>12</sup> George W Goethals to Ada M. Young, May 8, 1922, printed in Patricia W. Romero, ed., *I Too Am America: Documents from 1619 to the Present* (Cornwells Heights, PA: The Publisher's Agency, Inc., 1978), 190. Writing to Young's widow after his death in 1922, Goethals described the events of May-August 1885 in a somewhat detached manner: "I regret to state that I know little of Colonel Young's career at West Point outside of the Section Room in Civil and Military Engineering. He had considerable difficulty with the course and was deficient in it . . . I was leaving West Point, intending to remain there during the summer; my sympathies were aroused, and I offered to give him a certain amount of time daily in order to assist him in preparation for the examination which he was to take the last of August. This I did and subsequently learned that he successfully passed it."

<sup>13</sup> Crackel, 147-149; Shellum, 125-128; and "Official Register of the Officers and Cadets of the U.S. Military Academy, West Point, N.Y., June, 1889," Official Registers of Officers and Cadets, USMA, <http://www.library.usma.edu/index.cfm?TabID=6&LinkCategoryID=49> [accessed April 7, 2013], 11.

<sup>14</sup> Charles Young to Delamere Skerrett, July 13, 1915, reprinted in Shellum, 131-132.

Contrary to what Young may have thought, the assistance Goethals rendered Young was not the product of egalitarian racial attitudes. While clearly more forward-thinking than many of his contemporaries, Goethals was still very much a creature of his times, subject to the prejudices and discriminatory modes of thought that were prevalent in late-nineteenth-century America. When the Army transferred an African American cavalry unit to West Point in 1907, he privately expressed disapproval, writing, “I am sorry they have sent the negro troopers to West Point. I can appreciate the feeling of the Southerners on that score, and the powers that be ought to have considered that point.”<sup>15</sup> He also maintained segregation within the Panama Canal Zone, and took no action to change a highly racialized and discriminatory pay system that had been established for the workforce at the Panama Canal prior to his appointment as Chief Engineer.<sup>16</sup> Instead, the encounter with Charles Young demonstrates that Goethals had, despite such prejudices, an uncommon ability to deal with people on an individual basis with genuine empathy, and with a keenly felt sense of obligation to care for individuals in his charge.<sup>17</sup> Goethals was always very effective in forging connections and dealing effectively with individuals, much more so than with groups. This trait would inform his approaches to management and leadership for his entire career.

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<sup>15</sup> George W. Goethals to “Toodles” [George R. Goethals], April 4, 1907, Box 3, George W. Goethals Papers, LC.

<sup>16</sup> Greene, 123-158.

<sup>17</sup> While Julie Greene interprets this as paternalistic and perhaps manipulative behavior in *The Canal Builders* (see Greene, 60-62), contemporary observers regularly pointed to these traits as among Goethals’s best and most laudable qualities. See “When Goethals Made the Dirt Fly,” *Literary Digest* 96, February 11, 1928, 45; Albert Edwards, “The Boss of the Job,” *The Outlook*, June 24 1911, in *The Outlook, a Weekly Newspaper* vol. 98, May 6 – August 26, 1911. New York: The Outlook Company, 1911, 394; Joseph Bucklin Bishop, “The Personality of Colonel Goethals,” *Scribner’s Magazine* 57, February 1915, 145-146; and Edgar Young, “General George W. Goethals,” *New York Herald Tribune*, February 5, 1928. In this case, I trust the weight of contemporary opinion, particularly as Greene’s interpretation seems to be unduly influenced by that of Marie C. Gorgas, whose views were colored by the personal tension, perhaps animosity, between Goethals and her husband, William C. Gorgas. See Griffin, “Goethals and the Panama Canal,” 332-361.

Beyond his interaction with Charles Young, Goethals was an effective and well-respected instructor. Although he sometimes described Goethals as a taskmaster and a “mean cuss,”<sup>18</sup> Charles R. Rhodes of West Point’s class of 1889 recounted that Goethals was included when his classmates invited their favorite faculty members to a graduation celebration involving a dinner at the Hoffman House in New York City and a Broadway show.<sup>19</sup> Near the end of his assignment, Professor Mercur demonstrated the regard he held for Goethals by inducing Colonel John Parke, then the superintendent of West Point, to petition the War Department to extend the lieutenant’s detail to the Department of Civil and Military Engineering.<sup>20</sup>

Brigadier General Thomas L. Casey, who had assumed duties as Chief of Engineers in 1888, refused the request. With the change in chiefs came a change in assignment philosophy. Somewhat ahead of his time, Casey considered officers’ developmental needs to be a priority when considering their assignment options. Explaining why he would not agree to the extension, Casey wrote, “The Army Register shows that Lieutenants of Engineers are now promoted to Captains after from 10 to 11 years of service. They then become assignable to the charge of works and are needed in that capacity. Of the 9 years of service of Lieutenant Goethals, he has served but 2 on rivers and harbors.”<sup>21</sup> Despite the fact that this statement reveals weaknesses in administrative systems by wrongly attributing two years of river and harbor work to Goethals

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<sup>18</sup> Quoted in Shellum, *Black Cadet in a White Bastion: Charles Young at West Point* (Lincoln, NE: Bison Books, 2006), 123.

<sup>19</sup> Shellum, 162n40. Rhodes had identified some of the faculty by nickname, and Shellum did his best to match names nicknames. He is unable to identify one faculty member who is identified as “the Goat.” This almost certainly refers to Goethals, whose colleagues from his own cadet days frequently referred to him as “Goat,” as indicated in George H. Morgan to George W. Goethals, August 22, 1911, Container 14, George W. Goethals Papers, LC.

<sup>20</sup> Thomas L. Casey to Acting Adjutant General, August 28, 1889, pp 253-254, Volume 9, Entry 73, RG 77, NARA I.

<sup>21</sup> *Ibid.*

when he had only been assigned to river duty for a mere eleven months, such thinking represented a fundamental improvement from the lack of concern for officers' developmental needs evinced by General Newton. At the same time, the contrasting approaches demonstrate that the Army's approach to professional development was still unsystematic and thoroughly subject to the varying beliefs and practices of individual leaders.

Thus ending in 1889, Goethals's assignment to West Point's Department of Civil and Military Engineering may be viewed as turning point in his career. For the first time, there is demonstrable evidence of Goethals not only learning and developing as a result of his experiences, but also applying lessons learned in the past. Studying to prepare for his duties as an instructor was an important developmental exercise for Goethals. At the same time, by intervening on behalf of Cadet Young in 1889, Goethals demonstrated that he had absorbed and was prepared to apply lessons learned from William E. Merrill on the Ohio, particularly with regard to taking personal responsibility for a subordinate's development. Goethals did not have to intervene to change the Academic Board's decision to dismiss Cadet Young, nor did he have to spend his last summer at West Point tutoring Young on a daily basis to prepare him for reexamination. He was compelled to act, however, and played a critical role in the successful conclusion of Cadet Charles Young's West Point odyssey, and the beginning of a successful career that would last until Colonel Charles Young retired due to medical disability in 1917.<sup>22</sup>

On orders to return to river duty, the recently expanded Goethals family – a son, George Rodman Goethals, had been born at West Point in March 1886<sup>23</sup> – departed West Point at the end of August 1889. His orders instructed Goethals to return to Cincinnati. This time, he was

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<sup>22</sup> Crackel, 145.

<sup>23</sup> Bishop and Bishop, 58.

assigned to the sleepy Second Cincinnati District, which was still responsible for routine work on several tributaries to the Ohio River.<sup>24</sup>

He did not have time to settle in before the situation changed. Another engineer lieutenant, Graham D. Fitch, had been ordered to transfer from duties in Milwaukee to the Nashville District in order to assist Lieutenant Colonel John W. Barlow's efforts to improve the Tennessee and Cumberland Rivers. Prior to arriving in Nashville, however, Lieutenant Fitch grew ill to the point that his ability to continue serving in the Army was in doubt, and was ordered to Washington in to be evaluated by a medical board. Viewing the projects in the Nashville District as critically important, the Chief of Engineers searched for a lieutenant to fill the vacancy in Nashville. Because he had just arrived and did not have time to become an essential part of any work in Cincinnati, Goethals received orders to report to Barlow in Nashville.<sup>25</sup> This was an incredible stroke of luck for Goethals. Challenges on the Tennessee River would test his knowledge and abilities more than anything in his career to date, and would provide exceptionally valuable developmental opportunities that made possible Goethals's journey to the Panama Canal.

With a meandering and confused course, the Tennessee River is unique among inland American rivers. Beginning at the confluence of the Holston and French Broad Rivers in the mountains east of Knoxville, Tennessee, the river runs in a southwesterly direction until reaching Chattanooga, where Lookout Mountain and its neighbors force the river to adjust rapidly in a series of sharp, narrow bends before resuming its southwesterly track, crossing into northeast

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<sup>24</sup> Major H.M. Adams to Redfield Proctor, August 14, 1889, pg 564, Volume 10, Entry 73, RG 77, NARA I.

<sup>25</sup> Captain Thomas Turtle to Redfield Proctor, September 4, 1889, pg 649, Volume 10, Entry 73, RG 77, NARA I; and John C. Kelton to Surgeon General, September 28, 1889 and Special Orders No. 238, A.G.O., October 12, 1889, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

Alabama. Reaching Guntersville, Alabama, the Tennessee abruptly changes its course, turning obliquely northwest to traverse the rest of northern Alabama. Upon reaching the town of Waterloo in the state's northwestern corner, the river steers almost directly north, flowing through western Tennessee and into Kentucky before reaching its mouth on the Ohio River near Paducah.<sup>26</sup>

Inhabitants of the Tennessee River Valley developed a strong interest in the commercial potential of their river after steamers began plying the Mississippi and Ohio Rivers after the steamboat *Enterprise*'s pioneering journey in 1815. But there were significant hazards impeding navigation of the Tennessee, particularly in its middle section between Chattanooga and Waterloo. The sharp bends below Chattanooga, known in the nineteenth century as "the Suck," were particularly dangerous, even for experienced hands. The real problem, though, lay approximately 195 miles downriver from Chattanooga, in northern Alabama's Muscle Shoals.<sup>27</sup>

The Muscle Shoals region contained four separate hazards. Moving downriver from east to west, a boat would first encounter an area of wide shallows at Elk River Shoals just after passing Brown's Ferry. After negotiating the shallows, the boat would next come upon Big Muscle Shoals, a fifteen mile stretch of rapids and cascades in which the river fell a total of 85 feet. The channel here was narrow where it existed at all. Big Muscle Shoals had formed

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<sup>26</sup> Donald Davidson, *The Tennessee, Volume One, The Old River: From Frontier to Secession*, Southern Classics Series edition (Nashville, TN: J.S. Sanders & Company, 1991), 5-13.

<sup>27</sup> Davidson, *The Tennessee, Volume One, The Old River*, 230-231; U.S. War Department, *Letter from the Secretary of War, Transmitting Report of the Surveys on the Tennessee River, Made in Compliance with the Act of March 2, 1867*, 40<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1868, House Executive Document 271, 4-7; and "The Mussel Shoals Canal," *Harper's Weekly*, October 18, 1890. Nineteenth century sources are inconsistent in their spelling of the area, usually choosing between "Mussel Shoals" and "Muscle Shoals." The latter appears relatively consistently in government documents and in sources from the twentieth century. I have chosen to use "Muscle Shoals" in the text, and have changed "Mussel Shoals" to "Muscle Shoals" in some quotations for the sake of consistency. Original spelling will be maintained in the footnotes where appropriate, such as in titles of articles.

because of the presence of flinty, non-eroding rocks deposited on top of and among the limestone and sandstone that is generally prevalent throughout the entire riverbed of the Tennessee. With the river unable to cut a channel through these unyielding rocks, this area became a wide, shallow basin full of cascades, reefs, and river islands. At ½ to 1 ½ miles in width, a fifty-foot rise in the river stage at Chattanooga would only produce a five-foot rise at Big Muscle Shoals. Three miles after clearing Big Muscle Shoals, the boat would come upon Little Muscle Shoals, a four-mile, slightly less extreme version of its larger cousin. One mile after breaking free from Little Muscle Shoals, the boat would pass by Florence, Alabama, and then come upon Colbert and Bee Tree Shoals, an eight-mile stretch of shallows and shoals made up of sand, broken gravel, and rocks in which the river fell another twenty feet.<sup>28</sup>

While Colbert and Bee Tree Shoals could not be ignored, Little Muscle Shoals, Big Muscle Shoals, and Elk River Shoals were more significant. Together, they constituted 37 miles of nearly continuous hazards, with Big Muscle Shoals and Elk River Shoals being an absolute obstruction to free navigation of the river, except for during extremely high water stages. According to engineers who surveyed the area in 1867, there was “no channel at low water in this part of the river; in many places a person can walk across the river without wetting his feet, and the lightest flatboat cannot descend the shoals without being assisted in many places on rollers.”<sup>29</sup>

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<sup>28</sup> U.S. War Department, *Letter from the Secretary of War, Transmitting the Information Required by a Resolution of the House of Representatives of the 16th January Last, in Relation to an Examination of the Muscle Shoals in Tennessee River, with a View to Removing the Obstructions to the Navigation Thereof and the Construction of a Canal Around the Same*, 20<sup>th</sup> Cong., 1<sup>st</sup> sess., 1828, H.Doc 284, 5-9; *Letter from the Secretary of War*, 40<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1868, 13-19 and 25; and Davidson, *The Tennessee, Volume One, The Old River*, 284-286.

<sup>29</sup> *Letter from the Secretary of War*, 40<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1868, 25-26; and Davidson, *The Tennessee, Volume One, The Old River*, 284.

The Muscle Shoals, situated roughly at the midpoint of the river, effectively divided the upper and lower Tennessee into two separate rivers for trade and commerce. A major trade imbalance developed between them. Steamboats could ply the waters between Paducah and Florence with relative ease, but communities upriver from Florence could only ship goods downriver during limited windows of opportunity within two or three months out of the year when conditions were good enough to allow flatboats to traverse the shoals. Otherwise, these communities had to rely on small keelboats. Business owners in Knoxville tried to entice steamers to run the gauntlet at high water stages in the 1820s and 1830s, but the journey was more risky than profitable. On average, only one steamer would make the attempt in any given year.<sup>30</sup>

The only viable solution to problems posed by the Muscle Shoals hazards appeared to be a lateral canal around the lengthy belt of obstacles. The first attempt to build a canal was managed by the state of Alabama. The plans were ambitious, calling for an intricate system of improvements from the confluence of the Elk and Tennessee Rivers at the head of the Elk River Shoals all the way to Colbert Shoals, including a long canal along the northern bank of the Tennessee River from Brown's Ferry to Florence.<sup>31</sup>

Construction began in 1831, but the Alabama state government mismanaged the funds that had been set aside for the project. The canal engineers were forced to scale back their plans, building a canal at Big Muscle Shoals just over fourteen miles long, sixty feet wide, and six feet deep, with seventeen locks to mitigate the descent of the river. Although the canal's design and construction were sound, the decision to limit all improvement efforts to Big Muscle Shoals

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<sup>30</sup> Davidson, *The Tennessee, Volume One, The Old River*, 231-245.

<sup>31</sup> Davidson, *The Tennessee, Volume One, The Old River*, 286-288.



doomed the effort to insignificance and oblivion. The canal opened in 1836 and soon proved to be nearly useless, unreachable on either end except at high water stages because its engineers had taken no measures to facilitate navigation through the Elk River Shoals and Little Muscle Shoals above and below the canal. The canal at Big Muscle Shoals fell into disuse and disrepair after 1838.<sup>32</sup>

The Civil War interrupted both commercial traffic and improvement efforts on the Tennessee River. Advocates for improvement resumed their agitations almost immediately after the war ended. Opening the river for commercial navigation from its head to its mouth became widely viewed as a way to stimulate the region's economy and hasten its recovery from the war. In his 1868 report on a survey of the Tennessee that Congress had ordered the year before, Major George Weitzel advocated for a renewed focus on river improvement projects, including a second canal project at Muscle Shoals. He reasoned that completely opening the river "would be the means of giving a poverty-stricken community an opportunity to recover from the disastrous effects of a war, and give employment to a large class of deserving people who are said to be out of employment." The report was endorsed by both the Chief of Engineers and Secretary of War Edwin Stanton.<sup>33</sup>

Along the Tennessee River, commercial steamboat traffic gradually increased after the war. The Muscle Shoals area remained impassable for large vessels, and although communities on the upper Tennessee built their own steamboats for local trade, they remained unable to ship goods downriver to Paducah and beyond. This was especially frustrating for the rapidly

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<sup>32</sup> "Tennessee River Improvements," *Harper's Weekly*, April 27, 1895; Davidson, 288-289; and Leland R. Johnson, *Engineers on the Twin Rivers: A History of the U.S. Army Engineers Nashville District, 1769-1978* (Nashville, TN: U.S. Army Engineer District – Nashville, 1978), 52-59.

<sup>33</sup> *Letter from the Secretary of War*, 40<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1868, 4.

developing commercial-industrial sector in Chattanooga, where businesses produced heavy industrial goods that they wanted to ship to ports on the Ohio and Mississippi Rivers as cheaply as possible. A viable river route was seen as both a means of transportation and a means of checking the rising power and prices of the railroads. In 1871, responding to advocates for renewed Tennessee River improvements, the Corps of Engineers established a new district under Major Walter McFarland at Chattanooga. The district would plan and implement projects to improve navigation on the Tennessee, with a goal of ensuring open navigation of the full river for at least nine months of an average year for steamboats carrying a burden of up to 750 tons.<sup>34</sup>

Understanding that the greatest impediment to free navigation of the river was Muscle Shoals, McFarland devoted the bulk of his time to studying the problem and developing plans for a new system of improvements in the Muscle Shoals region. He developed a concept centered on restoring and expanding the first canal at Big Muscle Shoals and addressing the problems at Elk River Shoals and Little Muscle Shoals in order to facilitate access to the main canal. At Elk River Shoals, McFarland intended to build a short, two-lock canal and blast a channel through a reef that separated the foot of that canal from the head of Big Muscle Shoals. There, McFarland planned to expand, widen, and strengthen the old canal, consolidate its 17-lock system into nine locks, dam the creeks and ravines that emptied into the canal, and physically carry the canal over the mouth of Shoal Creek by constructing an aqueduct 90 feet long and 60 feet wide. At Little Muscle Shoals, McFarland believed that the channel could be deepened and the rapid current managed through dredging and the construction of wing dams along the embankments of the river. Ready to proceed, the second effort at Muscle Shoals hit its first delay when the building

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<sup>34</sup> Donald Davidson, *The Tennessee, Volume Two, The New River: Civil War to TVA*, Southern Classics Series edition (Nashville, TN: J.S. Sanders & Company, 1992), 156-166; Johnson, *Engineers on the Twin Rivers*, 124; *Letter from the Secretary of War*, 40<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1868, 2-3.

that doubled as McFarland's house and headquarters, where the only copies of the plans were kept, burned to the ground on January 13, 1874.<sup>35</sup>

In 1875, work finally began at Muscle Shoals under contracted labor, but soon encountered more difficulties. Problems with contractors, disease in the laborers' camps, and a dearth of appropriations caused significant delays. In 1876, McFarland was reassigned to duty along the Canadian border and replaced by Major William R. King, who would stay for a decade and make important enhancements and corrections to the effort. Such improvements included firing inefficient or inept contractors, converting to a system that relied on hired labor under the district's direct supervision, and building a railroad along the canal's towpath to shuttle supplies during construction and help guide vessels through after it opened, thus reducing the risk of careless pilots damaging the canal. King also created a systematic organization for the work, establishing divisions along the major sections of the project - Elk River Shoals, Big Muscle Shoals, and Little Muscle Shoals – and delegating considerable authority to subordinates in charge of each division in order to allow for effective and simultaneous efforts at each location.<sup>36</sup>

Still, there were delays at Muscle Shoals. Funding was a perennial problem that caused engineers to cut back on their labor force, further slowing the effort. Also, work paused when the district's paymaster was robbed by the Jesse James gang while making his way from a bank in Florence to the engineer camp at Big Muscle Shoals on March 11, 1881. Enraged engineers and laborers formed a posse and pursued the robbers until losing their trail on the banks of the

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<sup>35</sup> Davidson, *The Tennessee, Volume Two, The New River*, 167; Johnson, *Engineers on the Twin Rivers*, 124; and U.S. Department of War, *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1890), 217.

<sup>36</sup> Johnson, *Engineers on the Twin Rivers*, 126-129.

Cumberland River, effectively putting off any canal work whatsoever for a full week. With delays varying in cause and duration, the work dragged on.<sup>37</sup>

Lieutenant Colonel Barlow replaced King in 1886. Barlow was a well-regarded engineer whose service during the Civil War included campaigns with both the Army of the Potomac and Army of the Cumberland, and who was already familiar with the region, having been present for both the Atlanta Campaign and the Battle of Nashville in 1864. At the same time that Barlow was assigned to lead the district, the Corps of Engineers expanded its scope of responsibility to include improvements on the Cumberland River as well as the Tennessee River.<sup>38</sup>

Drawn to the most recent addition to the district's enlarged mission, Barlow devoted more of his time and energy to the Cumberland than to the Tennessee. He planned a major project to canalize the Cumberland between Nashville and Smith's Ferry, 377 miles upriver from Nashville. Barlow envisioned improving navigation on the Cumberland by constructing a system of thirty locks and dams similar to the Davis Island Lock and Dam on the Ohio. As work began in 1888 a short distance upriver from Nashville on the first lock and dam in this system, Barlow moved his district from Chattanooga to Nashville. When citizens of Chattanooga held a mass meeting to protest the move, Barlow insisted that the work on Muscle Shoals was almost complete, and he was therefore needed more in Nashville, where the Cumberland project was in

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<sup>37</sup> Johnson, *Engineers on the Twin Rivers*, 129-132. Interestingly, the Muscle Shoals robbery contributed to the downfall of both the gang and Jesse James himself. Not long after the robbery, gang member William Ryan was apprehended in Nashville using money stolen from the Muscle Shoals engineers. Officials recovered the money and returned to Florence. Frank and Jesse James had been hiding in Nashville at the time, living under aliases. Fearing discovery, they were forced to uproot and move to Missouri, where Jesse James was assassinated in 1882.

<sup>38</sup> Johnson, *Engineers on the Twin Rivers*, 141-145.

its infancy and required his attention. Lieutenant George Goethals reported to Barlow at the Nashville District headquarters in October 1889.<sup>39</sup>

Barlow's reports leave little evidence indicating how he employed or interacted with Goethals. In Goethals's efficiency report for 1890, Barlow demonstrated a favorable opinion of his lieutenant, writing, "Lieut. Goethals is energetic, industrious, prompt, & efficient in performance of duty . . . I consider him to be a true gentleman, an accomplished engineer, and a thorough army officer." But this report also hints at a lack of familiarity with his subordinate, as some of the remaining written comments were copied almost verbatim from the individual report that Goethals had to produce summarizing his professional reading and study outside of the normal scope of his duties.<sup>40</sup> More generally, Barlow's reports on the district's operations leave little evidence that he had any military or civilian subordinates at all. From this, one may suppose that Barlow was either extraordinarily active, taking a direct and hands-on approach to managing work on the Tennessee and Cumberland Rivers and delegating little to his subordinates, or that he was unhesitant to assume full credit for everything that happened in the district without acknowledging those in local control of the division's many projects. Whichever was the case, working for Barlow at Nashville must not have been as profitable an experience for Goethals as was working for Merrill on the Ohio.<sup>41</sup>

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<sup>39</sup> *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, vol. II, 216, 222, and 2136-2148; and Johnson, *Engineers on the Twin Rivers*, 145-147.

<sup>40</sup> See John W. Barlow, "Efficiency Report of 1<sup>st</sup> Lieut. Geo. W. Goethals," May 11, 1890 and George W. Goethals, "Officer's Individual Report," May 24, 1890, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I. Although Goethals's report postdates Barlow's, the fact that most of the extracurricular study happened prior to Goethals's assignment to Barlow's command makes it almost certain that Barlow had a draft or advance copy of Goethals's report at the time he wrote his own. The quotation is from Barlow's report.

<sup>41</sup> See *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, vol. II, 216-224, and 2111-2161. Aside from a mandatory entry of officers assigned to the district on page 216, subordinates only figure in Barlow's description of a Congressionally-mandated survey of the lower Cumberland River on pp 2153-2160, and it is distinctly possible that they are only included because he had to append their reports to his.

It is likely that Barlow attempted to shoulder an impossibly heavy load on his own. As the pace of construction on the Cumberland increased, he began to lose control and awareness of work on the Muscle Shoals. Describing progress made on the canals at Muscle and Elk River Shoals between July 1, 1889 and June 30, 1890, Barlow wrote, “the eleven locks were completed and are in working order.” Later, in the appendix attached to this report, Barlow indicated that as of June 30, none of the nine locks at Big Muscle Shoals, nor either of the two locks at Elk River Shoals were operable because all of the locks were still missing “hydraulic machinery to maneuver gates and valves.” These were valued at \$6,000.00 per unit, and that tests of the locks had revealed major structural problems in the canal. He had revealed some of this to a local newspaper in January 1890, which reported, “A system of hydraulic engines will have to be put in at each lock, to facilitate their working as they are under to[o] high a pressure to be worked readily by hand.”<sup>42</sup>

If Barlow’s reports about Muscle Shoals to his superiors were inconsistent, the information he gave to the communities affected by the project was worse. As early as the summer of 1889, the town of Florence, Alabama was anticipating the imminent opening of the canal and attempting to organize a grand opening ceremony. This community viewed itself as a rising commercial center and looked to the opening of the canal as the key to its future power and prosperity. The issues of the *Florence Herald* reveal much about the town’s relationship with Barlow and his answers to the town’s inquiries about the canal. In June 1889 it reported on the pending grand opening ceremony. In August, an article proclaimed that “it is confidently assured that the Tennessee River will be opened for through navigation on September 1. The

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<sup>42</sup> *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, vol. II, 217 and 2118-2120 and 2122; and “On a Trip of Inspection,” *Florence Herald*, January 11, 1890.

great obstruction, known as the Muscle Shoals, is practically overcome, and only a little finishing up remains to be done.” The following spring, the editors were “reliably informed that work on the canal is nearing completion.” And in May 1890, they “learned that the Muscle Shoals canal would be ready to open in June, if no mishap occurred.”<sup>43</sup>

By 1890, work at Muscle Shoals had been in progress for fifteen years, and the communities along the Tennessee River, particularly those around and upriver from the shoals, were growing restless. In June, one member of Florence’s Chamber of Commerce, complained to his congressman that “Col. Barlow told me 18 mos [months] ago that he thought the canal would be opened July 1, 1889, but for some reason the work has dragged along from year to year in the most unreasonable manner.”<sup>44</sup> An enterprising reporter from the *Chattanooga Times* pressed Lieutenant Colonel Barlow on the matter in March. The resulting non-answer was reported in the *Florence Herald* shortly thereafter: “The colonel did not give the Times man much satisfaction. He said in effect that if the water didn’t go any higher and if the masonry stood the present test and if it didn’t take too long to make the repairs now necessary, it was probable that in the course of four weeks he might be able to say something.”<sup>45</sup>

Florence had grown quite tired of Barlow’s equivocations. The *Herald* fired a broadside at Barlow in its issue of July 9, 1890. The editors lamented that work on the canal had “dragged its slow length for more than a generation . . . a formal opening has been promised year after year, the patience of those most vitally interested has been exemplary, and still we have no more

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<sup>43</sup> See “The Grand Opening,” *Florence Herald*, June 26, 1889; “Florence,” *Florence Herald*, August 7, 1889; “Completion of the Mussel Shoals Canal,” *Florence Herald*, August 7, 1889; “Mussel Shoals Canal,” *Florence Herald*, April 19, 1890; and “Mussel Shoals Canal,” *Florence Herald*, May 10, 1890, respectively.

<sup>44</sup> W.O. Skelton to Joseph Wheeler, June 30, 1890, Box 62, Joseph Wheeler Family Papers 1809-1943, ADAH.

<sup>45</sup> “The Mussel Shoals,” *Florence Herald*, March 15, 1890.

than promises.” Demanding a resolution to the problem, they declared, “The time has gone by, however, for promises to be satisfactory. The growing interests along the Tennessee have, within the last few years, grown too great and strong to be fed on such airy meat.”<sup>46</sup>

Here was Barlow’s opportunity to assuage the community’s concerns and clearly articulate his vision for the completion of the canal. He did not take it. In an ill-advised public letter written in response to the *Herald*, Barlow wrote:

First, the government has not been engaged upon the improvement during a generation, the work having been commenced late in the year 1875, less than fifteen years ago. Second, no official announcement has ever been published fixing the date of opening the canal to navigation. Several unauthorized statements made by newspaper correspondents have been published from time to time, which have been very misleading . . . work now in progress must be finished before water can be *retained* in those sections of the canal which require strengthening. This large amount of unexpected work has not only consumed a good deal of time, but has so reduced the available funds that, unless the pending River and Harbor bill soon becomes a law, an entire suspension of operations will soon become necessary, further delaying the final opening.<sup>47</sup>

The community’s frustration matched that of Brigadier General Thomas Casey, the Chief of the Engineers. Since the fall of 1889, he had been steadily increasing pressure on Barlow to explain the delays and articulate an appropriate plan of action so “a final presentation of the matter can be made, and the commercial interests of that section of the country know for a certainty what it can depend upon in the future.”<sup>48</sup> Tired of the delays, concerned about opening the river before anticipated decisions in the fall regarding a potential increase in railroad fares, and undoubtedly wincing at the public spat that had just taken place between Barlow and the *Florence Herald*, Casey was considering drastic options to resolve the problem.

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<sup>46</sup> “Mussel Shoals Canal,” *Florence Herald*, July 9, 1890.

<sup>47</sup> “The Truth About the Canal,” *Florence Herald*, August 6, 1890. The italics were in the original text.

<sup>48</sup> Major H.M. Adams to J.W. Barlow, November 11, 1889, pg 136, Volume 11, Entry 73, RG 77, NARA I. See also Major H.M. Adams to J.W. Barlow, November 30, 1889, pg 21, Volume 12, Entry 73, RG 77, NARA I.



Hearing rumors that he was to be replaced, Barlow wrote to Alabama's powerful Joseph Wheeler, congressman from Northern Alabama, asking if the rumors were true. "If such a project is on foot," he complained, "it must have originated, I think, from the pressure brought to bear on the Washington authorities to have the canal opened at an early day . . . To relieve me just now would to my mind imply censure and I don't think I deserve it. It would be like depriving an officer of command near the close of the battle, on the eve of victory or defeat."<sup>49</sup> Seeking to save his position, Barlow turned to his lieutenant. Several days after writing to Wheeler, Barlow wrote to General Casey, "I have the honor to report that 1<sup>st</sup> Lieut. Geo. W. Goethals, Corps of Engineers, has been assigned – subject to the approval of the Chief of Engineers – to the local charge of the work of improving the Tennessee River, between Decatur, Ala. and Waterloo, Ala. – the necessity for his services in local charge of this work, being now more urgent than the temporary duty to which he was assigned at Nashville, Tenn."<sup>50</sup>

Willing to wait see how this new arrangement would work out, Casey agreed to the request and allowed Barlow to continue his duties at Nashville. At the time, Goethals was already in the area leading a survey of Little Muscle Shoals. Barlow ordered him to finish the survey, then "establish an office, and take station temporarily at Florence, Ala." in order to complete and open the Muscle Shoals Canal in time to allow passage through the canal prior to a scheduled hearing on railroad rates in Chattanooga that fall. Goethals complied and assumed local control of the Muscle Shoals Canal on August 11, 1890, less than one week after Barlow's combative rebuttal had been printed in the *Herald*.<sup>51</sup>

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<sup>49</sup> J.W. Barlow to Joseph Wheeler, July 2, 1890, Box 62, Joseph Wheeler Family Papers 1809-1943, ADAH.

<sup>50</sup> J.W. Barlow to Chief of Engineers, July 10, 1890, File 4531, Box 27, Entry 96, RG 77, NARA I.

<sup>51</sup> Quotation from "Orders," July 10, 1890, File 4531, Box 27, Entry 96, RG 77, NARA I. See also George W. Goethals to Chief of Engineers, August 12, 1890, File 4924, Box 31, Entry 96, RG 77, National Archives and

In addition to the lingering need to install hydraulic machinery at each lock, tests of the canal over the summer had revealed major structural problems. Sections of the canal walls and embankments were unable to retain water when the canal was filled to maximum capacity. The problem was most extreme below the highest lock in the system, with a lift of thirteen feet, where water passed freely through the embankment and threatened the structural integrity of the canal's retaining walls. The necessary repair work had been underway since shortly after the problems were discovered, but Goethals found that the work was not being carried on with a sense of urgency. He organized two shifts for twenty-four hour operations on the canal and took personal charge of the night shift to complete the repairs.<sup>52</sup>

By October, the repairs were mostly complete and tests validated the structural integrity of the canal. Having learned from Barlow's negative example the importance of fostering open and cordial relations with the interested public, Goethals invited several journalists and residents of Florence to tour the canal, and observe preparations to open it for navigation. To much local acclaim, Goethals and his crew of engineers and laborers filled the entire length of the canal system from the Elk River Shoals to Big Muscle Shoals with water on November 8, and opened the system for commercial navigation on November 10, 1890. The same day, the steamer *R.T. Cole* crossed the canal with a shipment of grain bound for Chattanooga. It arrived before the hearing on railroad rates.<sup>53</sup>

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Records Administration I, Washington DC; Johnson, *Engineers on the Twin Rivers*, 134; Bishop and Bishop, 63; and "Opened in the Fall," *Florence Herald*, September 6, 1890, which is the first mention of Goethals in the *Herald*, and which identifies Goethals as "of this city."

<sup>52</sup> *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, vol. II, 217 and 2122; U.S. Department of War, *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1891), 2305-2310.

<sup>53</sup> "The Mussel Shoals Canal," *Harper's Weekly*, October 18, 1890; "Pushing the Work," *Florence Herald*, October 15, 1890; "A Day's Outing," *Florence Herald*, October 18, 1890; "Through Mussel Shoals," *Florence Herald*, October 29, 1890; "Unobstructed Navigation," *Florence Herald*, November 12, 1890; J.W. Barlow to Chief of

Goethals spent the next few weeks ensuring the routine of daily operations at the canal were established before heading north for leave to visit his family and to appear in New York City to stand for examination to become eligible for promotion to captain. The trip was well timed; his second son, Thomas Rodman Goethals, was born in December 1890 in New Bedford, Massachusetts, where his wife had been staying, as doctors had advised her that the northern Alabama climate was not suitable for her pregnancy. This extended Goethals's leave to attend to family affairs. Once all was settled, he took and passed the promotion examination, becoming eligible for promotion to captain, and saw to the details of securing a home and moving his family to Florence. By March 1891, the canal was open and running smoothly, the Goethals family had welcomed a new member, and Lieutenant Goethals was eligible for promotion to captain, although he would have to wait until January 1892 to be promoted.<sup>54</sup>

The good news kept coming. Effective on March 18, 1891, the Corps of Engineers created a new district at Florence, responsible for all improvements on the Tennessee River between Chattanooga and Colbert Shoals. Rewarding his efforts to finally open the canal, the Chief of Engineers placed Goethals in charge of the district.<sup>55</sup>

This was Goethals's first independent command. When he was originally sent to Florence to assume local control over work on the Muscle Shoals in August 1890, he was still a

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Engineers, November 11, 1890 and November 18, 1890, File 6370, Box 43, Entry 96, RG 77, NARA I; Johnson, *Engineers on the Twin Rivers*, 134; and Davidson, *The Tennessee, Vol Two, The New River*, 168.

<sup>54</sup> "Personal Mention," *Florence Herald*, December 10, 1890; and "Personals," *Florence Herald*, March 11, 1891; Bishop and Bishop, 58; Board of Promotion to Adjutant General, February 26, 1891, File 1443, Box 59, Entry 96, RG 77, NARA I; and "Oath of Office," January 22, 1892, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>55</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, vol. II, 286; and Thomas S. Casey to Redfield Proctor, March 5, 1891, J.W. Barlow to Chief of Engineers, March 18, 1891, and George W. Goethals to Chief of Engineers, March 18, 1891, File 1634, Box 60, Entry 96, RG 77, NARA I.

subordinate of Barlow's and a part of the Nashville District. Having always been subordinate to a nearby commander, Goethals's previous duties had been almost entirely within the technical realm of engineering problems. These would no longer be the only problems he needed to solve. He would have to worry about organization, administration, logistics, and advocacy. The experience would teach him much in all of these areas, providing practical instruction on problems he would face on much larger levels later in Panama and in Washington during World War I.<sup>56</sup>

By placing Goethals in charge of the Florence District, the Chief of Engineers was taking a risk. Although he had graduated from West Point and accepted his commission nearly eleven years before, and although he had already demonstrated proven abilities and potential for continued success, Goethals was still a lieutenant – a junior officer with a relatively limited base of experience. Of forty-nine Corps of Engineers districts dedicated to river and harbor improvements in 1891, only sixteen were commanded by officers below the rank of major. And only two of these, including the newly-created Florence district, were commanded by lieutenants. By giving a district to Lieutenant Goethals, Casey was not only demonstrating his confidence in that officer's abilities, but presenting him with opportunities that almost none of his peers shared. In 1892, after Goethals had been promoted to captain, and after the Corps had consolidated some of its districts, only fifteen out of forty-five districts dedicated to river and harbor improvements were commanded by officers below the rank of major.<sup>57</sup>

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<sup>56</sup> *Report of the Secretary of War, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, House Executive Document 1, Part 2, vol. II, 278; and Bishop and Bishop, 63.*

<sup>57</sup> *Report of the Secretary of War, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, House Executive Document 1, Part 2, vol. II, ii-viii; and U.S. Department of War, Report of the Secretary of War, 52<sup>nd</sup> Cong., 2<sup>nd</sup> sess., 1892, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1892), ii-vii.*

There was always the risk that both the faith and the opportunities were misplaced in inexperienced hands. Placing comparatively junior officers in charge of significant projects or districts was not a new practice. The post-Civil War demobilization and reduction of the Army was at odds with the steady increase in demand for internal improvement projects that the Corps of Engineers faced throughout the half-century following the war. The ratio of experienced engineer officers to projects that demanded seasoned engineers began to tip in favor of the projects, forcing the Corps of Engineers to appoint junior officers to billets involving significant projects. At first, the Chief of Engineers tried to keep them within arm's reach. By the mid-1880s, so many young, junior officers were in charge of public works along the mid-Atlantic coast that the area became known within engineering circles as "the kindergarten," a place where junior officers trained under eye of the Chief of Engineers to become qualified to serve as district engineers.<sup>58</sup>

Casey and his predecessor, Brigadier General James Duane, were not entirely comfortable with this. They understood that even the best young officers still needed supervision and guidance. Since district engineers reported directly to the Chief of Engineers, whose own workload was heavy and who could never visit all districts in a single year, junior officers serving as district engineers had no senior officer to supervise and mentor them effectively. To address this problem, Duane experimented with a new concept in 1884. Placed over "the kindergarten," a "supervising engineer" was in charge of multiple districts, overseeing and guiding junior officers in the mid-Atlantic region. Duane judged the program a success. When Casey became the Chief of Engineers in 1888, one of his first acts was to institutionalize

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<sup>58</sup> Johnson, *The Ohio River Division*, 35-37.

the concept. He assigned all the districts in the country to regionally-aligned engineering divisions and appointed the most experienced colonels in the Corps of Engineers to serve as division engineers. Division engineers were charged with supervising and mentoring district engineers below the rank of lieutenant colonel within their divisions.<sup>59</sup>

This concept was admirably forward-thinking, as it not only acknowledged that the Corps of Engineers had an implicit responsibility to take active measures to develop its junior officers, but it also implemented organizational reform in an attempt to achieve that end. But as with most good first steps, this was not a perfect solution. In practice, those junior officers on the geographic fringe of their divisions realized almost no benefit to having a division engineer. As it turned out, Goethals was one such junior officer. The Florence District did not fit neatly into any of the new divisions and was haphazardly assigned to the Southwest Division, under Colonel Cyrus B. Comstock.<sup>60</sup>

Comstock was a talented officer, but his headquarters was in New York City. He was extremely busy and prohibitively distant from Florence. Most of the time Goethals needed to consult with Comstock, he did so by letter. In Goethals's three years running the Florence District, Comstock made two visits and tours of inspection to Muscle Shoals. Generally pleased with what he saw on these trips, Comstock saw no need for more frequent visits. Although

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<sup>59</sup> Johnson, *The Ohio River Division*, 37-41.

<sup>60</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, House Executive Document 1, Part 2, vol. II, 286; H.M. Adams to C.B. Comstock, April 3, 1891, File 2249, Box 66, Entry 96, RG 77, NARA I; and Johnson, *The Ohio River Division*, 39-40.

provided in concept with a mentor and supervisor, Goethals remained in a position in which he had to develop on his own.<sup>61</sup>

The challenges of the Florence District presented plenty of opportunities for Goethals to learn and grow, both as an engineer and as a leader. Under his charge, the Florence District worked along four lines of effort on over 260 miles of the Tennessee River. Closer to Chattanooga, from the area known as “the Suck” downriver to Guntersville, Alabama, the district worked to clear natural obstructions from the river and improve the channel by blasting and dredging in the shallows. At Elk River and Muscle Shoals, the engineers and laborers under Goethals would stay busy operating, improving, and maintaining the canal system. At Lower Muscle Shoals, the Florence District investigated and recommended courses of action for a canal, but would never see the funding for such a project and limited their efforts to channel improvement by blasting and dredging the riverbed, and constructing wing dams along the river embankments. Farther downriver, Goethals and his engineers drafted and implemented plans for a canal around Colbert Shoals and Bee Tree Shoals.<sup>62</sup>

Simultaneously managing multiple projects across 260 miles of river was an excellent practical lesson in organizational leadership. As Barlow demonstrated to Goethals in 1889 and

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<sup>61</sup> For examples of Goethals consulting Comstock, see George W. Goethals to Chief of Engineers, May 16, 1891, File 2978, Box 71, Entry 96, RG 77, NARA I; George W. Goethals to Chief of Engineers, May 23, 1891, Box 77, Entry 96, RG 77, NARA I; and George W. Goethals to Thomas L. Casey, August 8, 1894, File 8019, Box 127, Entry 103, RG 77, NARA I. For Comstock’s visits, see C.B. Comstock to Thomas L. Casey, May 1, 1893 and April 18, 1894, File 2457, Box 37, Entry 98, RG 77, NARA I; “Home News,” *Florence Herald*, April 27, 1893; Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Box 1, Folder 2, Sydney B. Williamson Papers, Virginia Military Institute Archives, 28.

<sup>62</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, House Executive Document 1, Part 2, vol. II, 286 and 2303-2311; *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 2<sup>nd</sup> sess., 1892, vol. II, 274-275 and 1945-1950; U.S. Department of War, *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 2<sup>nd</sup> sess., 1893, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1893), 308-309 and 2420-2433; and U.S. Department of War, *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 3<sup>rd</sup> sess., 1894, House Executive Document 1, Part 2, vol. II (Washington, DC: Government Printing Office, 1894), 282-284 and 1821-1831.

1890, a district engineer could not become personally involved in all of the minute details of one project without losing sight of the others. An effective leader must be able to identify the critical points that require personal involvement and attention and be willing to delegate direct responsibility for other points, with clear guidance and general supervision, to trusted subordinates. When Goethals first arrived in Florence in August 1890, he was extremely involved in minute details, going so far as to personally oversee the night shift. This was entirely appropriate; the project was at a point of crisis and he had been sent expressly to see the Muscle Shoals Canal through to a rapid completion. Goethals would not be able to sustain that approach as the chief engineer of the Florence District.

Like Major King at Muscle Shoals from 1876-1886, Goethals subdivided his district. He organized his divisions around each of the four lines of effort and placed one of his civilian assistants in charge of each division, effectively making one subordinate in charge of each of his principal lines of effort. This allowed Goethals to manage the entire district more effectively and gave him the flexibility to focus his personal attention on points of friction as they arose. Such was the case when plans were drafted for the Riverton Lock in the canal around Colbert and Bee Tree Shoals in 1892, and when there were significant problems with contractors at that canal in 1893 and 1894.<sup>63</sup>

This approach also was the catalyst for the beginning of one of the more meaningful professional and personal relationships in Goethals's life. Sydney B. Williamson was a civilian engineer who came to join the Florence District at the behest of his brother, another engineer

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<sup>63</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, vol. II, 2306-2310; *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 2<sup>nd</sup> sess., 1892, vol. II, 1950-1957; *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 2<sup>nd</sup> sess., 1893, vol. II, 2426-2427; *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 3<sup>rd</sup> sess., 1894, vol. II, 1826-1831; and Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Sydney B. Williamson Papers, 28-30.



who had been hired as one of Goethals's assistants and installed as the division chief responsible for improvements between Elk River Shoals and Chattanooga in 1891. Williamson proved his worth on a survey upriver, and Goethals brought him into the district headquarters to help create plans for the canal at Colbert and Bee Tree Shoals. On the job, Williamson was never happier than when his supervisors allowed him to "do the work in my own way except as to the regulations and general policies of the Engineer Department." He thoroughly enjoyed working for and with Goethals. In turn, Goethals developed great trust in Williamson and eventually sent him to resolve a crisis at Colbert Shoals in 1894. It was the beginning of one of his few lifelong friendships, and of a close professional relationship. Goethals would bring Williamson in as a principal deputy in every major engineering assignment he held in the future.<sup>64</sup>

As his first independent command, the Florence District also exposed Goethals to problems of logistics and personnel administration that he had not previously experienced. Goethals managed a permanent workforce of approximately seventy people dedicated to operating and maintaining the canals at Elk River Shoals and Muscle Shoals. These numbers increased dramatically when some projects at Little Muscle Shoals and Colbert Shoals were undertaken not through contractors, but with hired labor under district supervision. Goethals was not only responsible for planning and executing the projects within his district but also for paying salaries; acquiring and maintaining tools, river vessels, machines, and a small railroad; feeding, housing, and looking after the health of the workforce; and projecting and managing an annual budget. Although proficiency in administration and logistics was an essential element of

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<sup>64</sup> Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Sydney B. Williamson Papers, 27-36. The quote is on pp. 35-36 of the manuscript. For further evidence of the burgeoning friendship, see "Little Jots and Dots," *Florence Herald*, June 21, 1894, which indicates that Williamson, his wife, and his sister-in-law lived with Goethals in the summer of 1894 while the rest of the Goethals family made their annual summer trek to Massachusetts.

high command, most Army officers in the nineteenth century were never actually trained in these areas. Those who became proficient administrators and logisticians learned through practical experience. Administering and supplying the Florence District was the foundational experience that taught Goethals concepts, techniques, and procedures he would employ against much larger administrative and logistical problems in Panama and during World War I.<sup>65</sup>

This independent command also gave Goethals quite a bit of public relations experience, teaching him skills that were uniquely necessary in the Corps of Engineers. The engineers' highest priority was its civil engineering mission, bringing officers into frequent and intimate contact with communities, groups, and individuals with legitimate interests in their work. Goethals had already demonstrated that he had learned from Barlow's negative example by inviting several local journalists and residents to tour the canal immediately prior to its opening. He made a habit of such behavior, and he became very popular because of it.

Goethals continued to impress the residents of Florence with his hospitality throughout his stewardship of the Florence District, making a point to extend all possible kindnesses to any visitors. In one example from April 1891, the *Herald* reported that a party of thirty men and women visited the town, and had "a very pleasant time indeed. Lieut. Goethals kindly furnished them a special train which took them from the foot of the canal to Lock 3, at the canal headquarters, where a splendid dinner was prepared for them. The entire party are loud in their praise of Lieut. Goethals, and should that gentleman run for president, he would get a handsome

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<sup>65</sup> The administrative and logistical overhead of the Florence District are outlined in *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 2<sup>nd</sup> sess., 1892, vol. II, 1951 and 1956-1958; *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 2<sup>nd</sup> sess., 1893, vol. II, 2428-2421 and 2433-2435; *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 3<sup>rd</sup> sess., 1894, vol. II, 1827 and 1831-1833; see also George W. Goethals to Chief of Engineers, April 16, 1891, File 2514, Box 67, Entry 96, RG 77, NARA I.

vote from the ladies.”<sup>66</sup> Several months later, when a college president arranged a tour of the canal for a group of professors and students, “a committee composed of the three press representatives present was instructed to offer suitable resolutions of thanks to Lieut. Goethals for his courtesies . . . and remark that for uniform politeness and accommodation, Lieut. Goethals is not excelled by any man in the service.”<sup>67</sup>

While Goethals had a knack for public relations and genuinely wanted to keep the interested public informed and maintain close relations with the communities he served, the experience as a district engineer also taught him to leverage his good standing to advocate for his projects. Worried that low usage of the Muscle Shoals canal would decrease the amount of funds, Goethals published an article in the *Chattanooga Times* urging businessmen in Chattanooga to organize a steamboat line and make greater use of the canal in order to influence Congress to continue appropriating funds for Tennessee River improvements. The article further suggests that Goethals had previously discussed and coordinated this strategy with Congressman Joseph Wheeler.<sup>68</sup> While certainly getting into ground that was at best murky with respect to proper civil-military relations, Goethals was learning valuable lessons in the complicated arts of advocacy and the politics of influence. These lessons would pay enormous dividends years later when he had to continually strive to convince a large and diverse workforce, an American public, and a Congress to support his ideas and methods during the construction of the Panama Canal.

Lastly, this independent command provided Goethals with an invaluable opportunity to refine his technical skills and his project management abilities to levels that ultimately shifted the

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<sup>66</sup> “A Day’s Outing,” *Florence Herald*, April 15, 1891.

<sup>67</sup> “The State Normal Excursion to Muscle Shoals,” *Florence Herald*, September 9, 1891.

<sup>68</sup> George W. Goethals, “More to be Done,” reprinted in *Florence Herald*, September 9, 1891.

boundaries of what was then considered possible. Although managing the daily maintenance and operation of the canals and channel improvement projects occupied much of the district's time and resources, the most significant project planned and implemented in the Florence District between 1891 and 1894 was the canal around Colbert and Bee Tree Shoals. With Elk River Shoals and Muscle Shoals opened by a canal system, and with channel improvements at Little Muscle Shoals, the Colbert and Bee Tree Shoals were the last notable hazards for river navigation in northern Alabama. More of a low-water obstacle for navigation than an impediment to navigation, the Colbert and Bee Tree Shoals constituted a nearly continuous eight-mile long hazard that was the natural next project for the district after the Muscle Shoals canal opened. Anticipating this, Goethals ordered surveys of the area to be completed in August and September 1890, and developed a plan for "the construction of a canal on the south bank of the river, 7.8 miles long, 150 feet wide at the water surface, and a depth of 7 feet."<sup>69</sup>

The canal required a system of locks at its lower end, near Riverton, Alabama, to mitigate the twenty-foot fall in the river from the head of the Colbert Shoals to the foot of the Bee Tree Shoals. Common wisdom at the time called for two locks. Goethals believed it could be accomplished through single lock with an unprecedented twenty-five-foot lift. In consultation with Sydney B. Williamson, Goethals developed the plan and pitched it to his superiors in Washington. His audience was skeptical that such a lock, with nearly double the lift of the highest locks in the United States, could be built. A centralized board of more conservatively-minded officers forced the plan to be changed in 1892 to two locks separated by a mile-long pool, with respective lifts of twelve and thirteen feet. Undeterred, Goethals continued to

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<sup>69</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 1<sup>st</sup> sess., 1891, vol. II, 2310-2311.

advocate for his plan for a single lock, feeling free to do so because the lock was not yet under construction. By 1893, he had successfully convinced the Chief of Engineers. The plan was approved and construction began at the lock site that summer.<sup>70</sup>

The effort did not go smoothly. Excavation of the lock site was extremely problematic because the site was mired in quicksand that seemed to have a knack for breaking equipment used against it. Goethals sent Williamson to the site to come up with a solution, and he eventually had to resort to employing a large force of laborers with shovels and wheelbarrows to slowly excavate the site. In the meantime, a board of engineers awarded a contract for the construction and installation of the lock to Terre A. Clark over Goethals's strenuous objections. Clark had been the lowest bidder, but Goethals believed the bid was irresponsibly low and that Clark could not possibly apply enough resources to solve the quicksand problem. He became more convinced of this when he received reports that Clark had a poor reputation and worse credit in his hometown of Quincy, Illinois. As it turned out, Goethals was right. Clark failed to secure the lock's foundation to the bedrock, causing the foundation to slide and the quicksand to flow back into the lock site. Having made what Williamson could only describe as "a terrible mess," Clark walked off the job. The contract was annulled, laborers were hired, and Williamson was put in charge of construction. His and Goethals's efforts to design and build the Riverton Lock at the foot of the canal around Colbert and Bee Tree Shoals established a precedent for the mega-locks they would design and build years later in Panama.<sup>71</sup>

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<sup>70</sup> *Report of the Secretary of War*, 52<sup>nd</sup> Cong., 2<sup>nd</sup> sess., 1892, vol. II, 1950; *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 2<sup>nd</sup> sess., 1893, vol. II, 2426-2427; and Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Sydney B. Williamson Papers, 28-29.

<sup>71</sup> *Report of the Secretary of War*, 53<sup>rd</sup> Cong., 3<sup>rd</sup> sess., 1894, vol. II, 1826; U.S. Department of War, *Report of the Secretary of War*, 54<sup>th</sup> Cong., 1<sup>st</sup> sess., 1895, House Executive Document 2, vol. II (Washington, DC: Government Printing Office, 1895), 2294; George W. Goethals to Thomas L. Casey, June 24, 1893, File 2657/23, Box 41, Entry

Goethals did not stay in Florence long enough to see the completion of the canal and its innovative high-lift lock. By opening the Muscle Shoals Canal, successfully managing an independent district for more than three years, then designing and doggedly advocating for the 25-foot Riverton Lock, Goethals had caught the attention of the Chief of Engineers, Brigadier General Thomas L. Casey. When Major Thomas Turtle, an officer on his staff in Washington, died unexpectedly in September 1894, Casey recommended Goethals to be assigned to fill the vacancy. In early October 1894, Goethals received orders that his district would be consolidated back into the Nashville District, and that he was to report to Washington immediately for duty on Casey's small staff of three engineer officers.<sup>72</sup>

Florence howled when the orders were published in the first week of October. The first reports indicated not only that Goethals was to be transferred, but also that the Corps of Engineers office in Florence would close. Locals moved first to prevent the loss of the office, and then to keep Goethals, to whom they had become rather attached. Business leaders immediately telegraphed to "Fighting" Joe Wheeler in Congress that they feared "the removal of Government headquarters from this city at this time would greatly retard work on the river, which is of the utmost importance to all towns in the Tennessee Valley."<sup>73</sup> Another constituent implored Wheeler, "I understand Capt. Goethals goes to Washington. I am truly sorry as is

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98, RG 77, NARA I; Johnson, *Engineers on the Twin Rivers*, 138; and Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Sydney B. Williamson Papers, 29-30. The quotation is on page 30 of Williamson's manuscript.

<sup>72</sup> Thomas L. Casey to Daniel S. Lamont, September 27, 1894, File 7329, Box 32, Entry 103, RG 77, NARA I; Thomas L. Casey to Joseph Wheeler, October 4, 1894, File 8453/4, Box 160, Entry 103, RG 77, National Archives and Records Administration I, Washington DC; and *Report of the Secretary of War*, 54<sup>th</sup> Cong., 1<sup>st</sup> sess., 1895, vol. II, 3-4, 310, and 2277. At the time, of 118 officers in the Corps of Engineers, only four were detailed to the Office of the Chief of Engineers, including the Chief of Engineers. The Corps of Engineers maintained an office in Florence to oversee the region's canals – that office reported first to the Nashville District as of October 4, 1894, and subsequently to a reinstated Chattanooga District. "Goes to Washington" and "May Not Go," *Florence Herald*, October 4, 1894; and "No Change," *Florence Herald*, October 11, 1894.

<sup>73</sup> "May Not Go," *Florence Herald*, October 4, 1894.

everyone here. Please look into this and if true, see if you can have the office still retained at Florence. It is worth considerable to us.”<sup>74</sup> That same day, Wheeler sent word to General Casey that the “people of north Alabama earnestly appeal that [the] engineer office remain in Florence,”<sup>75</sup> and went on to note that “if Capt. Goethals is taken away, we shall all be very despondent.”<sup>76</sup> The *Florence Herald* summed up local opinion in a commendatory article published on the day Goethals departed for Washington:

Captain George W. Goethals, engineer in charge of this Tennessee River Improvements, with headquarters in this city, has been transferred to Washington city. Captain Goethals will be greatly missed in Florence as he has made a host of friends in this city. His transfer at the present time is particularly unfortunate as it will tend to retard the work on the river which was well under way since the recent River and harbor appropriations . . . . The River improvements were never in better condition and the work has been progressing nicely under the able and efficient supervision of Capt. Goethals. Capt. Goethals is an engineer of unusual ability and skill and his suggestions have been of great value to the department in prosecuting the work.<sup>77</sup>

General Casey attempted to assuage these concerns in a letter to Congressman Wheeler on October 4, 1894 making it clear that Florence would not lose its Corps of Engineers office. While Florence would no longer be the seat of an independent district, the Nashville District was ordered to station a lieutenant in Florence to oversee work and canal operations in the Muscle Shoals area. With regard to Goethals, he would not bend. “Captain Goethals’ services were needed here,” he wrote, “and his relief will not in any way embarrass the work on the Tennessee.”<sup>78</sup> Although residents of northern Alabama were satisfied that they could maintain a

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<sup>74</sup> W.P. Campbell to Joseph Wheeler, October 2, 1894, Box 81, Joseph Wheeler Family Papers 1809-1943, ADAH.

<sup>75</sup> Joseph Wheeler cablegram to Thomas L. Casey, October 2, 1894, File 8453/3, Box 160, Entry 103, RG 77, NARA I.

<sup>76</sup> Joseph Wheeler letter to Thomas L. Casey, October 2, 1894, File 8453/4, Box 160, Entry 103, RG 77, NARA I.

<sup>77</sup> “Goes to Washington,” *Florence Herald*, October 4, 1894.

<sup>78</sup> Thomas L. Casey to Joseph Wheeler, October 4, 1894, File 8453/4, Box 160, Entry 103, RG 77, NARA I.

Corps of Engineers office at Florence, they would continue to unsuccessfully petition for Goethals's return for the better part of the next year.<sup>79</sup>

Goethals was not to return to Florence as a district engineer. That phase of his career was over. In fact, the phase of economic life in the region that demanded canals in that part of the Tennessee River was also coming to an end. The improvements with which Goethals was involved on the Tennessee River were short-lived. Not long after he left Florence, trade and traffic on the Tennessee began to decline. By the turn of the century, many in the Muscle Shoals area came to see more opportunity in the river's capacity to produce energy. By the turn of the century, a number of large dams and a major hydroelectric project were under way on the river. These efforts would join forces with New Deal programs and produce the Tennessee Valley Authority in 1933, which constructed even more dams on the river. Today, the problems that Goethals and his contemporaries faced at Muscle Shoals, and the solutions they came up with, are submerged deep below the now placid surface of the Tennessee River.<sup>80</sup>

His experiences in Florence are significant for what they reveal about how Goethals developed the skills needed to succeed in the later years of his career. Observing in Barlow at Nashville an excellent example of how not to run an organization, Goethals went on to practice his own style of organizational leadership at Florence. In the process, he learned about administration and logistics, public relations, the art of advocacy, and how to push the perceived

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<sup>79</sup> See John T. Ashcraft et. al. to Daniel Lamont, May 24, 1895, G.P. Bateman to N.N. Cox, June 20, 1895, N.N. Cox to Secretary of War, June 24, 1895, Joseph Wheeler to William P. Craighill, July 16, 1895, John W. Faxon to W.P. Craighill, August 15, 1895, and A. Mackenzie to Thomas V. Meyer, all in File 11235, Box 240, Entry 103, RG 77, NARA I.

<sup>80</sup> Davidson, *The Tennessee, Volume Two: The New River*, 177-215 and 346-351.



technical limits of engineering. Even if the physical products of his labor would not long survive, these were especially important and fruitful years in Goethals's career.

Goethals's experiences at West Point and on the Tennessee River between 1885 and 1894 constitute a distinct and intermediate phase in his career. In this phase, training mattered not at all. He did benefit from serving as an instructor at West Point when the academy's prevailing pedagogical techniques and the introduction of a new engineering text forced Goethals to study and memorize the most up-to-date engineering theory and methods. But this was more luck than training, as Goethals would not have had to heed the new material had he not been detailed as an instructor at that moment in time. Personal connections shaped this phase of Goethals's career in the form of Professor Mercur's request to bring Goethals to West Point.

Talent and ability were far more significant forces shaping Goethals's career in these years than either training or personal connections. Goethals was an exceptionally talented engineer. His demonstrated aptitude as a cadet paved the way for his appointment as an instructor at West Point. His notable achievements at Muscle Shoals and Colbert Shoals were driven primarily by his own resourcefulness, technical engineering abilities, and managerial skill. Furthermore, these achievements paved the way for his next developmental opportunity in the office of the Chief of Engineers.

Luck, however, played an at least equally significant role in this phase of Goethals's career. Work on the Tennessee River was arguably the single most important portion of Goethals's first twenty years of service because of the many significant lessons Goethals took from his experiences, and because it was the first major opportunity for Goethals to showcase his talents and set conditions for his ascent within the Corps of Engineers. Interestingly, what was

most directly responsible for Goethals's assignment on the Tennessee and eventual experiences at Muscle Shoals was the unfortunate Lieutenant Graham Fitch's illness in 1889. Without that illness and the subsequent order for Fitch to Washington to stand before a medical board, a less beneficial tour of duty on the Ohio River's tributaries, in which Goethals would not have had the experience of an independent command, would have followed his assignment at West Point.

Goethals had grown significantly as an engineer and as an Army officer between 1885 and 1894. As he departed Florence and made the journey to Washington, he was no longer merely finding his way in his chosen career. Armed with invaluable lessons from his recent experiences, Goethals was beginning the final ascent to the peak of his profession.

### **CHAPTER 3**

*Master, 1894-1907*

After departing his station at Florence, Alabama, George W. Goethals embarked upon a new phase in his career. The next thirteen years exposed him to the larger issues of the Corps of Engineers and the Army; issues on a level that made much of his previous work and concerns seem almost trivial and parochial. By consistently challenging him to think beyond immediate priorities and the relatively local problems of one major project, Goethals's assignments between 1894 and 1907 were a unique practical education in executive management, the problems of logistics on a grand scale, and the processes of military adaptation. These experiences prepared and positioned him well for future challenges, and that were unique in a generation of officers making its way through the Army's slowly evolving systems of training and professional development.

When Goethals reported in October 1894, the office of the Chief of Engineers was the central administrative authority for the U.S. Army Corps of Engineers. It programmed and managed congressional appropriations totaling nearly thirty-five million dollars, and coordinated the efforts of 118 officers throughout the country engaged in the construction and improvement of coastal fortifications, river and harbor improvements, various bridging and aqueduct projects, and the construction and renovation of public buildings. It was also the higher headquarters to

which the post of Willets Point, the Army's only engineer battalion, and the Engineer School of Application reported and received guidance.<sup>1</sup>

The office was manned by four officers, including the Chief of Engineers, and a small staff of civilian clerks. Those assigned to the office ranged widely in their duties. Some work was completely administrative, involving the disbursement of funds, production of orders, and the printing of manuals. Other duties were more technical in nature. As needed, these officers sat on engineering boards and commissions, reviewed plans and contracts, and advised congressional committees. Frequently, they served as a brain trust for the Chief of Engineers, weighing in informally on special projects and questions of general policy.<sup>2</sup> These officers were so exceptionally busy that Brigadier General William P. Craighill, who replaced Thomas L. Casey as the Chief of Engineers in May 1895, successfully lobbied the Secretary of War to authorize an additional engineer officer to be assigned to his office staff in 1895.<sup>3</sup>

When Captain Goethals reported to the Office of the Chief of Engineers in October, 1894, he was the most junior officer present, and he would remain so even after the team was authorized an additional officer. As such, many of Goethals's duties during his assignment with the Chief of Engineers were menial administrative tasks. He managed the routine daily administration of the office itself, printed circulars, and drafted orders.<sup>4</sup> He also served as the

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<sup>1</sup> *Report of the Secretary of War*, 54<sup>th</sup> Cong., 1<sup>st</sup> sess., 1895, vol. II, 1-22.

<sup>2</sup> *Report of the Secretary of War*, 54<sup>th</sup> Cong., 1<sup>st</sup> sess., 1895, vol. II, 3; William J. Sewell to Daniel S. Lamont, File 10828/7, Box 233; Untitled Memorandum, File 11572/4, Box 248; "Memorandum," December 3, 1895, File 13340, Box 283; George W. Goethals to Major Charles Allen, File 15632/37 Box 337; and George W. Goethals to W.P. Craighill, January 28, 1897, File 19019/15, Box 431; all in Entry 103, RG 77, NARA I.

<sup>3</sup> U.S. Department of War, *Report of the Secretary of War*, 54<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1896, House Executive Document 2, vol. II, (Washington, DC: Government Printing Office, 1896), 4.

<sup>4</sup> George W. Goethals to Major Charles Allen, September 12, 1896, File 15632/337, Box 337; "Memorandum," December 3, 1895, File 13340, Box 283; and Untitled Memorandum, File 15632/337, Box 337, all in Entry 103, RG 77, NARA I.

disbursing officer, distributing money to compensate officers' official travel expenses, and also evaluating bids and awarding funds to the contractors who supported various improvement projects nationwide.<sup>5</sup> Goethals was also assigned as a member of the relatively inconsequential Board of Geographic Names, which was charged with naming as-yet-unnamed things, manmade or natural, that appeared on engineers' maps and charts.<sup>6</sup>

Not all of Goethals's work as an assistant to the Chief of Engineers was trivial and inconsequential, though. In one of his earliest acts as the Chief of Engineers, Brigadier General William P. Craighill altered the department's system for training West Point graduates commissioned as engineer lieutenants. He believed that the practice of sending officers straight from graduation leave to the School of Application at Willets Point, which had by now expanded its curriculum to almost two-and-a-half years of material, "was not entirely advantageous." Craighill designed a new program based upon a firm belief in the educational benefits of experience. Beginning in October 1895, new lieutenants assigned to the Corps of Engineers first spent a year working on coastal fortifications or river and harbor projects before reporting to Willets Point, "having then had the benefits of a year's rest from severe study and of a year's experience in engineering work."<sup>7</sup> Goethals had the opportunity to weigh in two years later

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<sup>5</sup> "Individual Service Report of Geo. W. Goethals, Captain, Corps of Engineers, for the fiscal year ended June 30, 1896," July 11, 1896, File # 3644-ACP-1880, Box 667, Entry 297, RG 94; Untitled memorandum, File 11572/4, Box 248, Entry 103, RG 77; and A. Mackenzie to Inspector General, July 25, 1898, File 27681, Box 580, Entry 103, RG 77; all in NARA I.

<sup>6</sup> "Efficiency Report of Capt. George W. Goethals, Corps of Engineers, for the fiscal year ended June 30, 1895," June 30, 1895, and "Individual Service Report of Geo. W. Goethals, Capt. Corps of Engineers for the fiscal year ended June 30, 1896, both in File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>7</sup> U.S. Department of War, *Report of the Secretary of War*, 54<sup>th</sup> Congress, 2<sup>nd</sup> Session, 1896, House Executive Document 2, vol. II, (Washington, DC: Government Printing Office, 1896), 4.

when Craighill was considering whether this was an effective concept, and if the interim year of experience would allow a reduction of the curriculum at Willets Point to a two year program.<sup>8</sup>

Revealing a similar belief in experience as education, Goethals urged that the new system be continued, arguing that the year of experience between West Point and attending the School of Application “cannot but impress him [the new officer] of how little he really knows, notwithstanding any preconceived notions to the contrary.” At the same time, Goethals demonstrated some appreciation of theoretical education, arguing that if the Willets Point program was to be reduced to two years, it ought not to be at the expense of instruction in civil engineering. Goethals reasoned, “The course in Civil Engineering at West Point is necessarily very elementary; the year following graduation is limited more to practical experience, and while of material assistance in the theoretical course at Willets Point, this should not be abridged because of such experience. The graduate of Willets Point will find much use for his course in Civil Engineering when called upon to perform the duties of a Military Engineer.”<sup>9</sup>

In addition to weighing in on important policy matters, Goethals was placed on a few more significant civil-military boards. On the strength of his record in Florence, the Chief of Engineers looked to Goethals when he was asked to detail an officer to provide technical advice to a Senate select committee considering the possibility of constructing an interoceanic canal in Nicaragua.<sup>10</sup> In 1897, Goethals was tasked to confer with the U.S. Civil Service Commission to ensure that civilians hired by the Corps of Engineers adhered to rules and regulations established

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<sup>8</sup> H.M. Adams to W.P. Craighill, January 23, 1897, File 19019/1, Box 431, Entry 103, RG 77, NARA I

<sup>9</sup> George W. Goethals to W.P. Craighill, File 19019/431, Box 431, Entry 103, RG 77, NARA I.

<sup>10</sup> William J. Sewell to Daniel S. Lamont, January 24, 1896, File 10828, Box 233, Entry 103, RG 77, NARA I.

by the commission.<sup>11</sup> Finally, in April 1898, the Chief of Engineers selected Goethals to represent the Corps of Engineers on a board convened by the Secretary of War to designate articles that would be prohibited for export as the nation mobilized for war with Spain.<sup>12</sup> Each of these duties gave Goethals invaluable exposure to the nature and mechanisms of the relationship between the Army and civil government – a rare opportunity given to very few junior officers in the late-nineteenth-century Army, and one that helped condition Goethals for important aspects of his later work in Panama and his service in the War Department during World War I.

In addition to indirectly teaching him critical professional lessons, Goethals's assignment to the office of the Chief of Engineers was significant for the exposure it gave him within his branch and within the War Department. Between 1895 and 1898, Goethals worked for three successive Chiefs of Engineers: Brigadier Generals Thomas L. Casey, William P. Craighill, and John M. Wilson. As he impressed each one, his reputation increased within the Corps of Engineers. Craighill regarded him as “a man of more than usual ability and capable of performing very well any duty to which he is likely to be assigned.”<sup>13</sup> Wilson extolled him as “a man of the highest type of character, an engineer of marked ability and excellent judgment; I believe him to be peculiarly fitted for any duty that could be entrusted to any officer of the Army, however high may be his rank.”<sup>14</sup>

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<sup>11</sup> “Individual Service Report of Geo. W. Goethals, Capt. Corps of Engineers, for the fiscal year ended June 30, 1897,” File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>12</sup> John M. Wilson to Secretary of War, April 28, 1898, File 216151, Box 557, Entry 103, RG 77, NARA I.

<sup>13</sup> “Efficiency Report of Capt. George W. Goethals, Corps of Engineers for the fiscal year ended June 30, 1895,” and “Efficiency Report of Capt. George W. Goethals, Corps of Engineers, for the fiscal year ended June 30, 1896,” File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>14</sup> “Efficiency Report of Capt. Geo. W. Goethals, Corps of Engineers for the fiscal year ended June 30, 1897,” File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

Within the office, Goethals worked with two future Chiefs of Engineers, Lieutenant Colonel Alexander Mackenzie and Captain William Black. Goethals particularly impressed Mackenzie, who served as the principal assistant to the Chief of Engineers between 1895 and 1898, and who would be serving as Chief of Engineers in 1907 when Secretary of War William H. Taft consulted him prior to sending Goethals to assume control of the construction of the Panama Canal.<sup>15</sup> Duty in Washington allowed Goethals to further improve his reputation and to be seen as one of the most promising junior engineer officers. This would set conditions for him to be assigned to highly selective positions, both in the very near and also the distant future.

Regardless of the opportunities afforded to him, Goethals was unsatisfied with his duty as an assistant to the Chief of Engineers. Partly, this was because of loneliness. Although the first year of his assignment to Washington brought him back into close proximity with his good friends Gustav and Julia Fiebeger, it kept him in the humid South, from which his wife Effie and their two boys would escape early each summer in favor of the home Goethals had built for them on Martha's Vineyard several years earlier, much as they did when he was stationed in Alabama. "The house seems very quiet," a forlorn Goethals wrote to his nine-year-old son in the dog days of 1895, "without you and Tommy playing engine, you singing, quarreling, etc. You must write to me and tell me what you do and also what Tommy does."<sup>16</sup> While he could dispense parental wisdom from afar, telling his son, "I am very glad to hear from Mommy that you are . . . trying hard to be good, and I hope you will succeed,"<sup>17</sup> and, later, "I am glad that your new shoes fit

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<sup>15</sup> William H. Taft to Farnham Bishop, July 4, 1929, Box 40, George W. Goethals Papers, Manuscript Division, Library of Congress.

<sup>16</sup> George W. Goethals to "Toodles" [George R. Goethals], June 19, 1895, Box 3, George W. Goethals Papers, LC.

<sup>17</sup> George W. Goethals to "Toodles" [George R. Goethals], April 18, 1896, Box 3, George W. Goethals Papers, LC.



you so well, and I hope that you won't run into salt water with them and get them all spoiled before your return,"<sup>18</sup> it was never as satisfying for Goethals as when his family was present.

Goethals's dissatisfaction with his assignment in Washington, however, was more rooted in the nature of the work. Like most officers of the nineteenth century, Goethals subscribed to a heroic vision of leadership that was frequently at odds with the managerial style that was rapidly emerging in an increasingly industrialized society and economy. Goethals and many of his contemporaries believed that an officer's true place was at the front with his unit – or in the case of the Corps of Engineers, personally involved in some active project – and not in an office or a headquarters coordinating the myriad of logistical and administrative requirements that the Army and its Corps of Engineers required in the modern age. Thus, when his own name was being mentioned as a candidate to become the Chief of Engineers as a reward for his work in Panama, Goethals could reply in complete honesty, "I am not an applicant, nor do I care of the position, the work not being to my liking. These views are not new, for I held them during my service as Assistant to the Chief, and have not changed my mind."<sup>19</sup>

Knowing his most junior assistant was getting restless, Brigadier General Wilson arranged in the fall of 1897 for Goethals to relieve the instructor of Practical Military Engineering at West Point when that officer's assignment expired the following summer. The Secretary of War agreed, and Goethals was set to move to West Point in several months' time.<sup>20</sup> This transfer did not happen on schedule; it was interrupted by events in Cuba.

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<sup>18</sup> George W. Goethals to "Toodles" [George R. Goethals], September 18, 1897, Box 3, George W. Goethals Papers.

<sup>19</sup> George W. Goethals to William M. Black, December 19, 1912, Box 17, George W. Goethals Papers, LC.

<sup>20</sup> John M. Wilson to Secretary of War, File 22967, Box 492, Entry 103, RG 77, NARA I.

Tensions between Spain and the United States had been rising since the outbreak of the Cuban Insurrection in 1895. While the American public generated vocal and sometimes passive support for the Cubans, the American government's official position was neutral. At the same time, the Cleveland administration and subsequently the McKinley administration pressured Spain to pacify Cuba and grant it political autonomy. Sensing that they were nearing the point of victory, Cuban revolutionaries rejected autonomy, opting instead to continue fighting in order to win independence. Violence continued. The ineffective and at times heavy-handed Spanish response prompted increasing support among the American public for the Cuban revolutionaries. Tensions devolved into a full-blown crisis in early February 1898, when in a single week newspapers widely published a stolen letter from the Spanish ambassador to the U.S. that insulted President McKinley and the *U.S.S. Maine* mysteriously exploded while in Havana's harbor. As the American public clamored for war and Spanish officials became increasingly convinced that a war abroad was the only way to avoid a possible political revolution at home, policymakers on both sides lost the ability to pursue effective diplomacy. On April 25, 1898, the United States declared war against Spain, and the Army began to mobilize for war.<sup>21</sup>

Through Congressional authorization to expand the Regular Army, a presidential call for volunteers, and broad popular enthusiasm, the Army rapidly expanded. Units were formed so quickly that the headquarters staffs to command and control them were formed on an *ad hoc* and frequently personal basis. In early May a letter arrived on the Brigadier General Wilson's desk from the recently designated commander of the 1<sup>st</sup> Army Corps, Major General John R. Brooke. It read, "I would respectfully ask for the assignment of an engineer officer at my headquarters. If

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<sup>21</sup> Donald F. Trask, *The War with Spain in 1898* (Lincoln, NE: Bison Books, 1981), 1-59.

agreeable to the Chief of Engineers, I would like very much to have Captain George W. Goethals assigned to this duty.” Wilson needed no convincing, writing that the position of Chief Engineer for a corps was “a position for which he [Goethals] is thoroughly qualified by his high character, soldierly ability, and scientific attainments.”<sup>22</sup> On May 20, 1898, Goethals received orders to report to General Brooke at Chickamauga National Military Park, Georgia for duty as the Acting Chief Engineer Officer of the 1<sup>st</sup> Army Corps and a temporary promotion to serve as a Lieutenant Colonel of Volunteers while serving in that capacity.<sup>23</sup>

The reputation within the Corps of Engineers and within the War Department in general that Goethals had developed since 1894 put him in high demand as the war broke out. Shortly after General Brooke secured Goethals’s assignment with the 1<sup>st</sup> Corps, Brigadier General William Ludlow, having recently been designated Chief Engineer of all armies in the field and preparing to accompany the expedition to Cuba then assembling at Tampa, attempted to steal Goethals. “He was applied for by General Brooke at Chickamauga, but his services are much more needed at this time in connection with the forces organizing at Tampa . . . Goethals is an extremely valuable and energetic man and I would rather have him for my assistant.”<sup>24</sup> Furthermore, in June, General Wilson nominated Goethals to serve as a lieutenant colonel in the first of three regiments to be raised in a brigade of volunteer engineers that Congress had authorized in the middle of May.<sup>25</sup>

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<sup>22</sup> John R. Brooke to Adjutant General, May 1, 1898, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>23</sup> Adjutant General’s Office Special Orders No. 118, May 20, 1898, and Oath of Office, May 26 1898, both in File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I; and John M. Wilson to R.A. Alger, June 1, 1898, File 26640, Box 562, Entry 103, RG 77, NARA I.

<sup>24</sup> General Ludlow, “Memorandum for General Corbin,” May 23, 1898, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>25</sup> John M. Wilson to R.A. Alger, May 14, 1898 and June 1, 1898, File 26640, Box 562, Entry 103, RG 77, NARA I.

Goethals learned of the competing requests shortly after reporting to Brooke at Chickamauga on May 30. The request from Ludlow was passively rejected; the Adjutant General replied that while Goethals was assigned to 1<sup>st</sup> Corps, a transfer to Ludlow's staff was possible if Brooke agreed and wrote the orders, but Brooke proved unwilling to let him go.<sup>26</sup> The Chief of Engineers left the transfer to the volunteer engineer regiment up to Goethals. He was torn, commenting to his son that "Genl. Brooke doesn't want me to go and I don't reckon what to do." Ultimately, he acceded to pressure from Brooke and declined the appointment in favor of maintaining his position as Chief Engineer of the 1<sup>st</sup> Corps.<sup>27</sup>

Goethals may have immediately regretted that decision when he was shown to his assigned campsite and found that it was a short distance downhill from a slit trench used as a latrine. "During the heavy rains," he testified after the war, "our sink [latrine] was flooded out, and naturally the drainage was toward the tents."<sup>28</sup> Such amateurish and unsanitary mistakes were endemic to the Army's mobilization for the Spanish American War. Mobilization camps generally poorly sited and became pestilent breeding grounds of disease. The Army's 1<sup>st</sup> and 6<sup>th</sup> Corps mobilized at Chickamauga Park, which was among the more notorious Spanish-American

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<sup>26</sup> H.C. Corbin to General Ludlow, May 24, 1898, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I

<sup>27</sup> General Orders No. 22, HQ, First Army Corps and Department of the Gulf, Camp George H. Thomas, May 30, 1898, Volume 1, Entry 33, RG 395, NARA I; John M. Wilson cablegram to George W. Goethals, June 9, 1898, and George W. Goethals cablegram to John M. Wilson, June 9, 1898, File 26945, Box 564, Entry 103, RG 77, NARA I. Quotation from George W. Goethals to "Toodles" [George R. Goethals], June 1, 1898, Box 3, George W. Goethals Papers, LC.

<sup>28</sup> *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, Senate Document No. 221, vol. 6 (Washington: Government Printing Office, 1900), 2683.

War mobilization centers as scandalous reports, some accurate and some exaggerated, filled the pages of widely-read muckraker newspapers.<sup>29</sup>

Experiences at Chickamauga underscored to Goethals the importance of preventive health measures and strict enforcement of sanitation regulations when large organizations live and work in the field. To his family, Goethals reported only, “It is awfully dirty out here.”<sup>30</sup> He was more candid to postwar investigators, recalling, “I did not think the camp was particularly clean. Riding through the woods, for instance, there were evidences of the men having defecated all through the woods without reference to sinks. My attention was particularly called to our own headquarters, which were not in a very good condition as far as policing was concerned.”<sup>31</sup> Goethals further testified that many commanders at the camp selected bivouac sites in unhealthy locations because they deemed healthier locations to be more useful as training and drilling grounds. Bivouac sites were dangerously overcrowded as inexperienced leaders failed to comprehend the relationship between dispersion and sanitation. Units were frequently encamped in and among their own filth, encamped upon ground that was too rocky to permit digging adequately deep latrines. Beyond this, Goethals’s testimony suggests that a fundamental error was made in selecting Chickamauga Park as a mobilization site for two entire corps, as the sole uncontaminated water supply that was available to provide water to the camp could not support both corps if they were fully manned.<sup>32</sup>

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<sup>29</sup> An excellent overview of sanitation and related supply problems at mobilization centers during the Spanish-American War can be found in Graham A. Cosmas, *An Army for Empire: The United States Army in the Spanish-American War* (College Station, TX: Texas A&M University Press, 1994), 266-278.

<sup>30</sup> George W. Goethals to “Dodo” [George R. Goethals], June 10, 1898, George W. Goethals Papers, LC.

<sup>31</sup> *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2683.

<sup>32</sup> *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2683-2686.

Mobilization at Chickamauga was mostly uneventful for Goethals. He spent much of the month of June working to improve the water supply. He conducted the necessary surveys and ran a line to a supplemental source at Crawfish Springs, but General Brooke ordered work on the water supply to be stopped when he heard a rumor that 15,000 soldiers were to be diverted to the 5<sup>th</sup> Corps at Tampa.<sup>33</sup> With newfound downtime, Goethals visited nearby Chattanooga and hiked Lookout Mountain. Seeking to make more appropriate use of his time, he began visiting the camps of the various volunteer regiments at Chickamauga and instructing their officers on how to conduct reconnaissance, and continued doing so throughout late June and July.<sup>34</sup> Seeing that his reliable assistant from Florence, Sydney B. Williamson, had been commissioned as a captain in the 3rd Regiment of volunteer engineers and was conveniently also mobilizing at Chickamauga, Goethals persuaded Brooke to assign Williamson as his assistant. Otherwise, he watched the war unfold in newspapers, followed the Santiago campaign with great interest, and waited for 1<sup>st</sup> Corps to receive orders.<sup>35</sup>

Despite being on the very small headquarters staff of the 1<sup>st</sup> Corps, it was from the newspapers that Goethals first learned that he and a portion of the corps were bound for Puerto Rico.<sup>36</sup> Having heard unconfirmed rumors at the end of June of a possible campaign, General

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<sup>33</sup> George W. Goethals to "Toodles" [George R. Goethals], June 17, 1898, Box 3, George W. Goethals Papers, Manuscript Division, Library of Congress; and *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2684.

<sup>34</sup> George W. Goethals to "Toodles" [George R. Goethals], June 21, 1898, George W. Goethals Papers, Manuscript Division, Library of Congress; and *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2687.

<sup>35</sup> George W. Goethals to "Toodles" [George R. Goethals], July 3, 1898, George W. Goethals Papers, LC; Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Box 1, Folder 2, Sydney B. Williamson Papers, VMI, 28; Special Orders No. 37, Headquarters, 1<sup>st</sup> Army Corps, Arroyo, Puerto Rico, August 11, 1898, Volume 1, Entry 34, RG 395, NARA I.

<sup>36</sup> George W. Goethals to "Toodles" [George R. Goethals], July 3, 1898 and July 12, 1898, George W. Goethals Papers, Manuscript Division.

Brooke asked Goethals to procure maps and information concerning Puerto Rico. Goethals sent a request for both maps and information to the Chief of Engineers on June 29, who promptly forwarded the request to the War Department's Bureau of Military Information. Receiving no positive response, Goethals telegraphed the Bureau of Military Information directly on July 8, and shortly thereafter "received by return mail a copy of a map of Puerto Rico, but no information whatever concerning that island."<sup>37</sup> The corps continued to prepare blindly until it was confirmed in the middle of the month that General Brooke would lead a detachment of approximately 5,000 men from the corps in the Puerto Rico Campaign.<sup>38</sup>

Following the Spanish surrender to General William R. Shafter's 5<sup>th</sup> Corps at Santiago de Cuba on July 17, Secretary of War Alger ordered General Nelson Miles to assume command of a previously planned expedition to Puerto Rico. Because Shafter's soldiers were too affected by disease to participate in the campaign, the War Department selected a bevy of units from the 1<sup>st</sup> and 4<sup>th</sup> Corps encamped at Chickamauga and near the ports of Charleston and Tampa to join Miles and nearly three thousand soldiers who had never debarked from their troop transports in Guantanamo Bay. In sum, this cobbled together a force of approximately 17,000 men. Although the plans previously drawn up and approved by the Secretary of War called for Miles to land at Cape Fajardo in the northeast and make a quick strike to the west to capture San Juan, Miles elected to change course after sailing out of Guantanamo Bay. Suspecting that the Spanish

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<sup>37</sup> George W. Goethals to John M. Wilson, July 18, 1898, File 26289, Box 563, Entry 103, RG 77, National Archives and Records Administration I.

<sup>38</sup> See George W. Goethals to "Toodles" [George R. Goethals], July 3, 1898, July 12, 1898, and July 22, 1898, Box 3, George W. Goethals Papers, Manuscript Division, Library of Congress. Goethals clearly regards Puerto Rico as only a possibility or mere "newspaper talk" in the earlier two letters. Only in the July 22 letter does he discuss Puerto Rico in certain terms that are also surprisingly specific and uncensored: "We are to go to Porto [sic] Rico and leave tomorrow at 2:30 P.M. for Newport News where we will be for a few days before going to our destination on board the *St. Louis*."

expected him to land as close to San Juan as possible, Miles chose instead to land on Puerto Rico's southern coast.<sup>39</sup>

As Miles and sailed from Cuba, the War Department coordinated to move the remainder of his invasion force to their ports of embarkation and transport them to Puerto Rico. The portion of the 1<sup>st</sup> Corps selected to participate in the campaign departed Chickamauga Park to await transportation at Newport News, Virginia on July 23, 1898. They were fortunate; cases of typhoid fever in the unsanitary Camp Thomas climbed dramatically beginning in late July, and doubled in number by the middle of August.<sup>40</sup> But Goethals was unaware of his comparatively favorable luck. When he boarded the *U.S.S. St. Louis* at Newport News on July 28, he noted that “the bedding was foul, very bad; ventilation, none at all, and the meals were simply abominable.”<sup>41</sup>

Additionally, the 1<sup>st</sup> Corps had a woefully inadequate understanding of Puerto Rico. The War Department had failed to send anything more than one map of Puerto Rico in response to Goethals's requests in July. General Brooke, however, noticed that a small detachment of Puerto Ricans were also taking passage on the *U.S.S. St. Louis* to rendezvous with General Miles to serve as scouts and guides for the invasion. He quickly sent his engineer to interview them. Goethals spent most of the voyage collecting from them “all the information concerning the

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<sup>39</sup> Cosmas, 232-234 and Trask, 336-356

<sup>40</sup> Cosmas, 272. Approximately 2,200 soldiers at Camp Thomas were ill with typhoid fever on June 25, 1898. That number climbed to approximately 4,400 by August 15.

<sup>41</sup> *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2688



island, roads, etc., needed by the Commanding General for intelligent operations.”<sup>42</sup> Although better than nothing, this was no way to prepare effectively for an invasion.

Landings commenced on Puerto Rico’s southwest coast at Guánica on the morning of July 25. After a minor skirmish, American soldiers had established a secure beachhead. That beachhead was expanded on July 26, and at the same time Miles landed a division at Ponce, near the center of Puerto Rico’s south coast. More reinforcements landed on July 31 at both Ponce and Guánica. After a few small-unit actions, the outnumbered Spanish troops, recently abandoned by the Puerto Rican militia who deserted for their homes or defected outright to the American side, were retreating. When the *St. Louis* and accompanying transports steamed into Ponce on July 31, Miles directed Brooke to collect his forces and prepare to land forty miles to the east, near a village named Arroyo.<sup>43</sup>

Goethals splashed ashore with the lead elements of the 1<sup>st</sup> Corps on August 2, 1898, meeting no opposition. Brooke took three days to disembark all of his men. For the first two days, he placed Goethals in command of the perimeter of outposts securing the beachhead, during which time occurred no action more severe than the ultimately harmless exchange of a few potshots.<sup>44</sup> As the disembarkation reached its final stages, Goethals, along with Sydney B. Williamson, was pulled back to the beach and for two days was “charged with building a wharf

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<sup>42</sup> George W. Goethals to John M. Wilson, April 13, 1901, File 39037, Box 915, Entry 103, RG 77, NARA I.

<sup>43</sup> Cosmas, 234-236; Trask, 357-362; Wooster, 225-229; *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56<sup>th</sup> Congress, 1<sup>st</sup> Session, 1900, vol. 6, 2688.

<sup>44</sup> George W. Goethals to John M. Wilson, April 13, 1901, File 39037, Box 915, Entry 103, RG 77, NARA I; George W. Goethals to “Toodles” [George R. Goethals], August 28, 1898, Box 3, George W. Goethals Papers, LC.

to facilitate landing supplies – the rough surf was preventing landing supplies on the beach itself.” The dock was a relatively simple project and took little time to complete.<sup>45</sup>

By August 5, all of Brooke’s soldiers had landed, and supplies were starting to move ashore in bulk as well. Expanding the base of operations, one of the 1<sup>st</sup> Corps regiments had seized the nearby town of Guayama after a brief skirmish, and Brooke was poised to support a general offensive, although he still required more intelligence about the position and disposition of the Spanish.<sup>46</sup> With the dock complete, Brooke looked to Goethals to conduct reconnaissance to prepare for the pending offensive. Taking along his trusted friend Williamson, Goethals executed several thorough reconnaissance missions, finding that the Spanish had “occupied the heights three or four miles inland from the town that commanded the highway leading to San Juan.” It was risky work on both ends of these missions. Williamson later recalled that “the most dangerous feature of the reconnaissance was getting back through our own outpost composed of green volunteer troops that were liable to shoot first and investigate afterwards.”<sup>47</sup>

Meanwhile, General Miles had completed his plan for the conquest of Puerto Rico. He envisioned four assaulting columns converging on San Juan. In the west, two columns starting from Guánica and Ponce would move from south to north, converging at the town of Arecibo on Puerto Rico’s northwest coast, and then moving east against San Juan. In the center of the island, one column would move northeast from Ponce against the main Spanish defensive position at Aibonito, a village in high ground on the southern end of a mountain range that

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<sup>45</sup> George W. Goethals to John M. Wilson, April 13, 1901, File 39037, Box 915, Entry 103, RG 77, NARA I. Also noted in Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Box 1, Folder 2, Sydney B. Williamson Papers, VMI, 34.

<sup>46</sup> Cosmas 234 and Wooster, 228.

<sup>47</sup> Both quotations from Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Box 1, Folder 2, Sydney B. Williamson Papers, VMI, 34.

bisects the interior of the island from east to west. There, 1,300 Spaniards blocked the main highway leading to San Juan. The 1<sup>st</sup> Corps constituted the fourth assaulting column and was assigned to support the attack against Aibonito by moving against Cayey from Arroyo and Guyama, then cutting across the highway behind Aibonito, isolating its defenders. After Aibonito fell, Miles intended the two columns to move north along the highway against San Juan.<sup>48</sup>

The offensive began on August 9, 1898. The Spanish were ill prepared to mount an effective defense. Because the Puerto Rican militia had gone home or defected, the Spanish mustered only 8,000 defenders, less than half the strength of the American forces under Miles. Furthermore, as their colleagues did on Cuba, the Spanish erred in attempting to defend too many points at once. As a consequence, they failed to mass enough combat power at any point to effectively defend against any of the four assaulting columns.<sup>49</sup>

The 1<sup>st</sup> Corps watched idly as the three columns to their west opened the offensive, with the westernmost units making the most rapid progress. A reconnaissance in force on August 8 by the 4<sup>th</sup> Ohio Volunteer Infantry Regiment, belonging to the 1<sup>st</sup> Corps, produced a skirmish that indicated Spanish forces were entrenched in the high ground near Cayey.<sup>50</sup> Brooke spent the next few days planning his attack. He hoped to delay the attack until the corps could be reinforced by an additional regiment of volunteers, but was forced to take earlier action when he learned that Wilson's column was making unexpectedly rapid progress toward Aibonito.<sup>51</sup>

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<sup>48</sup> Cosmas, 236; Trask, 362-363.

<sup>49</sup> Cosmas, 236-237.

<sup>50</sup> Trask, 362-363.

<sup>51</sup> Transcription of George W. Goethals to "My Darling" [Effie R. Goethals], August 14, 1898, Thomas Goethals Private Collection, Vineyard Haven, MA. I am deeply indebted to Mr. Goethals, the grandson of George W.

On the evening of August 11, Brooke issued orders to his soldiers to advance on to Cayey shortly before dawn the following morning. But inexperienced leaders of the volunteer regiments failed to coordinate their movements properly, and the 1<sup>st</sup> Corps began its movement two hours behind schedule. Brooke sent Goethals and Williamson ahead to conduct a final reconnaissance of the Spanish line, then relied on them to post the lead battalion of skirmishers. With this task accomplished, and with anxiety mounting as his first taste of combat drew near, Goethals returned to his commander, who was positioning a battery of light artillery that he intended to use to open the battle. Brooke directed Goethals and the rest of his staff to observe the artillery fire and adjust it as needed. As the last artillery piece was being unlimbered and hauled into position, afternoon was giving way to early evening, and the moment of battle had arrived. But it passed as quickly as it came. At that moment, as Goethals wrote to his wife two days later, “a messenger came galloping up and shouted that he had an important dispatch. The General read it, abused the messenger for not caring more for his horse and telling him never to ride so hard again, after which he told us there would be no fight as peace had been declared.”<sup>52</sup>

“Five minutes more,” Goethals lamented, “and the first shot would have been fired and then there could have been no stopping until after the Spaniards had been driven away . . . Thus ends the war, I expect, and I haven’t been under Spanish fire at all, I’m sorry to say, for the outpost firing doesn’t count for anything as there were only a few shots fired on us.”<sup>53</sup> Somehow,

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Goethals, for a most pleasant and interesting meeting in December 2012, during which time he showed me a transcribed copy of the original letter. This is the only surviving letter between Goethals and his wife, who burned her letters from him later in life out of a deeply valued sense of privacy. According to Mr. Goethals, she saved this one letter because she believed it to have historical value.

<sup>52</sup> Transcription of George W. Goethals to “My Darling” [Effie R. Goethals], August 14, 1898, Thomas Goethals Private Collection, Vineyard Haven, MA.

<sup>53</sup> Transcription of George W. Goethals to “My Darling” [Effie R. Goethals], August 14, 1898, Thomas Goethals Private Collection, Vineyard Haven, MA.

Goethals felt cheated out of a genuine experience of the war. While it seems inconsistent with a rational sense of self-preservation, Goethals was expressing a genuine sentiment. His generation of officers had been educated at West Point and reared as junior officers by Civil War veterans in a time when veterans and society alike were constructing an idealized and romanticized memory of the Civil War.<sup>54</sup> Goethals, like his peers, was heavily influenced by this and held an almost Victorian sense of war and officership in general. Describing General Brooke preparing for battle, he wrote to his wife in terms reminiscent of the earliest phases of the earlier war: “The General was just magnificent; he was in khaki uniform, in the front, and had no fear for anyone but his staff.”<sup>55</sup>

Like most officers of his generation, Goethals’s perception of the ideal officer – from a lieutenant up to a general – was a fearless veteran in the thick of the action, leading from the front. In his view, his wartime service was cheapened by not experiencing battle. For Goethals, this would be a constant source of insecurity as his career progressed. For the Army, this mindset among Goethals’s generation would be a significant aspect of an incongruity between the Army’s culture and its organization as it adapted to meet the managerial and logistical requirements of modern industrialized warfare.

But for now, Goethals was stuck in Puerto Rico with no war to fight. Immediately after the armistice, Goethals was busy repairing two bridges on the highway to San Juan that had been blown by the Spanish in an effort to slow down the American advance. Beyond this, Goethals could only report, “I performed various routine duties assigned to me by the Major General

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<sup>54</sup> See David W. Blight, *Race and Reunion: The Civil War in American Memory* (Cambridge, MA: Belknap Press, 2001), 140-170 and 255-299.

<sup>55</sup> Transcription of George W. Goethals to “My Darling” [Effie R. Goethals], August 14, 1898, Thomas Goethals Private Collection, Vineyard Haven, MA.

Commanding [General Brooke] and more particularly that of inspecting the fortifications of San Juan.”<sup>56</sup>

In reality, Goethals had very little to do. He passed time by touring the island and collecting Spanish stamps and other relics of the war to send back home to his sons. He was not enamored with the inhabitants, whom he viewed in racialized terms, observing to his oldest son that “the little boys and girls about here run around naked until they are about 7 or 8 years old – nearly all the men and women go barefooted . . . They are awfully dirty too – and I don’t think there are any full blooded whites.”<sup>57</sup> When General Miles returned to the United States, Brooke was placed in charge of the occupation of Puerto Rico, and brought Goethals with him to serve on his staff in this new capacity. There remained, however, little for Goethals to do. Always uncomfortable with idleness, Goethals wrote home, “Genl. Brooke wants me to stay here with him, but I don’t care to unless I have something to do and to keep busy.”<sup>58</sup> By the middle of September, he was miserable. “I want to get back very much,” he wrote to his family, “I have no work to do, [and] everything is so filthy and dirty that I just cannot stand it here for any length of time.”<sup>59</sup>

As it turned out, Goethals did not have to wait any significant length of time. In the second week of September, Brigadier General James Wilson, Chief of Engineers, began agitating to move him to the Department of Practical Military Engineering at West Point, as had been

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<sup>56</sup> George W. Goethals to John M. Wilson, April 13, 1901, File 39037, Box 915, Entry 103, RG 77, NARA I.

<sup>57</sup> George W. Goethals to “Toodles” [George R. Goethals], August 22, 1898, and August 28, 1898, Box 3, George W. Goethals Papers, LC. The quotation is from the August 22 letter.

<sup>58</sup> George W. Goethals to “Toodles” [George R. Goethals], August 28, 1898, Box 3, George W. Goethals Papers, LC.

<sup>59</sup> George W. Goethals to “Toodles” [George R. Goethals], September 15, 1898, Box 3, George W. Goethals Papers, LC.

originally arranged prior to the outbreak of war.<sup>60</sup> Brooke was opposed to losing his engineer, protesting loudly and, ultimately, unsuccessfully.<sup>61</sup> Goethals was officially relieved of his responsibilities in Puerto Rico on October 20, 1898, and was soon on his way back home to move his family once again to the United States Military Academy.<sup>62</sup>

The Department of Practical Military Engineering was an important part of cadets' military training while at West Point. This department ran exercises that taught cadets how to design and dig field fortifications and entrenchments, conduct reconnaissance, execute topographical surveys, construct pontoon and simple trestle bridges, operate signaling and communications equipment, and employ siege materials. Because such training was always conducted outdoors, it was generally scheduled between the months of April and October.<sup>63</sup>

As the head of the Department of Practical Military Engineering, Goethals had several other duties to attend to that kept him busy throughout the year. Having reverted back to his Regular Army rank of captain, he was the commander of Company E of the Army's battalion of engineers. This company was responsible for providing a daily guard for the West Point garrison, maintaining the artillery batteries and their emplacements at West Point, and supporting field training for the cadets. In addition, Goethals served as the post engineer, directly under the superintendent's command. In this capacity, he increased West Point's water supply by adding

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<sup>60</sup> John M. Wilson to Secretary of War, September 9, 1898, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>61</sup> John R. Brooke telegram to Adjutant General, October 10, 1898 and October 18, 1898, and Henry C. Corbin telegram to John R. Brooke, October 19, 1898, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>62</sup> U.S. Department of War, "Report of the Chief of Engineers," Part 1, *Annual Reports of the War Department*, 57<sup>th</sup> Cong., 1<sup>st</sup> sess., 1901, House Executive Document 2 (Washington, DC: Government Printing Office, 1901), 58.

<sup>63</sup> Betros, *Carved from Granite* 214; U.S. Department of War, *Annual Reports of the War Department*, 56<sup>th</sup> Cong., 1<sup>st</sup> sess., 1899, House Executive Document 2, vol. I, Part 1 (Washington, DC: Government Printing Office, 1899), 675; U.S. Department of War, *Annual Reports of the War Department*, 56<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1900, House Executive Document 2, vol. I, Part 1 (Washington, DC: Government Printing Office, 1900), 290.

more pipelines and purification systems to handle water from additional local sources, and supervised the renovation of the academy's library.<sup>64</sup>

Goethals did not linger at West Point. General Wilson, still serving as the Chief of Engineers, ordered him to appear before an examination board scheduled to convene in New York City in December 1899. The board examined Goethals on December 6 and recommended him for promotion to major. He was formally promoted on March 6, 1900.<sup>65</sup> Because the Department of Practical Military Engineering was a captain's position, General Wilson recommended to Elihu Root, the new Secretary of War, that he approve orders to transfer Goethals to the engineer district based at Newport, Rhode Island, responsible for fortifications and river and harbor improvement in Rhode Island and southeastern Massachusetts.<sup>66</sup>

Wilson made a conscious decision to send Goethals to Newport for reasons of professional development. General Leonard Wood, a future Army Chief of Staff who was then commanding the American forces still occupying Cuba, had requested Goethals's services on his own staff. To Wilson, he wrote, "I want a moderately young man, active and thoroughly tactful. The situation is difficult and requires great judgment and tact . . . I should prefer above all others Major George W. Goethals if he is available . . . My next choice would be Captain David DuBois Gaillard, then Captain H.F. Hodges, Captain J.J. Morrow, and Captain McKinstry." Wilson replied, "Of the names you sent me, I have selected Capt. Hodges; he has had every class of duty

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<sup>64</sup> *Annual Reports of the War Department*, 56<sup>th</sup> Cong., 1<sup>st</sup> sess., 1899, vol. I, 675-677; *Annual Reports of the War Department*, 56<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1900, vol. I, 290-291.

<sup>65</sup> John M. Wilson to Elihu Root, October 4, 1899, File 32857, Box 722, Entry 103, RG 77, NARA I; "Examination for Promotion," December 6, 1899, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>66</sup> John M. Wilson to Elihu Root, May 10, 1900, File 35155, Box 837, Entry 103, RG 77, NARA I.



nearly, river work, harbor work, fortification work, canal work, and was Lt. Col. of one of the Volunteer Engineer regiments during the Spanish war.”<sup>67</sup>

While Goethals had significant experience with river improvement, he had none at all with coastal fortifications, which had been the primary mission for which the Corps of Engineers had been originally organized in 1802, and to which the corps dedicated a quarter of its personnel at the beginning of the twentieth century.<sup>68</sup> Wilson was already convinced that Goethals was an outstanding officer, but wanted him to gain experience in fortifications work so that he could truly be a master of his trade. The decision would benefit Goethals in ways beyond what Wilson likely imagined, as Goethals’s work in Newport served as a critical catalyst for his ultimate selection to lead the construction of the Panama Canal.

Goethals was probably delighted to be sent to Newport, as it would allow for much more time with his family than any of his other assignments had. The lengthy annual sojourns of Effie and the two Goethals boys to the Rodman home in New Bedford, Massachusetts and the Goethals’ house on Martha’s Vineyard would no longer be so lengthy nor so distant. Both New Bedford and Martha’s Vineyard were part of his district and within his scope of responsibility. As indicated from the complete lack of correspondence with his family during his time in Newport, these were some of the least lonely years of his career.<sup>69</sup>

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<sup>67</sup> Leonard Wood to John M. Wilson, April 1, 1901 and John M. Wilson to Leonard Wood, April 7, 1901, File 32481/9, Box 715A, Entry 103, RG 77, NARA I.

<sup>68</sup> David A. Clary, *Fortress America: The Corps of Engineers, Hampton Roads, and United States Coastal Defense* (Charlottesville, VA: University of Virginia Press, 1990), x; “Report of the Chief of Engineers,” Part 1, *Annual Reports of the War Department*, 1901, 4-5. The latter shows 33 engineer officers out of 131 assigned to duties that were either wholly or partially involved with fortifications.

<sup>69</sup> Box 3, George W. Goethals Papers, LC contains family correspondence from this period. There are no letters between late 1898 and early 1905.

Goethals officially assumed his responsibilities in Newport on August 31, 1900.<sup>70</sup> The district now under his charge was large and multifaceted, responsible for both fortifications and improvements of rivers and harbors throughout Rhode Island and southeastern Massachusetts. As district engineer, Goethals managed simultaneous efforts to establish or deepen anchorages and create more navigable channels in and around harbors in Martha's Vineyard, Nantucket, Cape Cod, Woods Hole, and Rhode Island's Narragansett Bay, as well as dredging river channels in the Taunton River in Massachusetts. In addition to this, the district was responsible for removing unfortunate vessels that routinely wrecked or sank and obstructed navigation in channels frequently used by fishermen and commercial shipping, especially near Buzzards Bay, Nantucket, Martha's Vineyard, and Block Island. Much of this work, however, was conducted by contractors. While Goethals and his supporting staff of one lieutenant, four clerks, one draftsman, six engineers – including the seemingly ever-present Sydney B. Williamson, four inspectors, and ten skilled workers spent a fair amount of time monitoring and inspecting progress and disbursing funds for the contracted projects, they directed most of their effort to the coastal fortifications near Newport, Rhode Island and New Bedford, Massachusetts.<sup>71</sup>

Since its earliest days, the United States viewed the wide Atlantic Ocean as both a blanket of security that separated it from potentially hostile powers and a vulnerable avenue of approach over which those same powers could transport a raiding party, invasion force, or naval fleet to attack or impose a blockade at points of their choosing on the long American coastline.

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<sup>70</sup> George W. Goethals to John M. Wilson, August 31, 1900, File 36555, Box 839, Entry 103, RG 77, NARA I.

<sup>71</sup> On river and harbor improvement projects in the district, see U.S. Department of War, "Report of the Chief of Engineers," Part 1, *Annual Reports of the War Department*, 57<sup>th</sup> Cong., 2<sup>nd</sup> sess., 1902, House Executive Document 2, vol. II (Washington, DC: Government Printing Office, 1902), 108-124 and 889-919. For Goethals's staff, see George W. Goethals to John M. Wilson, December 6, 1900, File 36791/5, Box 845, Entry 103, RG 77, NARA I. For Sydney B. Williamson's time in Newport, see Sydney B. Williamson, Untitled Manuscript, January 16, 1934, Box 1, Folder 2, Sydney B. Williamson Papers, VMI, 35-38.

In the first few decades after the Revolution, this was not a completely paranoid point of view, grounded on the recent memory of threats and capabilities demonstrated by British raiding parties and expeditionary forces. With the problem of coastal defense in mind, even as he moved to reduce the aggregate size of the military, President Thomas Jefferson supported legislation in 1802 that created the Corps of Engineers. But the fortifications created by this new arm of the Army in its first decade of existence did little to deny the British freedom of action along the coastline during the War of 1812.<sup>72</sup>

After a period of study in the wake of the war, the Corps of Engineers submitted to Congress in 1821 a report that laid the foundation for the “Third System” of American coastal defense. The report articulated that the purpose of the coastal defense system was to deny the enemy access to important harbors, deny the enemy access to potential bases of operations from which it could launch offensive operations along the seacoast, defend major American cities, prevent blockades of major rivers that the United States could use as interior lines of communication, protect coastal and internal trade, and defend naval bases and important commercial harbors. This statement of policy would govern the Army’s contribution to American coastal defense for more than a century. The 1821 report also specified that the vast majority of fortifications in the system would be large, casemated, brick-and-mortar structures in three classes of size. In all, the Corps of Engineers envisioned constructing fifty fortifications within and around the major harbors and trade routes of the Atlantic and Gulf coasts at a projected cost of \$18,000,000. This was an ambitious scheme that only became more ambitious as time progressed. By 1851, the Chief of Engineers reported that 186 fortifications were

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<sup>72</sup> Browning, 3-25; Clary, 25-29.

needed, with a total projected cost of \$67,500,000 to build and arm the works. For the Army Corps of Engineers, this cemented coastal defense as its highest priority mission in the nineteenth century.<sup>73</sup>

Progress on the Third System proceeded very slowly, limited somewhat by an unenthusiastic Congress, but most of all by the engineers' own relatively small base of human and material resources. The simple fact was that the scope of the Third System was vastly disproportionate to the means with which the Corps of Engineers could execute the program. The pace of work was therefore necessarily slow. Three decades after the 1821 report was published and the program began, fifty-nine forts were complete and another ten were in progress.<sup>74</sup> This strikingly slow pace developed a characteristic distinct to coastal defense that would persist even into Goethals's time. Ambitious national fortification programs took decades to complete. Naturally, then, especially as time wore on, the work was inherently backward-looking. Engineers busily raising fortifications in the 1840s and 1850s based their work on principles and doctrines established in the early 1820s, not recognizing that technological innovation had rendered many of those principles and doctrines irrelevant. They toiled on, blissfully unaware that they were waging a losing battle against time and technology, even as the Crimean War of 1853-1856 provided hints that the still incomplete Third System had already faded into obsolescence.<sup>75</sup>

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<sup>73</sup> Clary, 39; and Browning, 30-44. The figures are on pages 33 and 42, respectively.

<sup>74</sup> Browning, 43-47. The figures can be found on page 43.

<sup>75</sup> Browning, 73-75; Clary; 45-47; and Linn, 22-26. The Corps of Engineers chose to interpret the fact that the European allies were able to make sizable landings despite the Russian fortifications as confirmation that forts were necessary to deter or defend against similar hostile landings on American shores, rather than as evidence that such fortifications were no longer by themselves adequate means to deter and defend against hostile action.

The Civil War left no doubt that advances in technology had invalidated three key assumptions upon which the Third System had been built: that forts necessarily outmatched ships, that large casemated structures could withstand bombardment from the most powerful artillery of the day, and that fortifications alone could stop a hostile fleet before it reached a major port or city. Forty years of improvements in ship design, ordnance, and steam propulsion had changed the situation. In November 1861, a Union fleet decisively defeated Confederates in two forts defending Port Royal, South Carolina, demonstrating that an unimpeded fleet could have the requisite armor and armament to make it more than a match for coastal fortifications. In April 1862, the Union Army decisively demonstrated the ineffectiveness of casemated fortifications made of brick and mortar at Fort Pulaski near Savannah, Georgia. New rifled artillery allowed the Union to engage the fort from previously unheard of ranges, and to fire shells with such accuracy and such force that a large portion of the fort's southeast wall was reduced to rubble after less than two days of bombardment, forcing a Confederate surrender by exposing the powder magazine to incoming fire. Later that month, after an ineffective naval bombardment, Union Admiral David Farragut simply bypassed the two fortifications guarding New Orleans from positions down the Mississippi River to capture the city. Steam propulsion allowed ships to move faster and more directly than the architects of the Third System imagined in 1821, and the Admiral was able to push thirteen ships through the forts' engagement areas quickly enough to avoid major damage. As if to underscore the point, he repeated the feat to capture Mobile, Alabama in August 1864.<sup>76</sup>

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<sup>76</sup> Browning, 106-123; Linn, 29; James M. McPherson, *War on the Waters: The Union and Confederate Navies, 1861-1865* (Chapel Hill, NC: University of North Carolina Press, 2012), 36-42 and 54-69

The Corps of Engineers responded to the lessons of the Civil War in a muddled fashion. The older generation generally clung to the concept of coastal defense anchored by major fortifications and concentrated batteries. Younger officers then rising in the organization may have had new ideas, but had not yet risen high enough in the organization to exert real influence. A board met in 1866 and recommend that forts should be strengthened with armored plating, but did not recommend any substantive conceptual changes. Congress, however, was reluctant to pour money into a system of coastal defense that had already proven ineffective. Appropriations throughout most of the next two decades were so low that the Corps of Engineers could do little more than repair and maintain existing fortifications. During these years, however, the corps did begin to experiment with electrically-controlled submersible mines. By the middle of the 1870s, the Chief of Engineers was advocating for a new system of fortifications in which underwater minefields would be integrated to hold enemy ships within forts' engagement areas. This, however, represented a relatively simple shift in methods of coast defense, not in the basic concepts of a coast defense system.<sup>77</sup>

In the early 1880s, however, political leaders interpreted European wars and British naval expansion as possible threats, and became increasingly alarmed at the state of American coastal defenses. In 1885, Congress passed legislation requiring Grover Cleveland to appoint a board led by Secretary of War William C. Endicott to consider and make recommendations on the problem of coastal defense. The board made its report ten months later, in January 1886. Viewing the threat of raids against or even the capture of a major American port or coastal city as a real possibility, the board ratified both the rationale for and general principles of coastal

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<sup>77</sup>Browning, 128-148; Clary, 108-114.

defense outlined in the 1821 report. The most significant changes recommended by the Endicott Board were, like those advocated by the Chief of Engineers a decade earlier, in the methods of coastal defense. The board outlined a new system to protect the twenty-seven harbors that it considered most significant, in which multi-tiered casemate forts would be converted to or replaced by fortifications of cement and earthworks armed with the newest ordnance. These fortifications would be part of a layered system of defense that would also include floating artillery batteries, torpedo boats, and submerged, electrically-triggered minefields. These minefields would in turn be covered by additional artillery emplacements on shore. The final report of the Endicott Board stated that this new system would cost over \$126 million, with an initial appropriation of \$21.5 million and subsequent annual appropriations of \$9 million until work was complete.<sup>78</sup>

A shocked Congress refused to accept such an exorbitant price tag and a system of fortifications that required a manpower complement of three times as many soldiers as were in the Army at the time. While Congress appropriated funds to develop and produce improved weapons systems for coastal defense, it did not pass any significant appropriations for fortifications until 1890, and even then, as well as in subsequent years, funded construction at a lower rate than was envisioned by the Endicott Board. As with the Third System in the antebellum years, work on the Endicott System progressed slowly. Unlike the Third System, the delays did have a positive side effect. Some of the technology on which the board based its recommendations was untested, unproven, or underdeveloped in 1886. Research and development continued while construction was stalled. Accordingly, improvements such as the

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<sup>78</sup> Browning, 150-167; Clary, 124-130; Linn 32-35

development of procedures to reinforce concrete and the invention of a disappearing gun carriage – which enabled an artillery piece to be raised over a crest or wall to be fired, then retract to a protected position for reloading – could be incorporated before substantial progress had been made in building the forts and artillery emplacements envisioned by the Endicott Board.<sup>79</sup>

Nevertheless, the engineers were once again locked in an inevitably losing battle with time and technology. Appropriations and the pace of construction increased as the nation moved toward war with Spain and continued at an accelerated level in the immediate aftermath, but the new system was already on the path to obsolescence. The Endicott Board had crafted its entire concept of defense around rifled artillery powerful enough to pierce up to twenty inches of armor on a warship at a range of 1,500 – 2,000 yards. At the time Goethals reported for duty at Newport, the leading navies of the world already possessed ships armed with heavy cannon that were effective at ranges exceeding 3,000 yards, and were only a few years away from beginning work on a new class of battleship that would boast heavy guns that could accurately engage targets up to 16,400 yards distant.<sup>80</sup>

Consequently, fortifications work within the Corps of Engineers when Goethals arrived in Newport, Rhode Island in 1900 was a backward-looking mission. District engineers responsible for fortifications work were ordered to carry out a program then based on strategic principles and theories more than seventy-five years old, and on tactical systems and doctrine nearly two decades old. The Chief of Engineers, General Wilson, had done Goethals no favor by assigning him to work on fortifications. Due to the nature of the work, the vast majority of those employed on fortifications missions were merely completing an obsolete program, and could

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<sup>79</sup> Browning, 167-178; Clary 130-138.

<sup>80</sup> Linn, 36.



gain no experience that would keep them abreast of cutting edge developments in their profession. However, Wilson had unintentionally set Goethals up for success by sending him to Newport. Within a month of his arrival, unique conditions arose at Newport that put Goethals in the unusual position being able to do something new in regressive program.

The Army and Navy planned to hold joint maneuvers near Newport in late September 1900. The Navy intended to exercise its North Atlantic Squadron and test its tactics for penetrating coastal defenses to raid a port. The Army wanted to test its defenses at the mouth of Narragansett Bay and was particularly interested in testing its use of the searchlight. Although searchlights had been included in the Endicott Board's report as required pieces of equipment to facilitate observation of underwater minefields at night, little had been done to develop the best use of the searchlights in a tactical situation, or to specify doctrine as to how many lights a fort should have, where they should be placed, or how they should be controlled. Among the reporting requirements for both the Army and Navy elements participating in the exercise were observations of the most effective use of searchlights in the Army's defense.<sup>81</sup>

In his first week on the job in Newport, Goethals began installing searchlights and the power plants needed to power them at Forts Adams and Greble, and to repair the artillerists' range finding equipment at Ft. Adams. Knowing that the Navy's "red force" would open their attack at some point between September 20 and September 30, Goethals reported that he would post his lieutenant at Ft. Greble and himself at Ft. Adams for the duration of the exercise to render any needed engineering assistance and to observe the exercise.<sup>82</sup> The Navy launched its

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<sup>81</sup> H.C. Hasbrouck to Adjutant General, Department of the East, August 14, 1900, File 36467 and "Proposed Operations in Newport Harbor," File 36467/1, Box 837, Entry 103, RG 77, NARA I.

<sup>82</sup> George W. Goethals to John M. Wilson, September 13, 1900 File 36467/7, September 13, 1900, File 36467/1, Box 837, Entry 103, RG 77, NARA I.

attack at 9:40 P.M. on the night of September 24, and it lasted until midnight. After the Army and the Navy both loudly claimed victory in letters to superiors, and in some cases, in reports to newspapers, the observers began reflecting upon the lessons learned and consolidating their reports on the exercise.<sup>83</sup>

Army observers emphasized the utility of searchlights and the need for more of them. “One thing that was very apparent,” wrote one, “was the necessity for a search-light for each battery besides one for the commanding officer. One torpedo boat escaped our observation until after it had gotten by, simply because we had but one search-light on our side of the channel and we could attend to but one boat at a time.”<sup>84</sup> Another focused on the surprising versatility of the lights. This observer reported:

It was clearly demonstrated that Search Lights are to be considered from three points of view. 1<sup>st</sup>, as Search Lights proper to search the Mine Field for entering boats. 2<sup>nd</sup>, as Illuminating Lights used to illuminate the target to be fired at. 3<sup>rd</sup>, as Blinding Lights, intended to blind the eyes of the pilots, and force the vessel to slow down . . . It may be said that Search Lights are as important for Harbor defense as Guns. The greater the number of Search Lights, the more effective will be the defense of the Harbor.<sup>85</sup>

Goethals drafted his own report of the exercise and sent it to the Chief of Engineers. The vast majority of this report focused on searchlights, strongly recommending that fortifications be equipped with multiple lights. “That there cannot be too many search lights was very evident,” he reported.<sup>86</sup> He also emphasized the diverse roles they could play in the defense. In addition

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<sup>83</sup> Henry M. Robert to John M. Wilson, September 25, 1900, two letters, File 36467/10 and 36467/11, Box 837, Entry 103, RG 77, NARA I; George W. Goethals to John M. Wilson, October 1, 1900, File 36467/14, Box 837, Entry 103, RG 77, NARA I, 1-2.

<sup>84</sup> Henry M. Robert to John M. Wilson, September 25, 1900, two letters, File 36467/10, Box 837, Entry 103, RG 77, NARA I.

<sup>85</sup> G.N. Whistler to J.P. Story, October 16, 1900, File 36467/21, Box 837, Entry 103, RG 77, NARA I.

<sup>86</sup> George W. Goethals to John M. Wilson, October 1, 1900, File 36467/14, Box 837, Entry 103, RG 77, NARA I, 5. The section on searchlights is on pages 3-7.

to searching for ships approaching a minefield, Goethals honed in on a more active role for the searchlights:

The effect of the one search light bearing on the east passage was admitted by the naval authorities to have materially increased the difficulty of navigating this straight channel, one officer (Capt. Walker, U.S.N.) going so far as to assert that an additional light would have been as good as another battery to the defense. As it was, the torpedo boat *Stiletto* which had escaped was so confused by the light that she lost her bearings and ran into the Engineer wharf sustaining slight damage, throwing the umpire aboard of her into the water and slightly injuring two of the men. The one light, it was also admitted, interfered with the proper sighting of the guns aboard the ship except those in turrets . . . Prior to the manoeuvres [sic] it seemed to be the consensus of naval opinion that a search light on shore would make an easy target and that, therefore, it would be easily disposed of . . . [afterwards,] this opinion seems to have undergone a change as the glare was too strong to enable the gunners to get the range.<sup>87</sup>

General Wilson received Goethals's report enthusiastically, immediately circulating it within the Corps of Engineers.<sup>88</sup> But these recommendations created a complicated problem. Existing power demands of forts' artillery emplacements – whose range finding equipment, auxiliary ammunition hoists, and disappearing gun carriages were usually electrically powered – and of the buildings within forts' garrisons usually maximized the generating capacity of the forts' simple power plants, which were originally designed to provide intermittent power only to artillery emplacements when they were actively in use. Existing power generation systems were insufficient to support multiple high-power searchlights at the forts. To address the problem, Wilson created a board of engineers consisting of Goethals and two other officers. Together, they created a larger central power station that became the standard for coastal fortifications.<sup>89</sup>

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<sup>87</sup> George W. Goethals to John M. Wilson, October 1, 1900, File 36467/14, Box 837, Entry 103, RG 77, NARA I, 4-5.

<sup>88</sup> John M. Wilson to George W. Goethals, October 8, 1900, and John M. Wilson to H.M. Robert, October 8, 1900, File 36467/14, Box 837, Entry 103, RG 77, NARA I.

<sup>89</sup> George W. Goethals, "Electricity in Permanent Seacoast Defenses," *Transactions of the American Institute of Electrical Engineers* 19 (October 1902): 665-683.

Goethals spent most of the rest of his time in Newport on the power generation issue. The two new power plants that he needed to construct in Newport and New Bedford were complete by the end of 1902. Additionally, he wrote and presented a paper entitled “Electricity in Permanent Seacoast Defenses” to the American Institute of Electrical Engineers in May 1902. The paper was well received within both the engineering community and the larger coast defense community, and was reprinted in the *Journal of the United States Artillery* in 1903.<sup>90</sup>

Goethals’s reputation was on the rise inside and outside of his branch at exactly the right time. In the spring of 1903, President Theodore Roosevelt and Secretary of War Elihu Root ordered Major General Samuel B.M. Young to convene a board to select forty-two officers to be detailed to the Army’s first General Staff. Major George W. Goethals made the cut.<sup>91</sup>

Power and authority within the Army had long been split between the Commanding General and the autonomous and influential chiefs of supply and administrative bureaus, such as the Adjutant General, Quartermaster General, Chief of Ordnance, Judge Advocate General, and Chief of Engineers. The relative power of the Commanding General waxed and waned according to the personalities of both successive Commanding Generals and successive Secretaries of War. On two occasions in the nineteenth century, relations between the

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<sup>90</sup> “Report of the Chief of Engineers,” Part 1, *Annual Reports of the War Department*, 1902, 18; George W. Goethals, “Electricity in Permanent Seacoast Defenses,” *Transactions of the American Institute of Electrical Engineers* 19 (October 1902): 665-683; and George W. Goethals, “Electricity in Permanent Seacoast Defenses,” *Journal of the United States Artillery* XIX (1903): 47-65.

<sup>91</sup> U.S. Congress, Senate, William H. Carter, *Creation of the American General Staff*, 68<sup>th</sup> Cong., 1<sup>st</sup> sess., 1924, S.Doc 119 (Washington, DC: Government Printing Office, 1924), 54-55; and U.S. Department of War, “Report of the Secretary of War,” *Annual Reports of the War Department*, 58<sup>th</sup> Cong., 1<sup>st</sup> sess., 1903, House Executive Document 2 (Washington, DC: Government Printing Office, 1903), 3-4.

individuals holding those two offices were so poor that the Commanding General went so far as to remove his headquarters from Washington, DC.<sup>92</sup>

The bureau chiefs were more constant presences and more consistent forces to be reckoned with. Generally less hierarchical than their colleagues of the line branches – over whom the Commanding General reigned supreme – the bureau chiefs were more comfortable with a broadly consultative approach to managing the military and jealously guarded their respective spheres of expertise, influence, and authority. The bureau system suffered in efficiency because the scopes of responsibility of the several bureaus frequently overlapped. For example, when Goethals worked on the problem of power generation in coastal fortifications, different aspects of his work fell under the purview of five different bureaus: the Corps of Engineers for construction and power generation, the Quartermaster Department for lighting the buildings of the forts' garrisons, the Signal Corps for power requirements of communications equipment, the Ordnance Department for power requirements of the ammunition hoists, and the Artillery for power requirements of the gun emplacements, range finding equipment, and battery commanders' stations.<sup>93</sup>

In the three decades after the Civil War ended in 1865, the Army approached a critical turning point. For its entire prior existence, except in times of war, the Regular Army's reason for being was to serve as a constabulary for the expanding frontier and as a coastal defense force. By the end of Reconstruction, it was clear that the day was rapidly approaching when there would be no frontier to police. Forced to reconsider the proper role of the Army, an increasing

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<sup>92</sup> Otto Nelson, Jr., *National Security and the General Staff* (Washington, DC: Infantry Journal Press, 1946), 14-22; Beaver, 21-26.

<sup>93</sup> Beaver, 13-15; James E. Hewes, Jr., *From Root to McNamara, Army Organization and Administration, 1900-1963* (Washington, DC: U.S. Army Center of Military History, 1975), 5-9.

number of officers came to believe that the proper role of an Army at peace was to prepare for war. Reflecting the trends of an American society whose conception of professionalism was evolving, officers began to debate the future of their profession in newly organized professional associations and journals. Many looked to European nations perceived as potential threats and future adversaries and determined that the Army was structurally and doctrinally ill-prepared for modern warfare.<sup>94</sup> A faction, led by Civil War hero and William T. Sherman protégé Emory Upton, pushed for radical reforms, including a centralized system of command and administration headed by a Chief of Staff and a General Staff, modeled after Upton's understanding of the Prussian military's system.<sup>95</sup>

Upton, and those of his followers who carried the argument forward after his death in 1881, failed in their endeavors to overturn the existing system of command and administration. Their ideas did not gain enough traction because they exceeded the parameters of what was considered possible and acceptable at the time. Although American society was increasingly accepting consolidated professional authority in other professions, such as medicine and law, it had not shaken off its long-held distrust of centralized military authority. Furthermore, nothing had occurred to shake confidence in the bureau system. For much of the late-nineteenth century, officers and political leaders alike basked in the afterglow of the Union victory in the Civil War, and saw little reason to modify systems that they believed had led to success. Crisis is the

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<sup>94</sup> Coffman, *The Old Army*, 215-286; Nenninger, 3-7 and 21-31; Weigley, *History of the United States Army*, 273-281; Abrahamson, 19-62.

<sup>95</sup> Coffman, *The Old Army*, 271-274; Jörg Muth, *Command Culture: Officer Education in the U.S. Army and the German Armed Forces, 1901-1940, and the Consequences for World War II* (Denton, TX: University of North Texas Press, 2011), 23-25; Clark, 14-60.

mother of all motivators, and it would take a severe one to shift the parameters of what was considered possible and acceptable.<sup>96</sup>

That crisis came with the Spanish-American War in 1898. Goethals's experience of a problematic mobilization for war was no exception. Mobilization camps were ill-sited, ill-supplied, and ill-supervised, leading to scandalously preventable epidemics of disease. The War Department selected ports of embarkation serviced by limited, sometimes solitary, and generally underdeveloped rail lines, leading to congestion and confusion at the ports and troops embarking without much-needed supplies. While en route, most units, like Goethals, found that the War Department could not supply them with even rudimentary information about their objectives or the disposition of Spanish forces, or even with adequate maps. Furthermore, war plans were virtually non-existent and events in both the Caribbean and the Pacific theaters took on a strikingly improvisational air. In fact, then-Captain Peyton C. March, who would later serve as Chief of Staff of the Army during World War I, was instructed to decide for himself to which theater of the war his light artillery battery would be deployed.<sup>97</sup>

These blunders, as well as plenty of fabricated ones, came to light in almost real time in the age of muckraker journalism. Public opinion turned heavily against the War Department, leading President McKinley to appoint the Dodge Commission to investigate the conduct of the war. Although the Dodge Commission's report balanced criticism of the War Department's

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<sup>96</sup> Coffman, *The Old Army*, 273; Weigley, 276-281. On the link between successful innovation and the parameters of what is considered acceptable and possible, see Elting E. Morrison, *Men, Machines, and Modern Times* (Cambridge, MA: M.I.T. Press, 1966), *passim*. On changing social attitudes toward professional authority, see Starr, 79-144; McGerr, 128-129; and Wiebe, 113-127. That crisis is an essential ingredient to prompting reform and adaptation is suggested in Williamson Murray, *Military Adaptation in War, With Fear of Change* (New York: Cambridge University Press, 2011), 37-73.

<sup>97</sup> Cosmas, 103-296; Trask, 145-422; Weigley, 305-309; Coffman, 12-13.

most blatant errors with praise for what it was able to accomplish in managing the first substantial American overseas military expeditions, the public continued to demand accountability. In the summer of 1899, McKinley acted, sacking Secretary of War Russell Alger and appointing a corporate lawyer from New York, Elihu Root, in his place.<sup>98</sup>

That Root would implement the most significant institutional and organizational reforms in the Army's history to that date would come as something of a surprise. McKinley did not select Root to lead the War Department so that he could change the Army. Rather, McKinley believed Root's excellent reputation as a lawyer made him well qualified to run a War Department wading into unprecedented legal territory, charged with administering the military occupation and civil reconstruction of Cuba, the Philippines, Puerto Rico, and Guam in the wake of the Spanish-American War. But a close study of the report of the Dodge Commission and a closer association with the influential and reform-minded Adjutant General Henry C. Corbin and his assistant Lieutenant Colonel William H. Carter made Root a devoted convert to the cause of military reform. Significantly, Root recognized that the controversies surrounding the Spanish-American War had shifted the parameters of what both the Army and the American public considered possible and acceptable, and that conditions were ripe for reform. Perhaps most importantly, his legal background and excellent relationships with the nation's political elite gave him the political acumen to manage the legislative effort to turn reformers' theories into policy.<sup>99</sup>

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<sup>98</sup> Beaver, 29-30; Weigley, 309-312; Coffman, *The Regulars*, 26; and Cosmas, 278-298 and 316-319.

<sup>99</sup> Clark, 126-133; Weigley, 313-316; L. Michael Allsep, Jr., "New Forms for Dominance: How a Corporate Lawyer Created the American Military Establishment" (PhD diss., University of North Carolina, 2008) 197-227 and 242-243.



The most important reforms of Root's tenure were the establishment of the Army War College, the overhauling of the militia system in the Dick Act of 1903, and the establishment of the General Staff in the General Staff Act of 1903. The War College came first, as Root discerned that this would be not only the least controversial of the major reforms he had in mind, but also one that he could institute without seeking the approval of Congress. He convened a board in February 1900 to consider the proper scope of the War College. Based on its recommendations and the persistent advocacy of William H. Carter, Root published orders in November 1901 that established the Army War College and established the principle that the War College would be the pinnacle of a formal, rationalized, and tiered system of professional education.<sup>100</sup> The Dick Act of January 1903 represented the first fundamental overhaul of the militia system since 1792. It created the National Guard and imposed standardized tables of organization and equipment upon the National Guard, as well as established a formal training and support relationship between the Regular Army and the National Guard. The crowning achievement of Root's program of reforms came a few weeks later with the passage of the General Staff Act.<sup>101</sup>

Root had become convinced of the need for a General Staff early in his tenure. He took as the most important lesson of the Spanish-American War that the Army desperately needed an agency responsible for developing war plans and coordinating the complex array of activities and resources required to mobilize and deploy the Army. His first attempt at General Staff legislation in 1902 failed due to an excess of ambition. Not only did this bill attempt to create a

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<sup>100</sup> General Orders No. 155, Adjutant General's Office, November 27, 1901, File AWC 275, Box 2, Entry 295, RG 165, NARA II; Harry P. Ball, *Of Responsible Command: A History of the U.S. Army War College* (Carlisle Barracks, PA: Alumni Association of the U.S. Army War College, 1983), 62-69.

<sup>101</sup> Millis, 179-180; Weigley, 320-322; Clark, 136-137.

planning and coordinating agency in the form of the General Staff, but also it called for closing and consolidating several of the powerful bureaus. At the same time that Commanding General Nelson A. Miles railed to a sympathetic Senate Military Affairs Committee filled with veteran volunteer officers of the Civil War that no General Staff was necessary because the existing system had succeeded in defeating the Confederacy, the bureau chiefs, with the notable exception of Henry C. Corbin, also closed ranks and argued that the proposal would deprive the Army the benefit of their technical expertise. Root remained committed to the cause and orchestrated an intensive lobbying campaign in support of a second attempt. Securing the support of a critical mass of senior officers and political leaders, and dividing the opposition by backing away from his proposal to consolidate the bureaus, Root finally secured passage of the General Staff Act in February 1903, despite the continuing vocal opposition of General Miles.<sup>102</sup>

In a nod to Miles, the General Staff Act – which abolished the office of the Commanding General, replaced it with the Chief of Staff, and established the General Staff – was set to become effective on August 15, 1903, exactly one week after Miles’s retirement. In the meantime, Secretary Root directed the War College Board to prepare recommendations on how to select officers for detail to the General Staff. Although the War College had been formally established a year and a half previously, only its administrative board had been established so far, and Secretary Root had taken to using it as an informal General Staff until such time as he was able to establish a formal one. The board recommended that “the personnel of the General Staff Corps should be selected with great care and should comprise the most competent officers in the Army at large . . . and that the proportion to be selected from the existing staff corps and

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<sup>102</sup> Nelson, 44-60; Hewes, 6-12; Weigley, 319-320; Clark, 141-145.

departments shall number 12, and from the line 30.” The board, consisting of six generals and a lonely major, convened in Washington on March 30, and published their selections in the middle of April.<sup>103</sup> With orders in hand to report for duty with the new General Staff, Goethals formally transferred charge of the Newport District to his successor on May 22, 1903 and moved his family to Washington.<sup>104</sup>

Establishing the General Staff did not end the bureau system. After the failed legislative effort in 1902, Root knew that he would have to accept some level of coexistence between the General Staff and the bureaus in order to secure support within Congress and within the Army. In fact, he came to believe that the coexistence would be a good thing, as it would enhance the General Staff’s ability to plan for war by freeing it from the minutia of daily administration. The General Staff Act, as drafted by Root and his advisors, and approved by Congress, stipulated:

. . . the duties of the General Staff Corps shall be to prepare plans for the national defense and for the mobilization of the military forces in time of war; to investigate and report upon all questions affecting the efficiency of the Army and its state of preparation for military operations; to render professional aid and assistance to the Secretary of War and to general officers and other superior commanders, and to act as their agents in informing and coordinating the action of all different officers who are subject, under the terms of this act, to the supervision of the Chief of Staff; and to perform such other military duties not otherwise assigned by law as may be from time to time prescribed by the President.<sup>105</sup>

Root intended the General Staff to be a planning and coordinating agency, but the extent to which it could coordinate anything depended upon the extent to which the bureaus felt that they were “subject . . . to the supervision of the Chief of Staff.” Events in the early years of the new

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<sup>103</sup> Carter, 50-54. The quotation is from “Report of the War College Board,” March 9, 1903, quoted in Carter, 53.

<sup>104</sup> George W. Goethals to C.L. Gillespie, May 22, 1903, File 46996/1, Box 1122, Entry 103, RG 77, NARA I.

<sup>105</sup> “Report of the Secretary of War,” *Annual Reports of the War Department*, 1903, 4.

organization would prove that this was very much a function of the personalities occupying the key positions.<sup>106</sup>

Perhaps recognizing that he had the ability to change the Army's systems and organization rapidly but not the culture of the officer corps, Root relaxed his grip on the reins after the General Staff was formally established. Beyond what was specifically stipulated in the law, he would not dictate how the General Staff would organize, operate, or relate to the other agencies of the War Department. The officer corps would have to figure out on its own how to integrate the new organization into the Army. As William H. Carter later recalled, "the General Staff Corps was established and began to function officially, but without expectation of reaching its full usefulness in the immediate future," and the early years of the General Staff took on a highly uncertain and improvisational character.<sup>107</sup> Accordingly, Secretary Root reported to Congress in the summer of 1903 that when the selected officers first assembled in Washington:

They were then organized as an experimental or provisional general staff, and directed to work out a permanent organization and distribution of duties for the General Staff Corps, a draft of new regulations, and a revision of old regulations made necessary by the new departure. This work was done upon full consultation with the chiefs of bureaus and taking the opinions of general officers commanding departments, and was accompanied by reference to the provisional staff organization of many tasks and problems to be worked out which were appropriate for General Staff action, in order that they might become familiar with their work, and test by experiment the best methods of accomplishing it.<sup>108</sup>

The newly established General Staff organized itself into three divisions. The First Division considered problems and policy related to organization, doctrine, and training for the infantry, cavalry, and field artillery units; regulations; training maneuvers; and mobilization.

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<sup>106</sup> Hewes, 10-50; Nelson, 73-273.

<sup>107</sup> Quotation from Carter, 55. See also Weigley, 322-323.

<sup>108</sup> "Report of the Secretary of War," *Annual Reports of the War Department*, 1903, 5.

The Second Division, also known as the Military Information Division, was responsible for collecting and developing intelligence on foreign armies, procuring and producing maps for potential theaters of war, and coordinating the efforts of military attaches stationed abroad. The Third Division was charged with studying possible theaters of war and developing war plans, and also dealt with organization and doctrine for the Army's technical branches, coast defense, and combined maneuvers with the Navy. Given his recent experience in coast defense, Goethals was assigned to the Third Division, where he was simultaneously a member of the section responsible for developing war plans and the section responsible for working on issues related to coast defense.<sup>109</sup>

In short order, the Third Division became an arm of the Army War College. From his first year in office as Secretary of War, Root had envisioned that the War College would be a dual-purposed institution. On the one hand, Root intended the War College to “direct the instruction and intellectual exercise of the Army, to acquire the information, devise the plans . . . and to advise the Commander in Chief upon all questions of plans, armament, transportation, mobilization, and military preparation and movement.” On the other hand, it would serve as a school in which officers would “receive instruction . . . in the science of war, including the duties of the staff, and in all matters pertaining to the application of military science to national defense.”<sup>110</sup> Development of the War College concept stalled in 1902 and early 1903 as its board functioned almost entirely as an informal general staff for Secretary Root in the effort to secure passage of the General Staff Bill. After the bill was passed, the War Department put more

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<sup>109</sup> “Report of the Secretary of War,” *Annual Reports of the War Department*, 1903, insert facing page 68.

<sup>110</sup> U.S. Department of War, “Report of the Secretary of War,” *Annual Reports of the War Department*, 56<sup>th</sup> Cong., 1<sup>st</sup> sess., 1899, House Executive Document 2 (Washington, DC: Government Printing Office, 1899), 49 and 50.

thought into the War College and its relationship to the General Staff, and eventually determined that because both organizations were at least partly intended to consider and develop war plans and mobilization systems, the War College would be an adjunct component of the General Staff. Given the fact that it was tasked with developing war plans, the Third Division was a natural selection to carry out the mission of the War College. By October 27, 1903, all officers in the Third Division, now nicknamed the “War College Division,” were assigned to the War College under the newly promoted Brigadier General Tasker H. Bliss, assigned in 1903 to serve as its first president.<sup>111</sup>

Bliss was an uncommon officer. He was raised by academics, and the intellectual nature of the parents rubbed off on the son. He entered West Point after having already studied for a year at Lewisburg University, where his father was a professor of classical languages. He graduated from West Point in 1875, and spent only three of the next 23 years with his artillery regiment, with the rest of his career spent in unusual assignments teaching French and artillery at West Point, teaching strategy at the Naval War College, serving as an aide to Commanding General John Schofield and Secretary of War Daniel S. Lamont, and serving as the military attaché to the U.S. ambassador to Spain immediately prior to the Spanish-American War. Once the war came, he returned from Spain to serve as the 1<sup>st</sup> Corps Chief of Staff, during which time he undoubtedly got to know Goethals. Subsequently, he was assigned as the collector of customs for Havana. His herculean efforts in that position reformed a corrupt bureau and increased the revenue for the military-run government of Cuba during the postwar occupation. His service caught the attention of Secretary Root, who in 1902 rewarded Bliss with a promotion

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<sup>111</sup> Ball, 79-86.

to brigadier general, despite the fact that he was at the time only a major in the Regular Army. Bliss was an intellectual whose career experiences to date had kept his mind occupied with matters on a much higher plane than most of his peers. He was the natural choice to lead the new War College.<sup>112</sup>

It is surprising, then, that Bliss countered Secretary Root's vision for the War College with a somewhat anti-intellectual plan of his own. As president of the War College, Bliss was responsible for all professional education in the Army. When he issued orders in November 1901 establishing the Army War College, Root helped consolidate a formal, rationalized, and tiered system of professional education that began at West Point, progressed to schools of application for technical training, continued onward to post schools and lyceums for regimental officers, then advanced to the Leavenworth schools, and culminated at the War College. In formalizing this system, Root initiated a fundamental change in the processes of professional development within the Army, by tacitly acknowledging that education, not self-study but formal education, was a legitimate component of professionalism and professional development. While the intellectual side of Bliss applauded this new system, nearly thirty years of experience in an Army that valued practical experience far more than education had conditioned him to hesitate to hesitate to completely embrace Root's model.<sup>113</sup>

He first broached the subject in a lengthy memo to the Secretary of War in August 1903, in which he wrote:

An examination of the curricula of these schools [post schools, schools of application, and Leavenworth schools] show that they go, or are intended to go, to the limit in the

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<sup>112</sup> Clark, 224-228.

<sup>113</sup> See John D. Wainwright, "Root versus Bliss: The Shaping of the Army War College," *Parameters* 4 (March 1974): 52-65.

matter of direct theoretical instruction of officers. It is evident that if instruction is to be continued on this general line at the War College, it will involve a repetition of what has been given at the other service schools. We can have lectures upon strategy, upon the tactics of the three arms, upon the service of security and information, or the study of text books upon these subjects. Manifestly all this will be a waste of time and a degradation of the institution from its true function. When an officer has passed through the course to which he must have been subjected before he comes to the War College he must have learned, (unless there be a great fault somewhere) all that he needs to know of the theory of the art of war. From that time on he should learn things by doing things.<sup>114</sup>

Bliss was either successful in convincing Root, or was allowed to carry on because the Secretary of War was preparing to retire in early 1904 and hand control of the War Department over to William H. Taft. He received no argument when he further elaborated on this point in a report early the following year, in which he stated that the echelons of the education system below the War College “go to the limit of useful training by the ordinary scholastic methods. After passing them there is no further need for professors, instructors, and text books, - - although the limit of useful training has not been reached.” Continuing, he asserted that collaborative planning with experts from various branches constituted “an essential part of the art of war and which can be learned not from books and professors but only by patient and unostentatious labor in doing these things themselves.” Bliss believed that the primary purpose of the War College was to serve as a planning and supplemental staff agency, with a useful side effect of allowing its members to train on planning and problem solving through sheer repetition. “Thus,” he concluded, “the scholastic work of the War College will not consist in the study of general principles but in the application of these principles to the details of a specific plan.”<sup>115</sup>

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<sup>114</sup> Tasker H. Bliss, “Memorandum,” August 3, 1903, File AWC 1147, Box 1, Entry 294, RG 165, NARA II, 15-16. Underlines are in the original.

<sup>115</sup> Tasker H. Bliss, “Memorandum Report for the Chief of Staff,” January 15, 1904, AWC 84, Box 1, Entry 294, RG 165, NARA II, 2-8. Quotations from pages 3, 4, and 8, respectively.



In advocating for the War College to ignore its educational mandate, Bliss was not alone. The Naval War College, which had been conceived at its beginning as a more educational institution, had since the late 1890s acted in a more utilitarian role as a planning agency for the Navy.<sup>116</sup> The matter of professional military education was taken up for study by the entire Third Division, including Goethals, in the spring of 1904. Its final report held “that the duty of a student of the War College will rise to the full stature of his intellect and experience . . . [The War College] is not a place for academic instruction. It is a place for the work of well-qualified, capable and intelligent officers.”<sup>117</sup> That the division’s final report ratified Bliss’s position is particularly surprising because the division chief at the time was Colonel Arthur L. Wagner, whose revolutionary work in developing schools for line and staff officers at Fort Leavenworth in the late 1880s and 1890s did much to legitimize formal education in the Army.<sup>118</sup> Nevertheless, anti-intellectualism within an officer corps that had been taught to learn by experience, and whose leaders had succeeded under such a system, proved to be hard to shake off. As George C. Marshall, who entered the Army’s post-graduate schools at Ft. Leavenworth in 1906, later recalled, within the officer corps at the turn of the century, “the opposition to any studious preparation of the older officers was very decided.”<sup>119</sup>

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<sup>116</sup> Ronald Spector, *Professors of War: The Naval War College and the Development of the Naval Profession* (Newport, RI: Naval War College Press, 1977), 88-111.

<sup>117</sup> Third Division, General Staff, Memorandum Report No. 73, May 18, 1904, Volume 4, Entry 300, RG 165, NARA II. The quote is on page 22 of the memo, which is on page 341 of the volume. The full memo is on pages 321-342.

<sup>118</sup> For a full account of Wagner’s efforts in promoting education in the Army, see T.R. Brereton, *Educating the U.S. Army: Arthur L. Wagner and Reform, 1875-1905* (Lincoln, NE: University of Nebraska Press, 2000), *passim*. See also Clark, 61-115 and Nenninger, 34-50.

<sup>119</sup> Larry I. Bland and Joellen K. Bland, eds., *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue*, Revised edition (Lexington, VA: George C. Marshall Research Foundation, 1991), 152.

Root's conception of the War College had outpaced the thinking of the reformers who were assigned to implement the policy. As a result, the War College would not begin to even resemble an academic institution until 1907 and subsequent years, well after Bliss had moved on to other assignments.<sup>120</sup> The first active session of the War College ran from fall 1904 to spring 1905 under the leadership of Bliss as president, and Colonel Wagner and Lieutenant Colonel William W. Wotherspoon as directors. Nine officers were detailed as students. From the Third Division, five officers, including George Goethals, were detailed as War College staff, and another two were detailed for administrative duties.<sup>121</sup> That Goethals was detailed as War College staff rather than for administration was likely due to his talents and prior relationship with Bliss in the 1<sup>st</sup> Corps during the Spanish-American War. Goethals's revolutionary high-lift lock design at Colbert Shoals during his assignment in Florence, Alabama and innovations in power generation for coastal defenses while in Newport, Rhode Island demonstrate an inquisitive mind. As an intellectual, Bliss would assuredly have recognized and appreciated this quality, and sought to use it to maximum advantage in the War College.

This first session proceeded very much according to Bliss's conception of how the War College should function. Officers assigned to the War College considered problems, most of which related to President Theodore Roosevelt's more active Caribbean policies, including developing plans to prevent foreign intervention in Haiti and mobilizing expeditionary forces for operations in Santo Domingo, Venezuela, and Panama. Additionally, a series of fifteen lectures was established in which officers from the General Staff and the War College addressed the

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<sup>120</sup> Ball, 105-122.

<sup>121</sup> General Orders No. 155, War Department, September 17, 1904, File AWC 275 and Chief of the Third Division, "Memorandum for all officers of the Third Division, General Staff," September 15, 1904, File AWC 276, Box 2, Entry 294, RG 165, NARA II.

whole War College on current events or their areas of technical specialty within the Army. The ongoing Russo-Japanese War was the topic of seven of these lectures, delivered by officers recently returned from assignments as attachés or observers with the belligerent armies.<sup>122</sup> For his part, Goethals served as a member of the Strategy Board, was the chairman of the committee considering problems related to the defense of the Philippines and military operations in the Pacific, and was a member of a special committee planning combined Army-Navy maneuvers scheduled for 1905. Demonstrating the non-academic nature of the War College, students and staff alike were declared to be graduates of the inaugural War College class of 1905.<sup>123</sup>

Because the construction of its building at Washington Barracks had not yet been completed, officers assigned to the War College between 1903 and 1907 crammed into whatever office space they could improvise in a home the Army rented from a well-known Washington socialite. The four-story brick townhouse at 22 Jackson Place sat off of the northwest corner of Lafayette Square, mere yards down the road from the White House and its more sprawling, dourly Victorian-looking neighbor the State, War, and Navy building, where the rest of the War Department and General Staff were situated. Although those who secured workspace in one of the townhouse's rooms whose tall, slender windows gave excellent views of the park outside may have been content, the officers of the War College, especially the unhappy and unfortunate four who were forced to work in the attic, found that the pleasant home made for an uncomfortably cramped workspace.<sup>124</sup>

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<sup>122</sup> Samuel Reber, "Memorandum of the Work of the Army War College for the Session Ending May 31, 1905," File AWC 488, Box 2, Entry 294, RG 165, NARA II; Ball, 92-96.

<sup>123</sup> Tasker H. Bliss, "Memorandum," September 26, 1904, File AWC 290, Box 2, Entry 294, RG 165, NARA II; J.D. Leitch to George W. Goethals, April 28, 1911, Box 12, George W. Goethals Papers, LC.

<sup>124</sup> Files AWC 506, AWC 694, AWC 197, AWC 502, and AWC 858, Box 1, Entry 294, RG 165, NARA II are the lease documents for 22 Jackson Place. Cramped conditions are reported in Tasker H. Bliss to Secretary of the

For Goethals, the work environment was especially uncomfortable because it exacerbated his insecurities. The reformers who organized the first General Staff were careful to select only those officers who represented the cream of the crop. As General Carter recalled in later years, “The type and character of officers detailed in the General Staff . . . was of the highest, and were, I am sure, unexcelled in any other army.”<sup>125</sup> Nearly 75% of the first General Staff were officers from line branches whose only opportunities to stand out as junior officers were in combat with in the West during the Indian Wars, in Cuba or the Philippines during the Spanish-American War and subsequent Philippine Insurrection, or in China during the allied intervention to end the Boxer Rebellion in 1900. Many of Goethals’s colleagues on the General Staff and within the War College had distinguished combat records.<sup>126</sup> Like most officers of his generation, Goethals maintained a heroic conception of the ideal officer. Surrounded daily by combat veterans and undoubtedly subject to their stories, reminiscences, and yarns, Goethals found his lack of combat experience to be utterly discomfoting, even embarrassing. He even went so far as to write in his own individual service report in 1903 shortly after reporting for duty with the General Staff, “[I] have participated in no battles, engagements, or actions,” in a section in which he was supposed to describe his areas of expertise and special qualification.<sup>127</sup>

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General Staff, February 2, 1905, File AWC 395, Box 1, Entry 294, RG 165, NARA II. The building still stands today, but the address is now 736 Jackson Place.

<sup>125</sup> Carter, 55.

<sup>126</sup> 30 of the 42 company and field grade officers detailed to the first General Staff came from the line, in addition to all of its general officers – see “Report of the War College Board,” March 9, 1903, printed in Carter, 52-54. The first General Staff included a Medal of Honor Recipient from wars with the Native Americans in Brigadier General William H. Carter, and many officers who had been cited for bravery in more recent conflicts, including Major General Adna Chaffee, Captain John J. Pershing, Captain Peyton C. March, and Captain Joseph T. Dickman, among others. A listing of all officers on the first General Staff may be found in “Report of the Secretary of War,” *Annual Reports of the War Department*, 1903, insert facing page 68.

<sup>127</sup> “Individual Service Report of Major Geo. W. Goethals,” July 1, 1903, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

Goethals's insecurity turned out to be unfounded. If any of his colleagues or superiors thought any less of him because of he had not seen combat, they were quickly won over by his engineering expertise and his dedicated and energetic work ethic. Arthur L. Wagner found Goethals to be "well informed on all military subjects, and especially in regard to Military Engineering."<sup>128</sup> Lieutenant Colonel William W. Wotherspoon, who would briefly serve as Chief of Staff in 1914, reported in 1905 that Goethals "had shown marked ability in all the work entrusted to him."<sup>129</sup> In private correspondence, Brigadier General James Franklin Bell, another soon-to-be Chief of Staff, included Goethals in a list of a select group of individuals "who, by application and industry, have acquired such special qualifications that their services are always in demand, because those who want them really need their assistance and talent."<sup>130</sup> By 1905, Goethals had more than proven himself and was rewarded by being designated to serve as the junior director of the War College, with Wotherspoon as senior director, for the 1905-1906 session.<sup>131</sup>

He did not serve as a director of the War College for long; by the winter 1905 and 1906, a new coast defense board was taking up too much of his time to allow him to maintain any significant responsibilities at the War College.<sup>132</sup> Due to his work in the Newport District, Goethals was considered the General Staff's coastal defense expert. Under the original plan of organization in 1903, he had been designated as the head of the Third Division's section

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<sup>128</sup> "Efficiency Report of Major George W. Goethals," June 30, 1903, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>129</sup> "Efficiency Report of Major George W. Goethals," June 30, 1905, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>130</sup> James F. Bell to Adna R. Chaffee, March 25, 1904, File # 2145, Box 252, RG 393, NARA I.

<sup>131</sup> Ball, 98.

<sup>132</sup> "Efficiency Report of Major George W. Goethals," July 14, 1906, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

responsible for considering problems and questions related to permanent fortifications and submersible mines. Later, General Bliss assigned Goethals to deliver a lecture to the officers of the War College titled “The Tactics of Coast Defense, with Special Reference to Submarine Defense.”<sup>133</sup>

In 1904, President Roosevelt halted appropriations for the construction and improvement of seacoast fortifications because it had finally become apparent that technological advances had rendered aspects of the program recommended by the Endicott Board in 1885 obsolete. He ordered his new Secretary of War, William Howard Taft, to convene a board of general officers in early 1905 to come up with recommendations on what changes needed to be made in order to address the implications of two decades of technological innovation. When Taft asked the General Staff to provide him an officer to serve as the board’s secretary and recorder, Goethals was the natural choice.<sup>134</sup>

Working closely together on the National Coast Defense Board, informally known as the Taft Board, Goethals and Taft developed a warm bond. Goethals may have been surprised to find that he enjoyed the jocular Secretary of War’s company so much, as he tended to bear a mean prejudice against overweight people. Later in life, he would tell his daughter-in-law that the famously rotund Taft “was the only clean fat man he had ever known.”<sup>135</sup> The two shared a similar sense of humor and found common ground in jokes, often at the Navy’s expense, while

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<sup>133</sup> “Report of the Secretary of War,” *Annual Reports of the War Department*, 1903, insert facing page 68; Tasker H. Bliss, Memorandum No. 3, File # AWC 391, Box 2, Entry 292, RG 165, NARA II.

<sup>134</sup> Browning, 183; Clary, 150-151; “Individual Service Report of Geo. W. Goethals, Major, Corps of Engineers,” September 18, 1906, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>135</sup> David McCullough, *The Path Between the Seas: The Creation of the Panama Canal, 1870-1914* (New York: Simon & Schuster, 1977), 510 and 647.

on tours of inspection of coastal fortifications in 1905 and 1906.<sup>136</sup> For his part, Taft was quickly impressed by the knowledgeable and hardworking engineer, who in addition to his duties with the board found time to write and present a paper on fortifications for the International Congress of Engineers and publish it in *Transactions of the American Society of Engineers*.<sup>137</sup>

Accurately gauging Goethals's abilities and potential, Taft began to see a role for Goethals in the nation's most significant ongoing engineering project. "I am convinced," he wrote to the Chief of Staff and the Chief of Engineers in the summer of 1905, "that Major Goethals can be of great use in the construction of the Panama Canal . . . I desire that he be retired from the General Staff and be assigned to this work in any capacity that the [Isthmian Canal] Commission may designate."<sup>138</sup> The commission did not request Goethals's services. Only one year later, however, Taft was pressing the case again. Writing to Roosevelt, Taft called attention to "Major Goethals, one of the ablest of our army engineers," whom he wanted to send to Panama because the current Chief Engineer at the canal, John Stevens, "would find him so useful that they could work together, and that Goethals might be Stevens' understudy, should he for any reason fail us."<sup>139</sup> Still, the Isthmian Canal Commission expressed no interest, and Goethals was not sent to Panama.

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<sup>136</sup> Bishop and Bishop, 92-93. Goethals accompanied Taft on several tours of inspection of fortifications on both coasts and in Panama – see "Correspondence of the Board to Revise the Report of the Endicott Board, 1905-6," Volume 1, Entry 519, RG 165, NARA II, 26-100; and George W. Goethals to "Toodles" [George R. Goethals], October 22, 1905 and December 14, 1905, Box 3, LC.

<sup>137</sup> "Individual Service Report of Geo. W. Goethals, Major, Corps of Engineers," September 18, 1906, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I; George W. Goethals, "Fortifications," *Transactions of the American Society of Engineers* LIV (March 1905): 57-76.

<sup>138</sup> W.H. Taft, "Memorandum for the Chief of Staff and for the Chief of Engineers," June 30, 1905, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I.

<sup>139</sup> W.H. Taft to T. Roosevelt, August 21, 1906, Reel 320, Series 4, William Howard Taft Papers, LC.

Only a few months later, however, the Isthmian Canal Commission began to slide into crisis. For reasons he never fully disclosed, Stevens grew irritable and dissatisfied in Panama in the winter of 1906 and 1907. When Theodore Shonts resigned from his position as Chairman of the Isthmian Canal Commission on January 22, 1907, Stevens grew more despondent, appearing to crack under the strain of his duties.<sup>140</sup> On January 30, 1907, he sent a letter to Roosevelt. “I never sought this position,” he complained, “on the contrary, [I] declined it twice, and finally accepted it against my better judgment.” Continuing, he stated that “the idea of being constantly before the public, whether in a favorable or unfavorable light, is extremely distasteful to me. Particularly, I object to be placed in a position, where I am . . . continually subject to attack by a lot of people, and they are not all in private life, that I would not wipe my boots on in the United States.” Stevens went on to complain that his salary was too low, that the job required too much time away from his family, and that he was rapidly losing interest in the work. “The ‘honor’ which is continually being held up as an incentive for being connected with this work,” he declared, “appeals to me but slightly. To me, the canal is only a big ditch, and its great utility when completed, has never been so apparent to me, as it seems to be to others.” Coming to his conclusion after six meandering pages, Stevens stated unequivocally, “From all of the above, you will gather that I am not anxious to continue in the service. I feel that there are men as competent and far more willing to pick up and carry the burden than I am. My desire is to take a rest, and then to re-enter railway service, for which I know I am best fitted by training and inclination.”<sup>141</sup>

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<sup>140</sup> McCullough, 503.

<sup>141</sup> John F. Stevens to Theodore Roosevelt, January 30, 1907, Reel 320, Series 4, William Howard Taft Papers, LC. Quotations are from pages 2, 3, 4, and 6, respectively



President Roosevelt was taken completely by surprise. He had seen Stevens in Washington only one month earlier and had told the chief engineer to expect to be named chairman of the commission if Shonts stepped down.<sup>142</sup> After receiving the letter and digesting it, Roosevelt forwarded the letter to Secretary of War Taft, whose department was nominally responsible for overseeing the Isthmian Canal Commission. He enclosed a cover letter that simply stated, “There is of course no question that Stevens must get out at once . . . If he should now alter his mind, as he has so frequently altered it in the past, and wish to stay, I should not consider it for a moment given the tone of his letter.” He then called Taft to a meeting at the White House on the morning of February 13 to discuss the matter further.<sup>143</sup>

Roosevelt wanted a drastic change. The resignations of Shonts and Stevens constituted the end of the Isthmian Canal Commission. In as many years, this marked not only the demise of the second Isthmian Canal Commission, but also the sudden departure of the second Chief Engineer from the Panama Canal. He wanted to put the project in charge of people who could not quit unless they were fired or relieved. He had decided to place a soldier in charge of the Panama Canal. Roosevelt told as much to Taft and asked for his recommendation on whom to select to serve as both Chairman and Chief Engineer of the next Isthmian Canal Commission.<sup>144</sup>

While Taft had already been trying to have Goethals assigned to Panama for a year and a half, he asked to be excused to consult with Alexander Mackenzie, who by then had been promoted to Brigadier General and Chief of Engineers. Mackenzie held a high opinion of

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<sup>142</sup> John F. Stevens to Theodore Roosevelt, January 30, 1907, Reel 320, Series 4, William Howard Taft Papers, LC, 1.

<sup>143</sup> Theodore Roosevelt to W.H. Taft, February 12, 1907, Reel 320, Series 4, William Howard Taft Papers, LC.

<sup>144</sup> McCullough, 504-505.

Goethals from their service together in the Chief of Engineer's office from 1894 to 1898, and their subsequent service together on the first General Staff in 1903. He echoed Taft's assessment that Goethals was the engineer officer most fit for the job. The two brought their recommendation to Roosevelt, and the matter was settled. George W. Goethals would be placed in charge of the construction of the Panama Canal.

Goethals's experiences between 1894 and 1907, constituting the capstone of his professional development, prepared and positioned him well to be assigned as Chairman and Chief Engineer of the Panama Canal. His time in the office of the Chief of Engineers exposed him to the challenges and politics of high-level administration, and his subsequent wartime experiences, especially of the mobilization at Chickamauga National Military Park, gave him a firsthand lesson in the importance of logistics and resource management. The Newport assignment gave Goethals the opportunity to become known as a leading expert and an innovator with a mission that, although suffering from its own obsolescence, was considered a primary mission for both his branch and the Army. This enhanced Goethals's already excellent reputation at the right moment, setting conditions for Goethals to be selected for the General Staff. There, he would be further exposed to operational, logistical, and administrative issues at the highest level of the Army. Of more immediate significance, it was while serving on the General Staff that Goethals, once again working on coastal defense issues, caught the attention of William H. Taft, whose influence proved crucial at the end of Goethals's path to Panama.

Interestingly, Goethals's experiences between 1894 and 1907 once again demonstrate that the Army as an institution played only a passive role in producing leaders capable of handling tasks of such great magnitude. At no point was institutionally-driven training a part of Goethals's professional development in this period, not even when he was a member of the War

College's inaugural class of 1905. Instead, Goethals once again developed as a professional through his experiences, which were in this period a product of the interplay of his own talent, personal connections, and luck. It cannot be denied that Goethals talents as an engineer and his extremely dedicated work ethic made and enhanced many of the opportunities between 1894 and 1907. Goethals earned his way into the office of the Chief of Engineers through his own success at Florence, and his own talents and work ethic were at the foundation of his success at Newport that was so critical to his assignment to the General Staff and to the Taft Board. At the same time, there were points when his talents were noticeably only as strong as his personal connections. After all, it was General Wilson who pulled Goethals into the office of the Chief of Engineers in 1894, and it was Secretary Taft and General Mackenzie who pushed him out of Washington and into Panama in 1907.

But it was luck that was the most important factor in this period. Without his experiences in Newport, Goethals may not have been selected for the General Staff, and he certainly would not have been the coast defense expert and obvious choice for the Taft Board. While it is true that General Wilson made a conscious decision to assign Goethals to Newport in order to expose him to the coast defense and fortifications mission of the Corps of Engineers, he stood out not because of his experiences in an increasingly irrelevant mission, but because unique conditions that had not been a part of Wilson's decision-making process existed at Newport, and allowed him to innovate. That Goethals, an officer of considerable drive and talent, stumbled into an environment in which he could modernize an aspect of an inherently obsolete mission was very unusual. It was also very lucky, because it ultimately put Goethals on a path to Panama, by way of the General Staff and the Taft Board.

## CONCLUSION

February 18, 1907 began ordinarily enough for George Goethals, but things quickly took a more interesting turn. Late in the morning, he received a message from Taft asking him to come in for a meeting. Goethals dropped what he was doing and went straight to see Taft, who proceeded to quiz Goethals on his background and his previous experiences in the Army. This seemed unusual to Goethals because it was mostly material that they had previously discussed on their many tours of inspection of fortifications throughout the country. Finally, he intimated to Goethals that the President had accepted the resignation of John Stevens, and that he and General Mackenzie had met with President Roosevelt and recommended that he appoint Goethals as Chief Engineer. "He could not assure me I would be selected," Goethals recalled eight years later, "but I probably would be summoned to the White House that evening and should be prepared for such a call. In the meantime nothing was to be said concerning the matter to anyone."<sup>1</sup>

Later that night, Goethals and his wife were at their Washington home three blocks north of DuPont Circle, entertaining their close friend Gustav Fiebeger. Well into the evening, a message arrived from the President's personal secretary asking Goethals to come to the White House at 9:30 the next morning.<sup>2</sup> Remembering what Taft had told him, Goethals immediately

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<sup>1</sup> George W. Goethals, "The Building of the Panama Canal: Success of Government Methods," *Scribner's Magazine* LVII, No. 3 (March, 1915): 265.

<sup>2</sup> William Loeb, Jr. to George W. Goethals, February 18, 1907, Box 5, George W. Goethals Papers, Manuscript Division, Library of Congress. "Individual Service Report of Geo. W. Goethals, Major, Corps of Engineers,"

called the secretary, who then told Goethals not to wait until morning. Fully aware of what was about to happen, Goethals slipped into a dress uniform and out the front door.<sup>3</sup>

It was around ten o'clock on a Monday evening. Goethals would have found his most direct route to the White House – a twenty-minute walk from his townhouse on the corner of S and 19<sup>th</sup> Streets following 19<sup>th</sup> Street for three blocks until it intersected with Connecticut Avenue at DuPont Circle, and Connecticut Avenue all the way to LaFayette Square and the White House just beyond it – relatively unpopulated save for a few nocturnal passersby and stony, unmoving figures on monuments to exalted heroes of the Civil War. He would have been alone to his thoughts, torn as they may have been between the excitement of a consistently ambitious man and the nervousness of an experienced and pragmatic engineer who was well aware of exactly how enormous the job ahead of him was. It is not hard to imagine his thoughts turning to pondering just how exactly he had arrived at this position.

Whether or not he knew it, George W. Goethals's professional development prior to 1907 was representative of how officers of his generation grew and learned within a changing Army. The active institutional influences on the trajectory of his career were typical of most officers of his time. He was trained, educated, and socialized to the profession at West Point. Like other engineer officers, he received supplementary technical training at the U.S. Army Corps of Engineers School for Application at Willets Point. While attendance at a school of application was not typical for a member of West Point's class of 1880, more schools of application were established in the following decade, and the experience became more common. At the same

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September 18, 1906, File # 3644-ACP-1880, Box 667, Entry 297, RG 94, NARA I lists Goethals's address as 1903 S St., NW, Washington, DC. The home still stands today at the same address.

<sup>3</sup> Bishop and Bishop, 140-142.

time, Goethals's tour at Willet's Point from 1880 to 1882 marked the last time he would benefit from any formal training program.<sup>4</sup>

Afterwards, Goethals found his own way within a changing institution. Because the Army lacked formal systems of professional development universally applicable and available throughout its officer corps, it placed a high premium on learning from experience. However, it did very little to standardize and control the quality and type of experiences each officer would receive. Like his peers, Goethals's career path after receiving a relatively limited amount of formal education and training was shaped by the interplay of his personal connections, his own talents, and luck.

Personal connections were critically important to shaping Goethals's career. If not for his relationship with Nathan P. Beers, his Army career would never have been launched in the first place. In subsequent years, the timely intervention of key people shaped the trajectory of his career in fundamental ways. William Merrill took an innovative approach to teaching Goethals the technical aspects of river and canal work on the Ohio River in 1884 and 1885. Thomas Casey pulled Goethals onto his personal staff in Washington in 1894, and John Wilson ensured that he would not languish in an unproductive assignment in Puerto Rico in 1898. Finally, Goethals's appointment to Panama was secured in 1907 on the strength of recommendations from William H. Taft and Alexander Mackenzie. Not long before receiving this appointment, Goethals revealed that he had perceived the centrality of personal connections in his career when he wrote to his oldest son, then a cadet at West Point, "An officer is seldom if ever selected for

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<sup>4</sup> On the rise of schools of application, see Coffman, *The Old Army*, 96-97 and 274; and Skelton, *An American Profession of Arms*, 248-254.

any duty because of special aptitude, but because he is favorably known. All that one can do is to have the consciousness of doing one's duty to the best of one's ability."<sup>5</sup>

This, however, does not minimize the importance of aptitude and ability. Goethals earned one of only two commissions into the Corps of Engineers available to West Point's class of 1880 on the basis of his sterling academic record at the academy. Later, his ability to recognize and internalize practical lessons on the Ohio River set conditions for his success at the Muscle Shoals Canal in Alabama, where his laudable performance led General Wilson to bring him to Washington. Later yet, Goethals's dedicated work ethic and exceptional engineering abilities were the forces behind his successful innovations at Newport. These enhanced his reputation and contributed to his eventual selection as a member of the first General Staff, where he continued to create opportunities for himself with his noticeable talents and drive.

All the same, luck proved to be the most important factor in shaping the actual path of Goethals's career. While his talent and work ethic always impressed those with whom he served and would most likely have ensured a successful career for Goethals, luck shaped all of the vital stepping stones in Goethals's path to Panama. Two strokes of good fortune made Goethals's appointment to West Point possible: the academic failure of Congressman Cox's original nominee, and the persuasiveness of the intended replacement nominee's mother, who did not want to see her only son go into the Army. Later, Goethals was extremely fortunate that Miles requested his relief at the exact moment that a vacancy was opening under Merrill on the Ohio River. Without Merrill's tutelage, Goethals would have been far less likely to succeed at Muscle Shoals, a critical experience that would not have even been possible had the unfortunate

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<sup>5</sup> George W. Goethals to "Toodles" [George R. Goethals], August 16, 1905, Box 3, George W. Goethals Papers, LC.

Lieutenant Graham D. Fitch not fallen seriously ill in 1889. In 1901, when Wilson was determined to put Goethals in a position in which he would learn about the inherently backward-looking mission of coastal defense, Goethals was extremely lucky to be sent to Newport only one month before conditions arose that allowed him to innovate and put his very relevant talents on display. This remarkable success in Newport was, unintentionally, Goethals's springboard to Panama. It influenced his selection as an officer of the first General Staff, and also his duties within the General Staff as the resident coast defense expert, which led to his all-important detail to the Taft Board, putting Goethals into the orbit of the man who would, with Alexander Mackenzie, secure Goethals's appointment as Chairman and Chief Engineer of the Isthmian Canal Commission.

The experiences Goethals benefitted from as a junior officer not only positioned him well for significant future assignments, but also prepared him to overcome monumental challenges to succeed in these assignments. This preparation was more by accident than by design. Using Goethals's professional development through 1907 as an archetypal model of professional development of officers in his generation, it is clear that the Army did surprisingly little to ensure that it generated from among its officer corps senior leaders prepared for and capable of leading the profession in peace or in war. The Army's processes of generating talented leaders to rise to senior positions were very much a role of the dice. The rise of a high-caliber officer like Goethals, an expert of his trade prepared to assume senior leadership roles, depended upon repeated instances of the right officer being in the right place at the right time.

"The right officer" refers to the officer's aptitude and abilities. In order to be successful in a learn-by-doing environment, an officer had to possess the ability to reflect upon experiences, internalize lessons derived from experiences, and subsequently apply them. The officer also had



to possess a high degree of drive and ambition in order to pursue challenging and rewarding assignments and push the limits of professional knowledge from time to time. Goethals demonstrated throughout his early career an ability to internalize and apply lessons derived from both his own experiences and his observation of others' experiences. There were many like him, but because of the significant role of chance in professional development in the late-nineteenth-century Army, it is likely that many of these officers were unable to reach their full potential. An interesting question to ponder is not how Goethals developed the skills necessary to succeed in Panama and the War Department, but how many other equally capable officers did not, falling victim to the chance inherent in the next two elements of the equation.

“The right place” refers to the human element of a duty assignment – the people with whom an officer connected, and from whom an officer learned. The quality of an officer's experience under an excellent commander who took seriously his implicit responsibility to teach and mentor a subordinate was markedly superior to the quality of an officer's experience under a less-well-intentioned commander. For example, Goethals grew exponentially more as a result of his time with William Merrill at Cincinnati than as a result of his time with John Barlow at Nashville.

“The right time” refers to conditions at a given assignment. An officer could not gain much of value from an assignment where no or few opportunities existed that could challenge and develop him. Goethals arrived at the Nashville District shortly before a crisis that would propel him to the Muscle Shoals Canal and an independent command, providing him with a set of experiences that made possible his path to the Panama Canal. His career would likely have turned out much differently if his orders at the end of his tour of duty at West Point in 1889 had

sent him instead of poor Lieutenant John Millis to the Third Lighthouse District.<sup>6</sup> Similarly, had he not been assigned to the Newport District one month before an exercise would reveal a need to reformulate standard power generation designs in coastal fortifications, that assignment would not have been so beneficial to Goethals's professional development.

If the right officer happened to be in the right place at the right time frequently and consistently, that officer was well on his way to being positioned and prepared for senior leadership positions within the Army. Such instances were sheer strokes of luck for both the officer and the Army. The officer in question only had some control of the first element, as it has everything to do with his own qualities and abilities. "Right place" and "right time" were naturally outside of an officer's sphere of influence. They were also beyond the Army's influence, because the institution did not have in place any standardized procedures for determining transfers and assignments. This process depended upon the personalities of those in a position to produce the orders. As Goethals's career demonstrates, some generals factored only convenience and utility in making decisions on assignments. Others were more forward-thinking and weighed officers' developmental needs.

But even these few who did consider professional development when deciding upon assignments generally lacked mechanisms to see the full picture and recognize the variable conditions at different assignment locations. They were therefore unable to ensure that they sent the right officer to the right place at the right time. In an example from Goethals's career, it is extremely unlikely that the person who wrote the orders that sent Goethals to Cincinnati knew both that Goethals was so lacking in field engineering experience and also that Merrill would

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<sup>6</sup> *Report of the Secretary of War*, 51<sup>st</sup> Cong., 2<sup>nd</sup> sess., 1890, vol. II, 4.

take innovative and effective measures to remedy the deficiency. An officer with such knowledge would, from his perch in Washington, have to know Goethals, Merrill, and Captain Frederick Mahan – Merrill’s most recent pupil at the time of Goethals’s assignment – intimately enough to connect all of the dots. This is a highly unlikely scenario, given the fact that Goethals and Mahan each had a very limited amount of prior assignments – and thus a limited amount of exposure within the corps – and no systematic performance evaluation system yet existed to fill in information naturally lacking when the officers in question are not personally known entities.

Interestingly, the practice of relying upon unstandardized and unregulated experiences to train and develop the officer corps appears to have been self-reinforcing. Those officers who achieved high rank and position did so in careers shaped mostly by their own abilities, as well as the good fortune to have come into contact with quality mentors and to have encountered some challenging and rewarding developmental experiences. Those composed of balanced amounts of pride and humility were more likely to ascribe their success to the quality of their experiences than to their own natural abilities or the actions of interested mentors and generous benefactors. The officers who succeeded in the learn-by-doing system, then, became strong believers in and advocates for experiential professional development. Goethals revealed as much in 1922, when he told Samuel Crowther, “The best man is the one who regards each difficulty overcome as in the nature of an educational degree . . . He learns in the only school that is worth anything – experience. He may be able by reason of training to skip a few grades, but he cannot skip the whole course. For in the end it is the test of experience that counts.”<sup>7</sup>

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<sup>7</sup> Crowther, 16.

Goethals and officers of his generation who entered the Army in the 1870s and 1880s emerged on the far side of the Root reforms still committed to the nineteenth-century norm of unsystematic and informal professional development. This reveals a fundamental problem in interpreting those reforms as the line of demarcation between the “old Army” and the new. Further demonstrating the reluctance to let go of old ideas were the heroic conceptions of the ideal military officer, heavily influenced by the memory of the Civil War, to which Goethals and his generation still subscribed. By creating the General Staff and the War College, Elihu Root transformed the Army’s organization and infrastructure, but he could not so quickly change the culture of the officer corps. Goethals and others of his generation had come of age in the “old” Army, and then were tasked with implementing the transition to the “new” Army as the nineteenth century gave way to the twentieth. In that role, they served as the bridge between old and new, forging organizational and infrastructural change with familiar tools and old concepts in which they still deeply believed and to which they were still committed. The dichotomy of old concepts and new systems limited the effectiveness of Root’s reforms until after World War I, when the aging warriors of Goethals’s generation gave way to a younger generation whose attitudes and values were fundamentally altered by the nearly catastrophic crises of the first year of the American war effort.<sup>8</sup> Only then would the culture of the officer corps catch up to the organizational and structural changes of 1899-1903, finally completing the long institutional transformation of the United States Army.

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<sup>8</sup> On the challenges and limited effectiveness of the General Staff prior to World War I, see Hewes, 12-21; Nelson, 73-186; and Weigley, 323-354. On the crises of the first year of the U.S. war effort, see Edward M. Coffman, *The War to End all Wars: The American Military Experience in World War I* (Lexington, KY: The University Press of Kentucky, 1998), 20-85 and 121-158. For shifting attitudes in the younger generation, see Pogue, 190-282; Betros, 243-246; and Muth, 115-148.

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